

Poker Lake Unit 29 Big Sinks West CTB

Depth to Groundwater borehole location

Legend

- 0.5-mile radius
- 480 ft.
- C-4826 POD 1
- PLU 29 Big Sinks West CTB



Google Earth

3000 ft



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):

- For each interval plugged, describe within the following columns:**

[illegible]

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

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.) C-4826		WELL TAG ID NO.		OSE FILE NO(S). C-4826-POD1		
	WELL OWNER NAME(S) XTO Energy				PHONE (OPTIONAL)		
	WELL OWNER MAILING ADDRESS 3104 E. Greene Street				CITY Carlsbad	STATE NM	ZIP 88220
	WELL LOCATION (FROM GPS)	DEGREES 32		MINUTES 06	SECONDS 18.7344	* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84	
		LATITUDE		N	W		
LONGITUDE		-103		48	04.230		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE							

2. DRILLING & CASING INFORMATION	LICENSE NO. 1833		NAME OF LICENSED DRILLER Jason Maley			NAME OF WELL DRILLING COMPANY Vision Resources		
	DRILLING STARTED 5-29-24		DRILLING ENDED 5-29-24		DEPTH OF COMPLETED WELL (FT) 55'	BORE HOLE DEPTH (FT) 55'	DEPTH WATER FIRST ENCOUNTERED (FT) N/A	
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN *add Centralizer info below <input checked="" type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) 0'	DATE STATIC MEASURED 5-29-24	
	DRILLING FLUID: <input checked="" type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES – SPECIFY:							
	DRILLING METHOD: <input checked="" type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input type="checkbox"/> OTHER – SPECIFY:						CHECK HERE IF PITLESS ADAPTER IS INSTALLED <input type="checkbox"/>	
	DEPTH (feet bgl)		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)
	FROM	TO						
	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)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE- RANGE BY INTERVAL <i>*(if using Centralizers for Artesian wells- indicate the spacing below)</i>	AMOUNT (cubic feet)	METHOD OF PLACEMENT
	FROM	TO				
				None pulled and plugged		

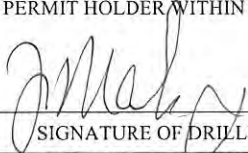
FOR OSE INTERNAL USE

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)		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)
	FROM	TO				
	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	
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					Y N	
					Y N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: <input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> 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: <div><div> SIGNATURE OF DRILLER / PRINT SIGNEE NAME</div><div>Jason Maley</div><div><div>6/3/24</div><div>DATE</div></div></div>









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

Intermittent 4,121 feet



December 9, 2023

Wetlands

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



December 9, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond


- Lake
- Other
- Riverine


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PLU 29 Big Sinks west CTB

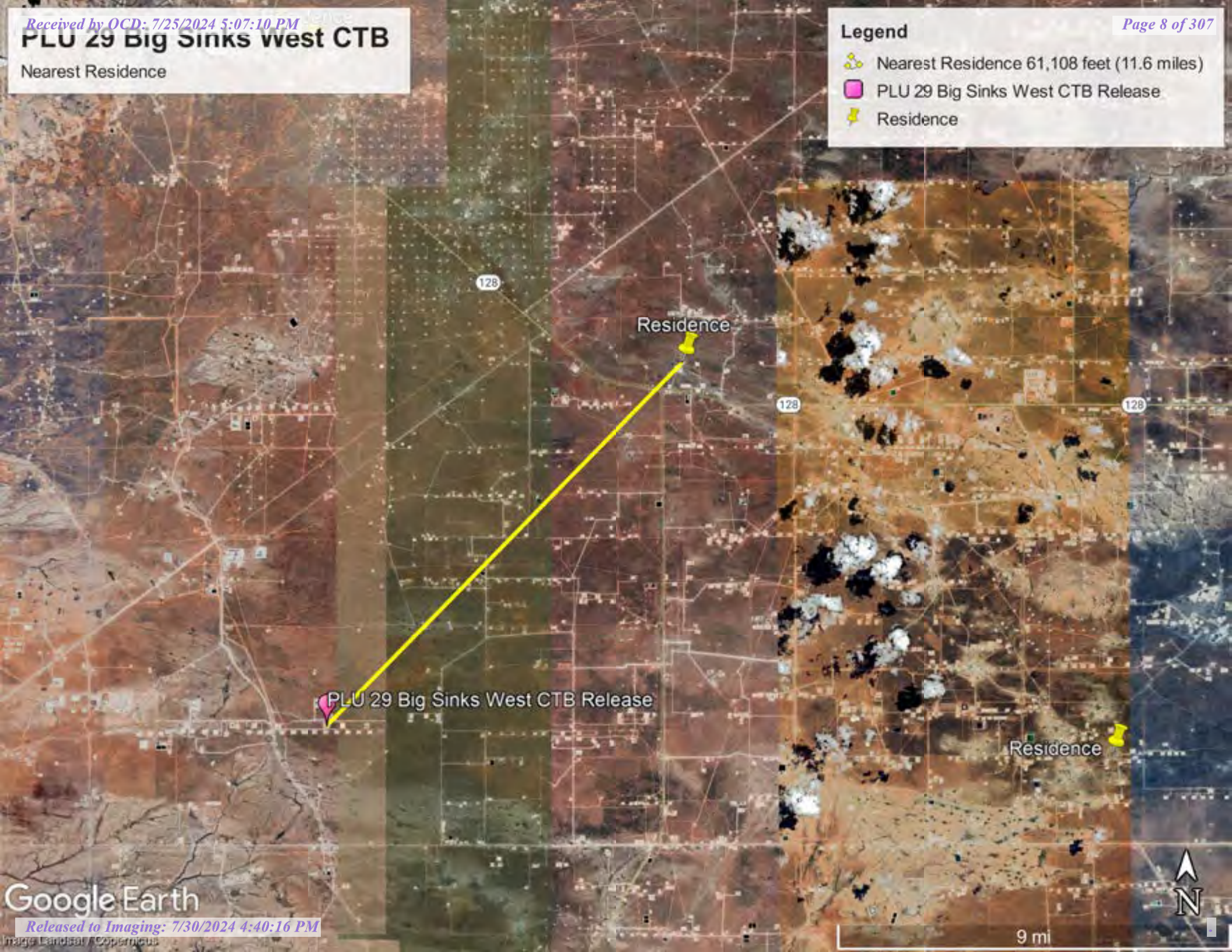
Nearest Residence

Legend

 Nearest Residence 61,108 feet (11.6 miles)

 PLU 29 Big Sinks West CTB Release

 Residence

















Residence

PLU 29 Big Sinks West CTB Release

Residence



New Mexico Office of the State Engineer
Active & Inactive Points of Diversion
 (with Ownership Information)

										(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)			
(acre ft per annum)																					
WR File Nbr	Sub	basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q	q	q	q	q	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

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



New Mexico Office of the State Engineer

Point of Diversion Summary

		(quarters are 1=NW 2=NE 3=SW 4=SE)						(NAD83 UTM in meters)	
		(quarters are smallest to largest)							
Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	C 02250	3	1	4	21	25S	31E	614912	3553620* 
x									
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

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12/9/23 12:31 PM

POINT OF DIVERSION SUMMARY



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		Transaction Desc.	From/ To	Acres	Diversion	Consumptive
			1	2					
198471	DCL	1992-03-16	DCL	PRC	C 02250	T	0	3	

Current Points of Diversion

POD Number	Well Tag	Source	Q (NAD83 UTM in meters)						X	Y	Other Location Desc
			64	Q16	Q4	Sec	Tws	Rng			
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	Q	64	Q16	Q4	Sec	Tws	Rng	Acres	Diversion	CU	Use	Priority	Status	Other Location Desc
256	64	Q16	Q4	Sec	Tws	Rng		0	3		STK		DCL	NO PLACE OF USE GIVEN.

Source

Acres	Diversion	CU	Use	Priority	Source Description
0	3		STK		GW

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WATER RIGHT SUMMARY

Wetland 7,255 feet



December 9, 2023

Wetlands

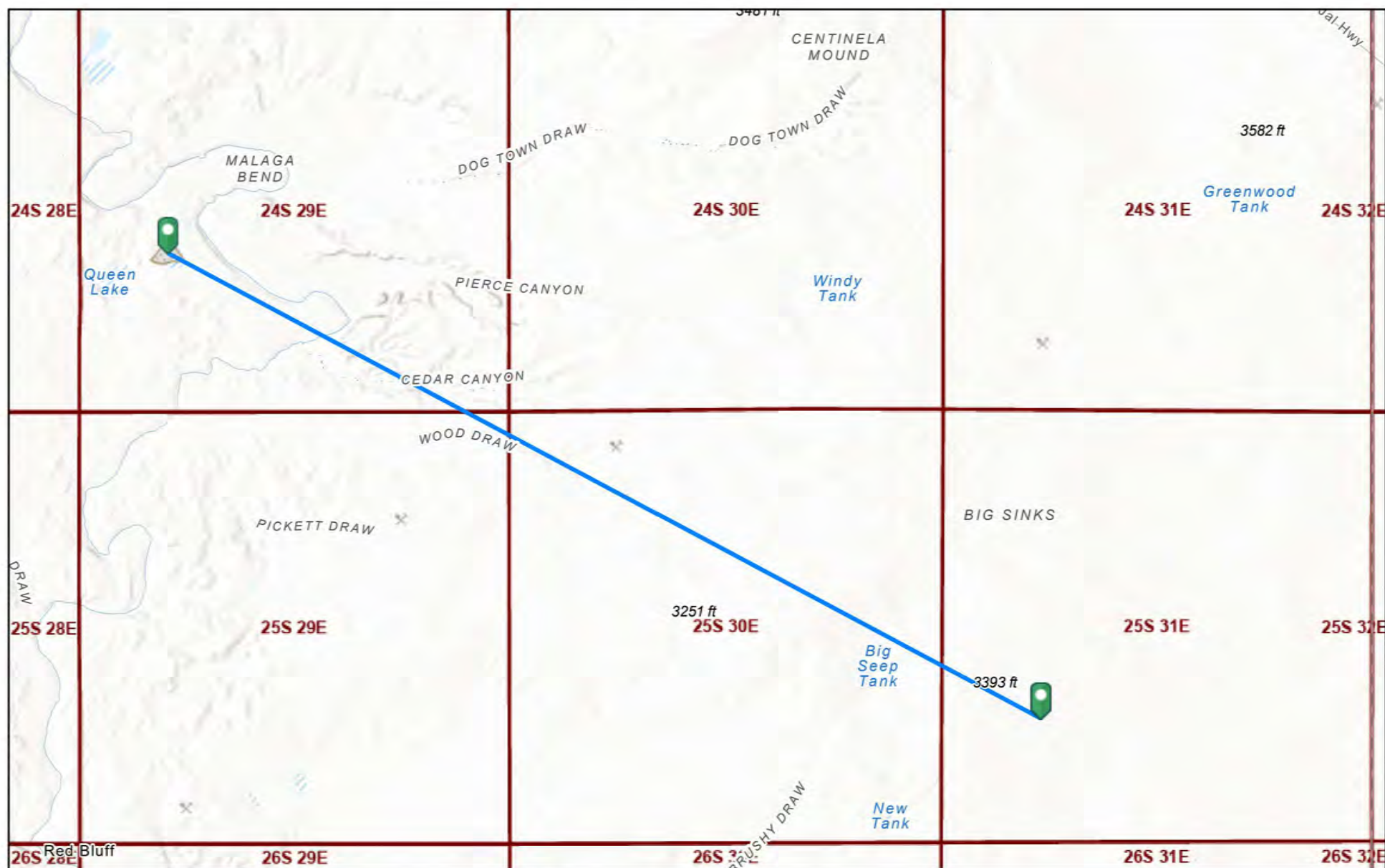
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Lake
- Other
- Riverine

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Subsurface Mine 73,190 feet



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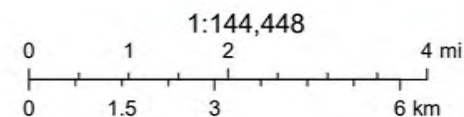
Registered Mines

Aggregate, Stone etc.



Aggregate, Stone etc. PLSS Townships

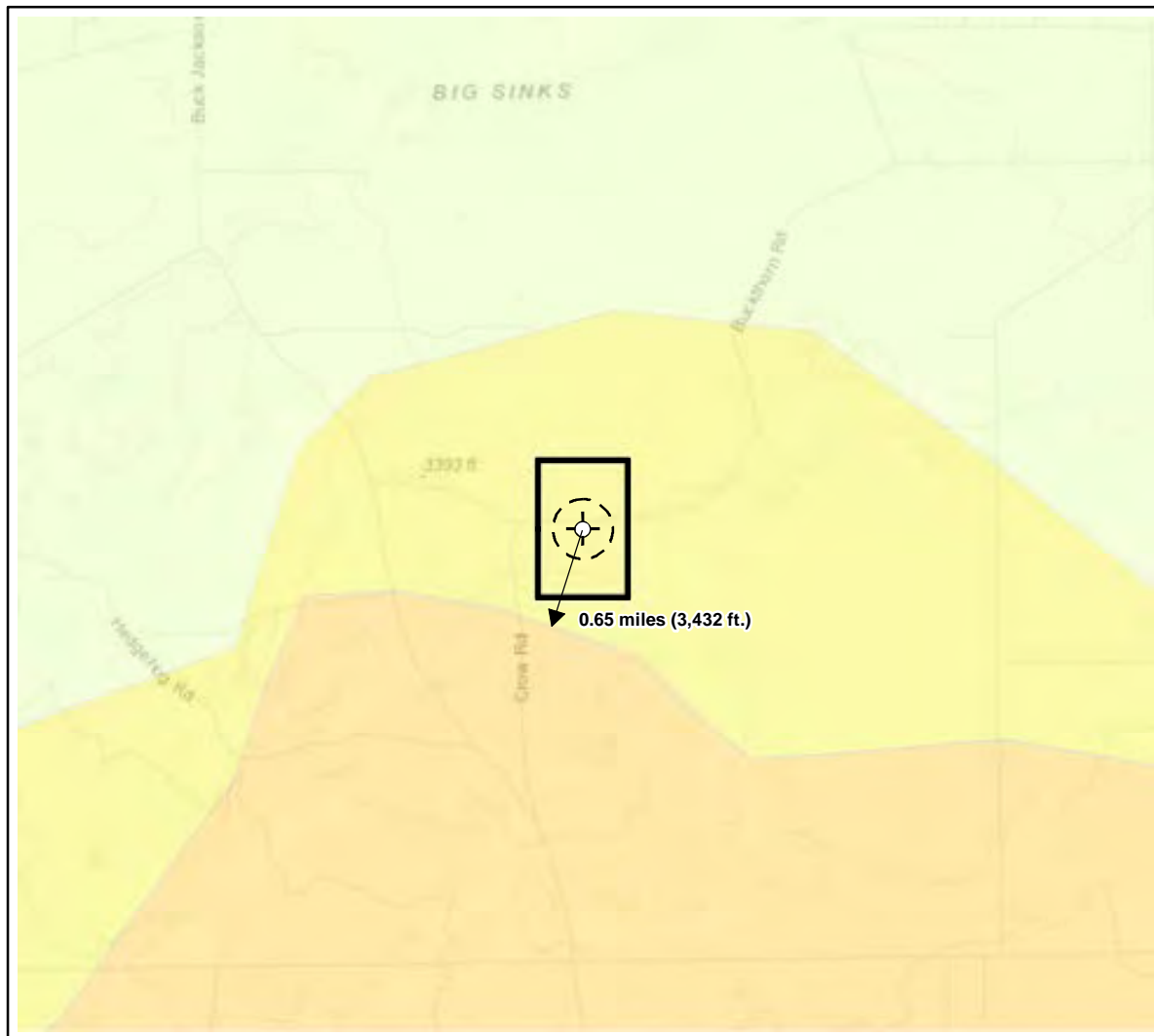
Salt



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>)



Karst Potential

- Critical
- High
- Medium
- Low

- Site Location
- Site Buffer (1000 ft.)

Overview Map

0 0.25 0.5 1 mi

Detail Map

0 150 300 600 ft



Map Center:
32.1049, -103.8014

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



Karst Potential Map PLU 29 Big Sinks CTB

Figure:
X



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

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

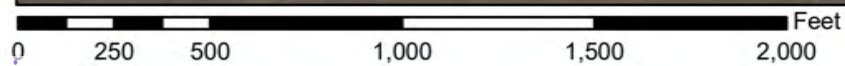
VERSATILITY. EXPERTISE.



National Flood Hazard Layer FIRMette



103°48'26"W 32°6'31"N



1:6,000

103°47'48"W 32°6'1"N

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 X
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
OTHER FEATURES		Levee, Dike, or Floodwall
		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		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

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.

Released to Imaging: 7/30/2024 4:40:16 PM

Received by OCD: 7/30/2024 5:07:10 PM

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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



Custom Soil Resource Report

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,

Custom Soil Resource Report

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.

Custom Soil Resource Report

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

Custom Soil Resource Report

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

Custom Soil Resource Report

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

Custom Soil Resource Report

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



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 Variant

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	2–8 in

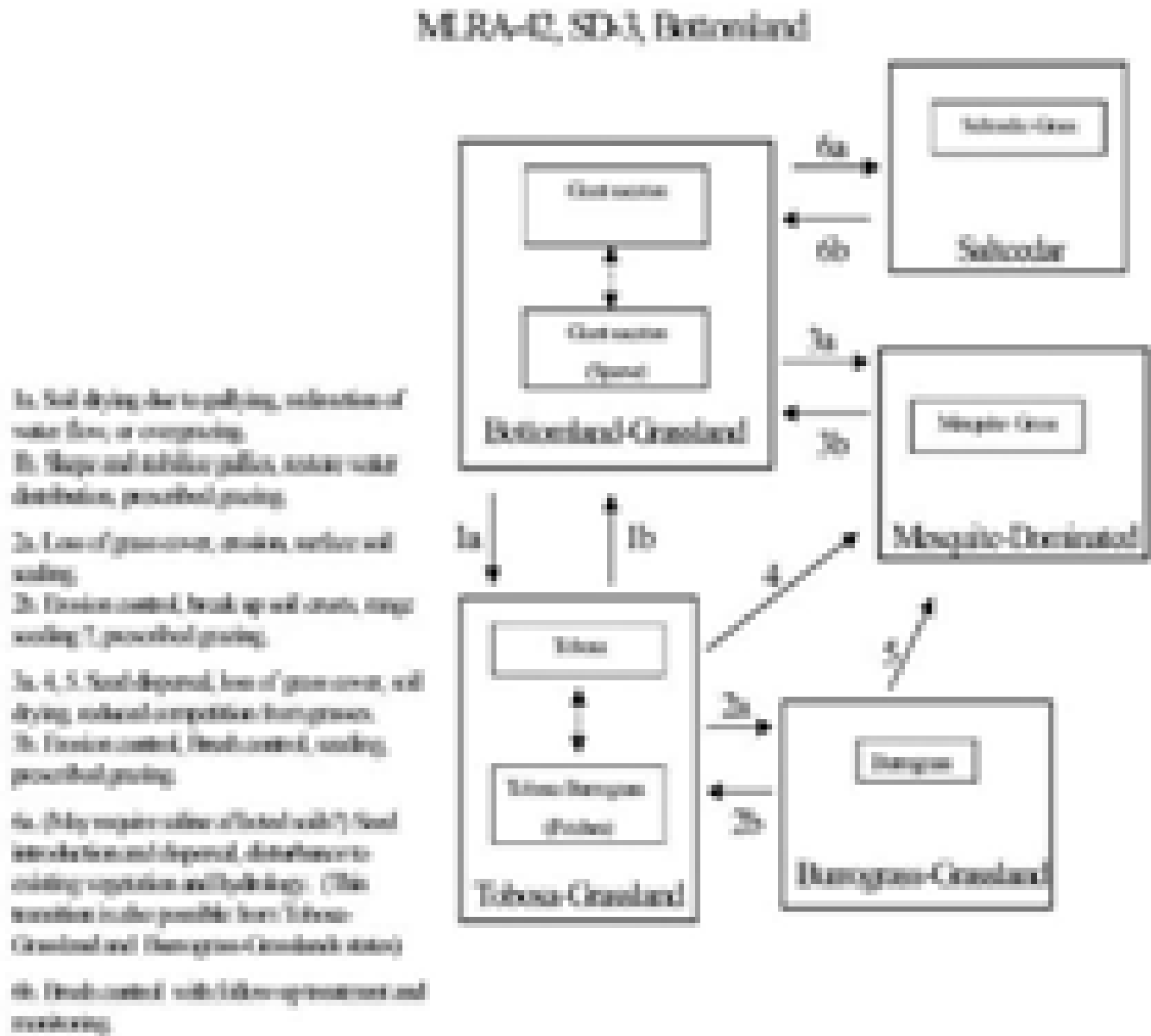
Calcium carbonate equivalent (0-40in)	3–15%
Electrical conductivity (0-40in)	0–4 mmhos/cm
Sodium adsorption ratio (0-40in)	0–5
Soil reaction (1:1 water) (0-40in)	7.4–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–15%
Subsurface fragment volume >3" (Depth not specified)	0–1%

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

Plant Communities and Transitional Pathways (diagram)



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 bristlegass, 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

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 gullyng, 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, gully, 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 transition 1b 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



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.
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Similar sites

R070BD004NM	Sandy Sandy ecological sites are similar to Shallow Sandy sites in species composition and Transition pathways.
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on plains, alluvial fans, uplands, or fan piedmonts. The parent material consists of mixed loamy alluvium or eolian material derived from igneous and sedimentary 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

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/clismnm.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%

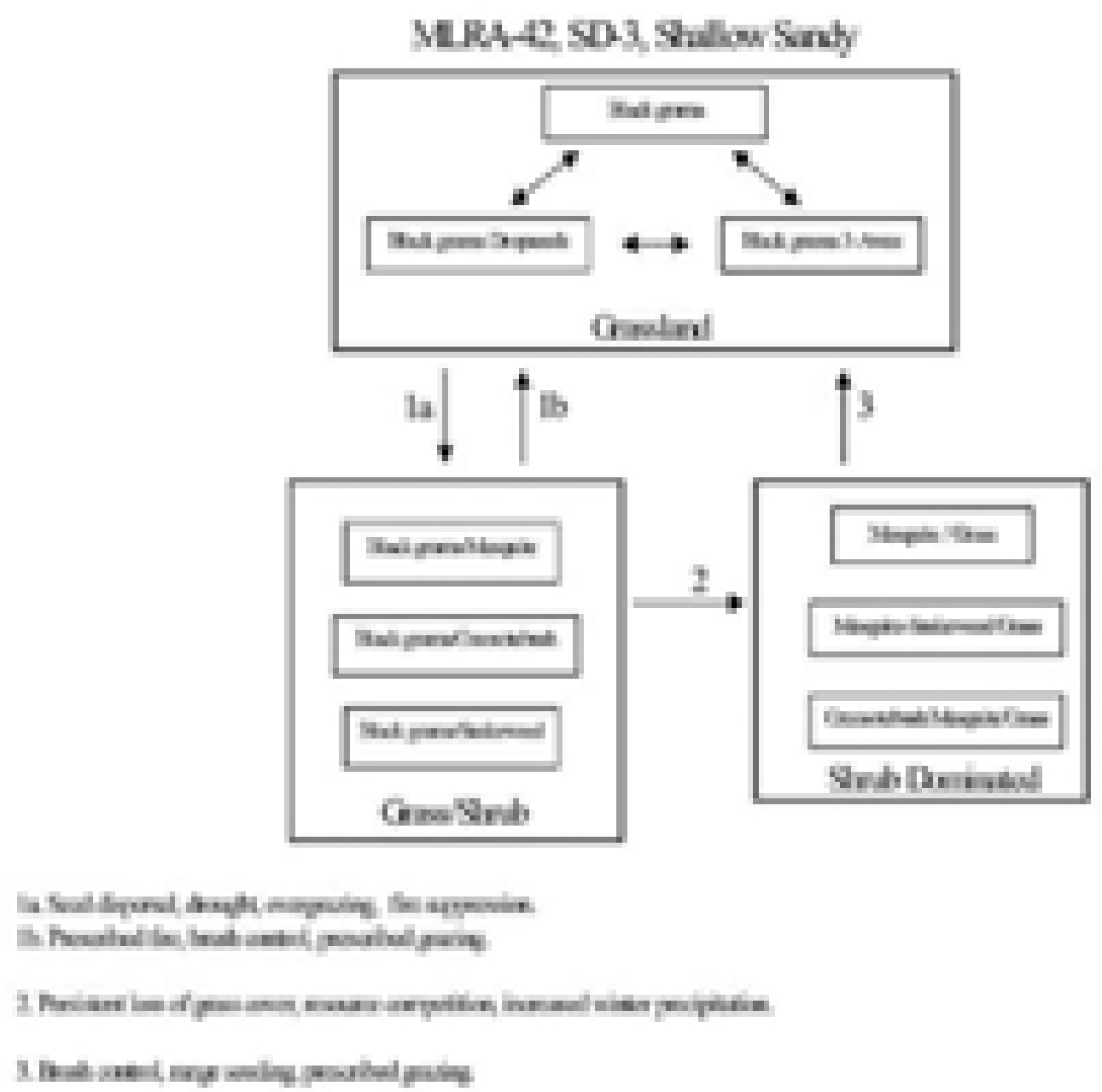
Ecological dynamics

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)



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 this 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	<i>Bouteloua eriopoda</i>	413–495	—
2	Warm Season			41–83	
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	41–83	—

ArcGIS Geology Map

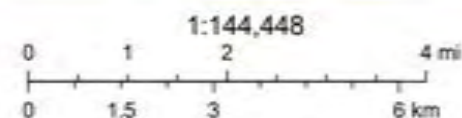


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Lithologic Units

- Playa—Alluvium and evaporite deposits (Holocene)
- Water—Perennial standing water
- Qa—Alluvium (Holocene to upper Pleistocene)

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



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

ArcGIS Web AppBuilder

APPENDIX D – Laboratory Data Reports and Chain of Custody Forms



Environment Testing

ANALYTICAL REPORT

PREPARED FOR

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

Generated 11/17/2023 1:59:38 PM

JOB DESCRIPTION

PLU 29 WEST BIG SINKS
23E-05485

JOB NUMBER

890-5610-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220

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



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11/17/2023 1:59:38 PM

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

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Laboratory Job ID: 890-5610-1
SDG: 23E-05485

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Definitions/Glossary

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

Qualifiers

GC VOA

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

GC Semi VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery 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
F1	MS and/or MSD recovery exceeds control limits.
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.
α	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/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

Job ID: 890-5610-1

Laboratory: Eurofins Carlsbad

Narrative**Job Narrative
890-5610-1**

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 11/9/2023 3:44 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.2°C

Receipt Exceptions

The following samples were received and analyzed from an unpreserved bulk soil jar: BH 23-03 0' (890-5610-1), BH 23-03 2' (890-5610-2), BH 23-03 4' (890-5610-3), BH 23-01 0' (890-5610-4), BH 23-01 2' (890-5610-5), BH 23-08 0' (890-5610-6), BH 23-08 2' (890-5610-7) and BH 23-08 4' (890-5610-8).

GC VOA

Method 8021B: The surrogate recovery for the blank associated with preparation batch 880-67061 and analytical batch 880-67021 was outside the upper control limits.

Method 8021B: Surrogate recovery for the following sample was outside control limits: (880-35797-A-81-D). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: Surrogate recovery for the following sample was outside control limits: BH 23-08 4' (890-5610-8). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis 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: (880-35343-A-1-F), (880-35343-A-1-G MS) and (880-35343-A-1-H MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015MOD_NM: Surrogate recovery for the following sample was outside control limits: BH 23-08 2' (890-5610-7). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015MOD_NM: Spike compounds were inadvertently omitted during the extraction process for the matrix spike/matrix spike duplicate (MS/MSD); therefore, matrix spike recoveries are unavailable for preparation batch 880-67028 and analytical batch 880-67152. The associated laboratory control sample (LCS) met acceptance criteria.

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

HPLC/IC

Method 300_ORGFM_28D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 880-66791 and analytical batch 880-66928 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Case Narrative

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

Job ID: 890-5610-1 (Continued)

Laboratory: Eurofins Carlsbad (Continued)

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

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

Client Sample ID: BH 23-03 0'

Lab Sample ID: 890-5610-1

Date Collected: 11/08/23 09:00

Matrix: Solid

Date Received: 11/09/23 15:44

Sample Depth: 0'

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		11/15/23 11:41	11/16/23 15:30	1
Toluene	<0.00200	U	0.00200	mg/Kg		11/15/23 11:41	11/16/23 15:30	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		11/15/23 11:41	11/16/23 15:30	1
m-Xylene & p-Xylene	<0.00401	U	0.00401	mg/Kg		11/15/23 11:41	11/16/23 15:30	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		11/15/23 11:41	11/16/23 15:30	1
Xylenes, Total	<0.00401	U	0.00401	mg/Kg		11/15/23 11:41	11/16/23 15:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	97		70 - 130	11/15/23 11:41	11/16/23 15:30	1
1,4-Difluorobenzene (Surr)	122		70 - 130	11/15/23 11:41	11/16/23 15:30	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00401	U	0.00401	mg/Kg			11/16/23 15:30	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			11/16/23 14:55	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	49.7	mg/Kg		11/15/23 09:52	11/16/23 14:55	1
Diesel Range Organics (Over C10-C28)	<49.7	U	49.7	mg/Kg		11/15/23 09:52	11/16/23 14:55	1
Oil Range Organics (Over C28-C36)	<49.7	U	49.7	mg/Kg		11/15/23 09:52	11/16/23 14:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	114		70 - 130	11/15/23 09:52	11/16/23 14:55	1
o-Terphenyl	126		70 - 130	11/15/23 09:52	11/16/23 14:55	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	9920		100	mg/Kg			11/14/23 20:38	20

Client Sample ID: BH 23-03 2'

Lab Sample ID: 890-5610-2

Date Collected: 11/08/23 09:05

Matrix: Solid

Date Received: 11/09/23 15:44

Sample Depth: 2'

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		11/15/23 11:41	11/16/23 15:50	1
Toluene	<0.00199	U	0.00199	mg/Kg		11/15/23 11:41	11/16/23 15:50	1
Ethylbenzene	<0.00199	U	0.00199	mg/Kg		11/15/23 11:41	11/16/23 15:50	1
m-Xylene & p-Xylene	<0.00398	U	0.00398	mg/Kg		11/15/23 11:41	11/16/23 15:50	1
o-Xylene	<0.00199	U	0.00199	mg/Kg		11/15/23 11:41	11/16/23 15:50	1
Xylenes, Total	<0.00398	U	0.00398	mg/Kg		11/15/23 11:41	11/16/23 15:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		70 - 130	11/15/23 11:41	11/16/23 15:50	1

Eurofins Carlsbad

Client Sample Results

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

Client Sample ID: BH 23-03 2'
Date Collected: 11/08/23 09:05
Date Received: 11/09/23 15:44
Sample Depth: 2'

Lab Sample ID: 890-5610-2
Matrix: Solid

Method: SW846 8021B - Volatile Organic Compounds (GC) (Continued)									
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
1,4-Difluorobenzene (Surr)	121		70 - 130			11/15/23 11:41	11/16/23 15:50	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			11/16/23 15:50	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			11/16/23 15:16	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	<49.6	U	49.6	mg/Kg		11/15/23 09:52	11/16/23 15:16	1	
Diesel Range Organics (Over C10-C28)	<49.6	U	49.6	mg/Kg		11/15/23 09:52	11/16/23 15:16	1	
Oil Range Organics (Over C28-C36)	<49.6	U	49.6	mg/Kg		11/15/23 09:52	11/16/23 15:16	1	
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
1-Chlorooctane	109		70 - 130			11/15/23 09:52	11/16/23 15:16	1	
o-Terphenyl	118		70 - 130			11/15/23 09:52	11/16/23 15:16	1	
Method: EPA 300.0 - Anions, Ion Chromatography - Soluble									
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Chloride	601		25.1	mg/Kg			11/14/23 20:44	5	

Client Sample ID: BH 23-03 4'
Date Collected: 11/08/23 09:10
Date Received: 11/09/23 15:44
Sample Depth: 4'

Lab Sample ID: 890-5610-3
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		11/15/23 11:41	11/16/23 16:11	1	
Toluene	<0.00198	U	0.00198	mg/Kg		11/15/23 11:41	11/16/23 16:11	1	
Ethylbenzene	<0.00198	U	0.00198	mg/Kg		11/15/23 11:41	11/16/23 16:11	1	
m-Xylene & p-Xylene	<0.00396	U	0.00396	mg/Kg		11/15/23 11:41	11/16/23 16:11	1	
o-Xylene	<0.00198	U	0.00198	mg/Kg		11/15/23 11:41	11/16/23 16:11	1	
Xylenes, Total	<0.00396	U	0.00396	mg/Kg		11/15/23 11:41	11/16/23 16:11	1	
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
4-Bromofluorobenzene (Surr)	102		70 - 130			11/15/23 11:41	11/16/23 16:11	1	
1,4-Difluorobenzene (Surr)	116		70 - 130			11/15/23 11:41	11/16/23 16:11	1	
Method: TAL SOP Total BTEX - Total BTEX Calculation									
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Total BTEX	<0.00396	U	0.00396	mg/Kg			11/16/23 16:11	1	
Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)									
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Total TPH	<50.1	U	50.1	mg/Kg			11/16/23 15:37	1	

Eurofins Carlsbad

Client Sample Results

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

Client Sample ID: BH 23-03 4'

Lab Sample ID: 890-5610-3

Date Collected: 11/08/23 09:10

Matrix: Solid

Date Received: 11/09/23 15:44

Sample Depth: 4'

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	<50.1	U	50.1	mg/Kg		11/15/23 09:52	11/16/23 15:37	1
Diesel Range Organics (Over C10-C28)	<50.1	U	50.1	mg/Kg		11/15/23 09:52	11/16/23 15:37	1
Oil Range Organics (Over C28-C36)	<50.1	U	50.1	mg/Kg		11/15/23 09:52	11/16/23 15:37	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	108		70 - 130			11/15/23 09:52	11/16/23 15:37	1
o-Terphenyl	119		70 - 130			11/15/23 09:52	11/16/23 15:37	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3040		24.9	mg/Kg			11/14/23 21:04	5

Client Sample ID: BH 23-01 0'

Lab Sample ID: 890-5610-4

Date Collected: 11/09/23 09:00

Matrix: Solid

Date Received: 11/09/23 15:44

Sample Depth: 0'

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		11/15/23 11:41	11/16/23 18:02	1
Toluene	<0.00199	U	0.00199	mg/Kg		11/15/23 11:41	11/16/23 18:02	1
Ethylbenzene	<0.00199	U	0.00199	mg/Kg		11/15/23 11:41	11/16/23 18:02	1
m-Xylene & p-Xylene	<0.00398	U	0.00398	mg/Kg		11/15/23 11:41	11/16/23 18:02	1
o-Xylene	<0.00199	U	0.00199	mg/Kg		11/15/23 11:41	11/16/23 18:02	1
Xylenes, Total	<0.00398	U	0.00398	mg/Kg		11/15/23 11:41	11/16/23 18:02	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	84		70 - 130			11/15/23 11:41	11/16/23 18:02	1
1,4-Difluorobenzene (Surr)	109		70 - 130			11/15/23 11:41	11/16/23 18:02	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			11/16/23 18:02	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.4	U	50.4	mg/Kg			11/16/23 15:58	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	<50.4	U	50.4	mg/Kg		11/15/23 09:52	11/16/23 15:58	1
Diesel Range Organics (Over C10-C28)	<50.4	U	50.4	mg/Kg		11/15/23 09:52	11/16/23 15:58	1
Oil Range Organics (Over C28-C36)	<50.4	U	50.4	mg/Kg		11/15/23 09:52	11/16/23 15:58	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	106		70 - 130			11/15/23 09:52	11/16/23 15:58	1
o-Terphenyl	115		70 - 130			11/15/23 09:52	11/16/23 15:58	1

Eurofins Carlsbad

Client Sample Results

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

Client Sample ID: BH 23-01 0'

Lab Sample ID: 890-5610-4

Date Collected: 11/09/23 09:00

Matrix: Solid

Date Received: 11/09/23 15:44

Sample Depth: 0'

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	78.9		5.05	mg/Kg			11/14/23 10:44	1

Client Sample ID: BH 23-01 2'

Lab Sample ID: 890-5610-5

Date Collected: 11/09/23 09:05

Matrix: Solid

Date Received: 11/09/23 15:44

Sample Depth: 2'

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		11/15/23 11:41	11/16/23 18:22	1
Toluene	<0.00200	U	0.00200	mg/Kg		11/15/23 11:41	11/16/23 18:22	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		11/15/23 11:41	11/16/23 18:22	1
m-Xylene & p-Xylene	<0.00399	U	0.00399	mg/Kg		11/15/23 11:41	11/16/23 18:22	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		11/15/23 11:41	11/16/23 18:22	1
Xylenes, Total	<0.00399	U	0.00399	mg/Kg		11/15/23 11:41	11/16/23 18:22	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		70 - 130			11/15/23 11:41	11/16/23 18:22	1
1,4-Difluorobenzene (Surr)	105		70 - 130			11/15/23 11:41	11/16/23 18:22	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			11/16/23 18:22	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.5	U	50.5	mg/Kg			11/16/23 16:19	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	<50.5	U	50.5	mg/Kg		11/15/23 09:52	11/16/23 16:19	1
Diesel Range Organics (Over C10-C28)	<50.5	U	50.5	mg/Kg		11/15/23 09:52	11/16/23 16:19	1
Oil Range Organics (Over C28-C36)	<50.5	U	50.5	mg/Kg		11/15/23 09:52	11/16/23 16:19	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	105		70 - 130			11/15/23 09:52	11/16/23 16:19	1
o-Terphenyl	120		70 - 130			11/15/23 09:52	11/16/23 16:19	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	15.7		5.01	mg/Kg			11/14/23 10:49	1

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

Client Sample ID: BH 23-08 0'

Lab Sample ID: 890-5610-6

Date Collected: 11/09/23 09:10

Matrix: Solid

Date Received: 11/09/23 15:44

Sample Depth: 0'

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		11/15/23 11:41	11/16/23 18:42	1
Toluene	<0.00201	U	0.00201	mg/Kg		11/15/23 11:41	11/16/23 18:42	1
Ethylbenzene	<0.00201	U	0.00201	mg/Kg		11/15/23 11:41	11/16/23 18:42	1
m-Xylene & p-Xylene	<0.00402	U	0.00402	mg/Kg		11/15/23 11:41	11/16/23 18:42	1
o-Xylene	<0.00201	U	0.00201	mg/Kg		11/15/23 11:41	11/16/23 18:42	1
Xylenes, Total	<0.00402	U	0.00402	mg/Kg		11/15/23 11:41	11/16/23 18:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	97		70 - 130	11/15/23 11:41	11/16/23 18:42	1
1,4-Difluorobenzene (Surr)	118		70 - 130	11/15/23 11:41	11/16/23 18:42	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			11/16/23 18:42	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			11/16/23 16:40	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	49.7	mg/Kg		11/15/23 09:52	11/16/23 16:40	1
Diesel Range Organics (Over C10-C28)	<49.7	U	49.7	mg/Kg		11/15/23 09:52	11/16/23 16:40	1
Oil Range Organics (Over C28-C36)	<49.7	U	49.7	mg/Kg		11/15/23 09:52	11/16/23 16:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	107		70 - 130	11/15/23 09:52	11/16/23 16:40	1
o-Terphenyl	118		70 - 130	11/15/23 09:52	11/16/23 16:40	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	58.8		4.98	mg/Kg			11/14/23 14:23	1

Client Sample ID: BH 23-08 2'

Lab Sample ID: 890-5610-7

Date Collected: 11/09/23 09:15

Matrix: Solid

Date Received: 11/09/23 15:44

Sample Depth: 2'

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		11/15/23 11:41	11/16/23 19:03	1
Toluene	<0.00202	U	0.00202	mg/Kg		11/15/23 11:41	11/16/23 19:03	1
Ethylbenzene	<0.00202	U	0.00202	mg/Kg		11/15/23 11:41	11/16/23 19:03	1
m-Xylene & p-Xylene	<0.00404	U	0.00404	mg/Kg		11/15/23 11:41	11/16/23 19:03	1
o-Xylene	<0.00202	U	0.00202	mg/Kg		11/15/23 11:41	11/16/23 19:03	1
Xylenes, Total	<0.00404	U	0.00404	mg/Kg		11/15/23 11:41	11/16/23 19:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	92		70 - 130	11/15/23 11:41	11/16/23 19:03	1

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

Client Sample ID: BH 23-08 2'

Lab Sample ID: 890-5610-7

Date Collected: 11/09/23 09:15

Matrix: Solid

Date Received: 11/09/23 15:44

Sample Depth: 2'

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	117		70 - 130	11/15/23 11:41	11/16/23 19:03	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00404	U	0.00404	mg/Kg			11/16/23 19:03	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			11/16/23 17:01	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		11/15/23 09:52	11/16/23 17:01	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9	mg/Kg		11/15/23 09:52	11/16/23 17:01	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9	mg/Kg		11/15/23 09:52	11/16/23 17:01	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	126		70 - 130			11/15/23 09:52	11/16/23 17:01	1
o-Terphenyl	136	S1+	70 - 130			11/15/23 09:52	11/16/23 17:01	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	460		50.4	mg/Kg			11/14/23 14:29	10

Client Sample ID: BH 23-08 4'

Lab Sample ID: 890-5610-8

Date Collected: 11/09/23 09:20

Matrix: Solid

Date Received: 11/09/23 15:44

Sample Depth: 4'

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		11/15/23 11:41	11/16/23 19:23	1
Toluene	<0.00199	U	0.00199	mg/Kg		11/15/23 11:41	11/16/23 19:23	1
Ethylbenzene	<0.00199	U	0.00199	mg/Kg		11/15/23 11:41	11/16/23 19:23	1
m-Xylene & p-Xylene	<0.00398	U	0.00398	mg/Kg		11/15/23 11:41	11/16/23 19:23	1
o-Xylene	<0.00199	U	0.00199	mg/Kg		11/15/23 11:41	11/16/23 19:23	1
Xylenes, Total	<0.00398	U	0.00398	mg/Kg		11/15/23 11:41	11/16/23 19:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	129		70 - 130	11/15/23 11:41	11/16/23 19:23	1
1,4-Difluorobenzene (Surr)	164	S1+	70 - 130	11/15/23 11:41	11/16/23 19:23	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			11/16/23 19:23	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0	mg/Kg			11/16/23 17:22	1

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

Client Sample ID: BH 23-08 4'
Date Collected: 11/09/23 09:20
Date Received: 11/09/23 15:44
Sample Depth: 4'

Lab Sample ID: 890-5610-8
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	<50.0	U	50.0	mg/Kg		11/15/23 09:52	11/16/23 17:22	1	
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		11/15/23 09:52	11/16/23 17:22	1	
OII Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		11/15/23 09:52	11/16/23 17:22	1	
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
1-Chlorooctane	110		70 - 130			11/15/23 09:52	11/16/23 17:22	1	
o-Terphenyl	119		70 - 130			11/15/23 09:52	11/16/23 17:22	1	

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble									
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Chloride	34.7		5.05	mg/Kg			11/14/23 11:06	1	

Surrogate Summary

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
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	DFBZ1				
		(70-130)	(70-130)				
880-35797-A-81-B MS	Matrix Spike	103	98				
880-35797-A-81-C MSD	Matrix Spike Duplicate	90	108				
890-5610-1	BH 23-03 0'	97	122				
890-5610-2	BH 23-03 2'	99	121				
890-5610-3	BH 23-03 4'	102	116				
890-5610-4	BH 23-01 0'	84	109				
890-5610-5	BH 23-01 2'	90	105				
890-5610-6	BH 23-08 0'	97	118				
890-5610-7	BH 23-08 2'	92	117				
890-5610-8	BH 23-08 4'	129	164 S1+				
LCS 880-67061/1-A	Lab Control Sample	99	116				
LCSD 880-67061/2-A	Lab Control Sample Dup	105	110				
MB 880-67061/5-A	Method Blank	117	154 S1+				
MB 880-67094/5-A	Method Blank	114	119				
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	OTPH1				
		(70-130)	(70-130)				
880-35343-A-1-G MS	Matrix Spike	2 S1-	0.2 S1-				
880-35343-A-1-H MSD	Matrix Spike Duplicate	2 S1-	0.2 S1-				
890-5610-1	BH 23-03 0'	114	126				
890-5610-2	BH 23-03 2'	109	118				
890-5610-3	BH 23-03 4'	108	119				
890-5610-4	BH 23-01 0'	106	115				
890-5610-5	BH 23-01 2'	105	120				
890-5610-6	BH 23-08 0'	107	118				
890-5610-7	BH 23-08 2'	126	136 S1+				
890-5610-8	BH 23-08 4'	110	119				
LCS 880-67028/2-A	Lab Control Sample	97	112				
LCSD 880-67028/3-A	Lab Control Sample Dup	92	105				
MB 880-67028/1-A	Method Blank	109	124				
Surrogate Legend							
1CO = 1-Chlorooctane							
OTPH = o-Terphenyl							

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-67061/5-A

Matrix: Solid

Analysis Batch: 67021

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 67061

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		11/15/23 11:41	11/16/23 12:38	1
Toluene	<0.00200	U	0.00200	mg/Kg		11/15/23 11:41	11/16/23 12:38	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		11/15/23 11:41	11/16/23 12:38	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		11/15/23 11:41	11/16/23 12:38	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		11/15/23 11:41	11/16/23 12:38	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		11/15/23 11:41	11/16/23 12:38	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	117		70 - 130	11/15/23 11:41	11/16/23 12:38	1
1,4-Difluorobenzene (Surr)	154	S1+	70 - 130	11/15/23 11:41	11/16/23 12:38	1

Lab Sample ID: LCS 880-67061/1-A

Matrix: Solid

Analysis Batch: 67021

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 67061

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.1235		mg/Kg		124	70 - 130
Toluene	0.100	0.08522		mg/Kg		85	70 - 130
Ethylbenzene	0.100	0.08726		mg/Kg		87	70 - 130
m-Xylene & p-Xylene	0.200	0.1904		mg/Kg		95	70 - 130
o-Xylene	0.100	0.09465		mg/Kg		95	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	99		70 - 130
1,4-Difluorobenzene (Surr)	116		70 - 130

Lab Sample ID: LCSD 880-67061/2-A

Matrix: Solid

Analysis Batch: 67021

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 67061

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	0.100	0.1191		mg/Kg		119	70 - 130	4	35
Toluene	0.100	0.08593		mg/Kg		86	70 - 130	1	35
Ethylbenzene	0.100	0.08452		mg/Kg		85	70 - 130	3	35
m-Xylene & p-Xylene	0.200	0.1801		mg/Kg		90	70 - 130	6	35
o-Xylene	0.100	0.09651		mg/Kg		97	70 - 130	2	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	105		70 - 130
1,4-Difluorobenzene (Surr)	110		70 - 130

Lab Sample ID: 880-35797-A-81-B MS

Matrix: Solid

Analysis Batch: 67021

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 67061

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	<0.00199	U	0.0996	0.08388		mg/Kg		84	70 - 130
Toluene	<0.00199	U F1	0.0996	0.06167	F1	mg/Kg		62	70 - 130

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

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

Lab Sample ID: 880-35797-A-81-B MS

Matrix: Solid

Analysis Batch: 67021

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 67061

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00199	U F1	0.0996	0.06371	F1	mg/Kg		64	70 - 130
m-Xylene & p-Xylene	<0.00398	U F1	0.199	0.1444		mg/Kg		72	70 - 130
o-Xylene	<0.00199	U F1	0.0996	0.07765		mg/Kg		78	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	103		70 - 130
1,4-Difluorobenzene (Surr)	98		70 - 130

Lab Sample ID: 880-35797-A-81-C MSD

Matrix: Solid

Analysis Batch: 67021

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 67061

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00199	U	0.100	0.08417		mg/Kg		84	70 - 130	0	35
Toluene	<0.00199	U F1	0.100	0.06025	F1	mg/Kg		60	70 - 130	2	35
Ethylbenzene	<0.00199	U F1	0.100	0.05329	F1	mg/Kg		53	70 - 130	18	35
m-Xylene & p-Xylene	<0.00398	U F1	0.200	0.1270	F1	mg/Kg		63	70 - 130	13	35
o-Xylene	<0.00199	U F1	0.100	0.06890	F1	mg/Kg		69	70 - 130	12	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	90		70 - 130
1,4-Difluorobenzene (Surr)	108		70 - 130

Lab Sample ID: MB 880-67094/5-A

Matrix: Solid

Analysis Batch: 67021

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 67094

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		11/15/23 13:29	11/16/23 00:55	1
Toluene	<0.00200	U	0.00200	mg/Kg		11/15/23 13:29	11/16/23 00:55	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		11/15/23 13:29	11/16/23 00:55	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		11/15/23 13:29	11/16/23 00:55	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		11/15/23 13:29	11/16/23 00:55	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		11/15/23 13:29	11/16/23 00:55	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	114		70 - 130	11/15/23 13:29	11/16/23 00:55	1
1,4-Difluorobenzene (Surr)	119		70 - 130	11/15/23 13:29	11/16/23 00:55	1

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

Lab Sample ID: MB 880-67028/1-A

Matrix: Solid

Analysis Batch: 67152

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 67028

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		11/15/23 09:52	11/16/23 07:31	1

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

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

Lab Sample ID: MB 880-67028/1-A

Matrix: Solid

Analysis Batch: 67152

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 67028

Analyte	MB	MB	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		11/15/23 09:52	11/16/23 07:31	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		11/15/23 09:52	11/16/23 07:31	1
Surrogate	MB	MB	Limits			Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier						
1-Chlorooctane	109		70 - 130			11/15/23 09:52	11/16/23 07:31	1
o-Terphenyl	124		70 - 130			11/15/23 09:52	11/16/23 07:31	1

Lab Sample ID: LCS 880-67028/2-A

Matrix: Solid

Analysis Batch: 67152

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 67028

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec	Limits		
		Result	Qualifier				Limits			
Gasoline Range Organics (GRO)-C6-C10	1000	1059		mg/Kg		106	70 - 130			
Diesel Range Organics (Over C10-C28)	1000	924.3		mg/Kg		92	70 - 130			
Surrogate		LCS	LCS				Limits			
		%Recovery	Qualifier							
1-Chlorooctane		97					70 - 130			
o-Terphenyl		112					70 - 130			

Lab Sample ID: LCSD 880-67028/3-A

Matrix: Solid

Analysis Batch: 67152

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 67028

Analyte	Spike Added	LCSD	LCSD	Unit	D	%Rec	%Rec	Limits	RPD	Limit
		Result	Qualifier				Limits			
Gasoline Range Organics (GRO)-C6-C10	1000	1090		mg/Kg		109	70 - 130	3		20
Diesel Range Organics (Over C10-C28)	1000	952.9		mg/Kg		95	70 - 130	3		20
Surrogate		LCSD	LCSD				Limits			
		%Recovery	Qualifier							
1-Chlorooctane		92					70 - 130			
o-Terphenyl		105					70 - 130			

Lab Sample ID: 880-35343-A-1-G MS

Matrix: Solid

Analysis Batch: 67152

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 67028

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	%Rec	Limits		
	Result	Qualifier		Result	Qualifier				Limits			
Gasoline Range Organics (GRO)-C6-C10	<50.0	U F1	1010	<50.5	U F1	mg/Kg		2	70 - 130			
Diesel Range Organics (Over C10-C28)	<50.0	U F1	1010	<50.5	U F1	mg/Kg		0.3	70 - 130			
Surrogate	MS	MS							Limits			
	%Recovery	Qualifier										
1-Chlorooctane	2	S1-							70 - 130			
o-Terphenyl	0.2	S1-							70 - 130			

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

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

Lab Sample ID: 880-35343-A-1-H MSD
Matrix: Solid
Analysis Batch: 67152

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 67028

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline Range Organics (GRO)-C6-C10	<50.0	U F1	1010	<50.5	U F1	mg/Kg	-	2	70 - 130	10	20
Diesel Range Organics (Over C10-C28)	<50.0	U F1	1010	<50.5	U F1	mg/Kg		-0.2	70 - 130	12	20
	MSD	MSD									
Surrogate	%Recovery	Qualifier	Limits								
1-Chlorooctane	2	S1-	70 - 130								
o-Terphenyl	0.2	S1-	70 - 130								

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-66791/1-A
Matrix: Solid
Analysis Batch: 66928

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			11/14/23 08:12	1

Lab Sample ID: LCS 880-66791/2-A
Matrix: Solid
Analysis Batch: 66928

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec
							Limits
Chloride	250	256.5		mg/Kg		103	90 - 110

Lab Sample ID: LCSD 880-66791/3-A
Matrix: Solid
Analysis Batch: 66928

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

			Spike	LCS	LCS				%Rec		
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Chloride			250	257.8		mg/Kg		103	90 - 110	1	20

Lab Sample ID: 880-35571-A-8-D MS
Matrix: Solid
Analysis Batch: 66928

Client Sample ID: Matrix Spike
Prep Type: Soluble

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec		
	Result	Qualifier	Added	Result	Qualifier				Limits		
Chloride	51.3		251	302.3		mg/Ka		100	90 - 110		

Lab Sample ID: 880-35571-A-8-E MSD
Matrix: Solid
Analysis Batch: 66928

Client Sample ID: Matrix Spike Duplicate
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	51.3		251	303.3		mg/Kg		100	90 - 110	0	20

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 880-35649-A-4-B MS Matrix: Solid Analysis Batch: 66928											Client Sample ID: Matrix Spike Prep Type: Soluble		
Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits				
Chloride	7720	F1	2530	10720	F1	mg/Kg		119	90 - 110				
Lab Sample ID: 880-35649-A-4-C MSD Matrix: Solid Analysis Batch: 66928											Client Sample ID: Matrix Spike Duplicate Prep Type: Soluble		
Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD		RPD Limit	
Chloride	7720	F1	2530	10860	F1	mg/Kg		124	90 - 110	1		20	
Lab Sample ID: MB 880-66983/1-A Matrix: Solid Analysis Batch: 67006											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			11/14/23 18:25			1	
Lab Sample ID: LCS 880-66983/2-A Matrix: Solid Analysis Batch: 67006											Client Sample ID: Lab Control Sample Prep Type: Soluble		
Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits				
Chloride			250	241.8		mg/Kg		97	90 - 110				
Lab Sample ID: LCSD 880-66983/3-A Matrix: Solid Analysis Batch: 67006											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	241.8		mg/Kg		97	90 - 110	0		20	
Lab Sample ID: 880-35681-A-38-B MS Matrix: Solid Analysis Batch: 67006											Client Sample ID: Matrix Spike Prep Type: Soluble		
Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits				
Chloride	14600		4970	19150		mg/Kg		92	90 - 110				
Lab Sample ID: 880-35681-A-38-C MSD Matrix: Solid Analysis Batch: 67006											Client Sample ID: Matrix Spike Duplicate Prep Type: Soluble		
Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD		RPD Limit	
Chloride	14600		4970	19140		mg/Kg		92	90 - 110	0		20	

QC Association Summary

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

GC VOA

Analysis Batch: 67021

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5610-1	BH 23-03 0'	Total/NA	Solid	8021B	67061
890-5610-2	BH 23-03 2'	Total/NA	Solid	8021B	67061
890-5610-3	BH 23-03 4'	Total/NA	Solid	8021B	67061
890-5610-4	BH 23-01 0'	Total/NA	Solid	8021B	67061
890-5610-5	BH 23-01 2'	Total/NA	Solid	8021B	67061
890-5610-6	BH 23-08 0'	Total/NA	Solid	8021B	67061
890-5610-7	BH 23-08 2'	Total/NA	Solid	8021B	67061
890-5610-8	BH 23-08 4'	Total/NA	Solid	8021B	67061
MB 880-67061/5-A	Method Blank	Total/NA	Solid	8021B	67061
MB 880-67094/5-A	Method Blank	Total/NA	Solid	8021B	67094
LCS 880-67061/1-A	Lab Control Sample	Total/NA	Solid	8021B	67061
LCSD 880-67061/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	67061
880-35797-A-81-B MS	Matrix Spike	Total/NA	Solid	8021B	67061
880-35797-A-81-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	67061

Prep Batch: 67061

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5610-1	BH 23-03 0'	Total/NA	Solid	5035	
890-5610-2	BH 23-03 2'	Total/NA	Solid	5035	
890-5610-3	BH 23-03 4'	Total/NA	Solid	5035	
890-5610-4	BH 23-01 0'	Total/NA	Solid	5035	
890-5610-5	BH 23-01 2'	Total/NA	Solid	5035	
890-5610-6	BH 23-08 0'	Total/NA	Solid	5035	
890-5610-7	BH 23-08 2'	Total/NA	Solid	5035	
890-5610-8	BH 23-08 4'	Total/NA	Solid	5035	
MB 880-67061/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-67061/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-67061/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-35797-A-81-B MS	Matrix Spike	Total/NA	Solid	5035	
880-35797-A-81-C MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Prep Batch: 67094

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-67094/5-A	Method Blank	Total/NA	Solid	5035	

Analysis Batch: 67297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5610-1	BH 23-03 0'	Total/NA	Solid	Total BTEX	
890-5610-2	BH 23-03 2'	Total/NA	Solid	Total BTEX	
890-5610-3	BH 23-03 4'	Total/NA	Solid	Total BTEX	
890-5610-4	BH 23-01 0'	Total/NA	Solid	Total BTEX	
890-5610-5	BH 23-01 2'	Total/NA	Solid	Total BTEX	
890-5610-6	BH 23-08 0'	Total/NA	Solid	Total BTEX	
890-5610-7	BH 23-08 2'	Total/NA	Solid	Total BTEX	
890-5610-8	BH 23-08 4'	Total/NA	Solid	Total BTEX	

GC Semi VOA

Prep Batch: 67028

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5610-1	BH 23-03 0'	Total/NA	Solid	8015NM Prep	

QC Association Summary

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

GC Semi VOA (Continued)

Prep Batch: 67028 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5610-2	BH 23-03 2'	Total/NA	Solid	8015NM Prep	
890-5610-3	BH 23-03 4'	Total/NA	Solid	8015NM Prep	
890-5610-4	BH 23-01 0'	Total/NA	Solid	8015NM Prep	
890-5610-5	BH 23-01 2'	Total/NA	Solid	8015NM Prep	
890-5610-6	BH 23-08 0'	Total/NA	Solid	8015NM Prep	
890-5610-7	BH 23-08 2'	Total/NA	Solid	8015NM Prep	
890-5610-8	BH 23-08 4'	Total/NA	Solid	8015NM Prep	
MB 880-67028/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-67028/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-67028/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
880-35343-A-1-G MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
880-35343-A-1-H MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 67152

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5610-1	BH 23-03 0'	Total/NA	Solid	8015B NM	67028
890-5610-2	BH 23-03 2'	Total/NA	Solid	8015B NM	67028
890-5610-3	BH 23-03 4'	Total/NA	Solid	8015B NM	67028
890-5610-4	BH 23-01 0'	Total/NA	Solid	8015B NM	67028
890-5610-5	BH 23-01 2'	Total/NA	Solid	8015B NM	67028
890-5610-6	BH 23-08 0'	Total/NA	Solid	8015B NM	67028
890-5610-7	BH 23-08 2'	Total/NA	Solid	8015B NM	67028
890-5610-8	BH 23-08 4'	Total/NA	Solid	8015B NM	67028
MB 880-67028/1-A	Method Blank	Total/NA	Solid	8015B NM	67028
LCS 880-67028/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	67028
LCSD 880-67028/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	67028
880-35343-A-1-G MS	Matrix Spike	Total/NA	Solid	8015B NM	67028
880-35343-A-1-H MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	67028

Analysis Batch: 67310

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5610-1	BH 23-03 0'	Total/NA	Solid	8015 NM	
890-5610-2	BH 23-03 2'	Total/NA	Solid	8015 NM	
890-5610-3	BH 23-03 4'	Total/NA	Solid	8015 NM	
890-5610-4	BH 23-01 0'	Total/NA	Solid	8015 NM	
890-5610-5	BH 23-01 2'	Total/NA	Solid	8015 NM	
890-5610-6	BH 23-08 0'	Total/NA	Solid	8015 NM	
890-5610-7	BH 23-08 2'	Total/NA	Solid	8015 NM	
890-5610-8	BH 23-08 4'	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 66791

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5610-4	BH 23-01 0'	Soluble	Solid	DI Leach	
890-5610-5	BH 23-01 2'	Soluble	Solid	DI Leach	
890-5610-6	BH 23-08 0'	Soluble	Solid	DI Leach	
890-5610-7	BH 23-08 2'	Soluble	Solid	DI Leach	
890-5610-8	BH 23-08 4'	Soluble	Solid	DI Leach	
MB 880-66791/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-66791/2-A	Lab Control Sample	Soluble	Solid	DI Leach	

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QC Association Summary

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

HPLC/IC (Continued)

Leach Batch: 66791 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 880-66791/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
880-35571-A-8-D MS	Matrix Spike	Soluble	Solid	DI Leach	
880-35571-A-8-E MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	
880-35649-A-4-B MS	Matrix Spike	Soluble	Solid	DI Leach	
880-35649-A-4-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 66928

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5610-4	BH 23-01 0'	Soluble	Solid	300.0	66791
890-5610-5	BH 23-01 2'	Soluble	Solid	300.0	66791
890-5610-6	BH 23-08 0'	Soluble	Solid	300.0	66791
890-5610-7	BH 23-08 2'	Soluble	Solid	300.0	66791
890-5610-8	BH 23-08 4'	Soluble	Solid	300.0	66791
MB 880-66791/1-A	Method Blank	Soluble	Solid	300.0	66791
LCS 880-66791/2-A	Lab Control Sample	Soluble	Solid	300.0	66791
LCSD 880-66791/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	66791
880-35571-A-8-D MS	Matrix Spike	Soluble	Solid	300.0	66791
880-35571-A-8-E MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	66791
880-35649-A-4-B MS	Matrix Spike	Soluble	Solid	300.0	66791
880-35649-A-4-C MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	66791

Leach Batch: 66983

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5610-1	BH 23-03 0'	Soluble	Solid	DI Leach	
890-5610-2	BH 23-03 2'	Soluble	Solid	DI Leach	
890-5610-3	BH 23-03 4'	Soluble	Solid	DI Leach	
MB 880-66983/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-66983/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-66983/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
880-35681-A-38-B MS	Matrix Spike	Soluble	Solid	DI Leach	
880-35681-A-38-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 67006

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5610-1	BH 23-03 0'	Soluble	Solid	300.0	66983
890-5610-2	BH 23-03 2'	Soluble	Solid	300.0	66983
890-5610-3	BH 23-03 4'	Soluble	Solid	300.0	66983
MB 880-66983/1-A	Method Blank	Soluble	Solid	300.0	66983
LCS 880-66983/2-A	Lab Control Sample	Soluble	Solid	300.0	66983
LCSD 880-66983/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	66983
880-35681-A-38-B MS	Matrix Spike	Soluble	Solid	300.0	66983
880-35681-A-38-C MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	66983

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Lab Chronicle

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

Client Sample ID: BH 23-03 0'
Date Collected: 11/08/23 09:00
Date Received: 11/09/23 15:44

Lab Sample ID: 890-5610-1
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			4.99 g	5 mL	67061	11/15/23 11:41	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	67021	11/16/23 15:30	SM	EET MID
Total/NA	Analysis	Total BTEX		1			67297	11/16/23 15:30	AJ	EET MID
Total/NA	Analysis	8015 NM		1			67310	11/16/23 14:55	SM	EET MID
Total/NA	Prep	8015NM Prep			10.07 g	10 mL	67028	11/15/23 09:52	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	67152	11/16/23 14:55	SM	EET MID
Soluble	Leach	DI Leach			4.99 g	50 mL	66983	11/14/23 12:01	CH	EET MID
Soluble	Analysis	300.0		20	50 mL	50 mL	67006	11/14/23 20:38	CH	EET MID

Client Sample ID: BH 23-03 2'
Date Collected: 11/08/23 09:05
Date Received: 11/09/23 15:44

Lab Sample ID: 890-5610-2
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			5.02 g	5 mL	67061	11/15/23 11:41	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	67021	11/16/23 15:50	SM	EET MID
Total/NA	Analysis	Total BTEX		1			67297	11/16/23 15:50	AJ	EET MID
Total/NA	Analysis	8015 NM		1			67310	11/16/23 15:16	SM	EET MID
Total/NA	Prep	8015NM Prep			10.09 g	10 mL	67028	11/15/23 09:52	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	67152	11/16/23 15:16	SM	EET MID
Soluble	Leach	DI Leach			4.98 g	50 mL	66983	11/14/23 12:01	CH	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	67006	11/14/23 20:44	CH	EET MID

Client Sample ID: BH 23-03 4'
Date Collected: 11/08/23 09:10
Date Received: 11/09/23 15:44

Lab Sample ID: 890-5610-3
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			5.05 g	5 mL	67061	11/15/23 11:41	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	67021	11/16/23 16:11	SM	EET MID
Total/NA	Analysis	Total BTEX		1			67297	11/16/23 16:11	AJ	EET MID
Total/NA	Analysis	8015 NM		1			67310	11/16/23 15:37	SM	EET MID
Total/NA	Prep	8015NM Prep			9.98 g	10 mL	67028	11/15/23 09:52	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	67152	11/16/23 15:37	SM	EET MID
Soluble	Leach	DI Leach			5.02 g	50 mL	66983	11/14/23 12:01	CH	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	67006	11/14/23 21:04	CH	EET MID

Client Sample ID: BH 23-01 0'
Date Collected: 11/09/23 09:00
Date Received: 11/09/23 15:44

Lab Sample ID: 890-5610-4
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	67061	11/15/23 11:41	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	67021	11/16/23 18:02	SM	EET MID
Total/NA	Analysis	Total BTEX		1			67297	11/16/23 18:02	AJ	EET MID

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Lab Chronicle

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

Client Sample ID: BH 23-01 0'
Date Collected: 11/09/23 09:00
Date Received: 11/09/23 15:44

Lab Sample ID: 890-5610-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8015 NM		1			67310	11/16/23 15:58	SM	EET MID
Total/NA	Prep	8015NM Prep			9.92 g	10 mL	67028	11/15/23 09:52	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	67152	11/16/23 15:58	SM	EET MID
Soluble	Leach	DI Leach			4.95 g	50 mL	66791	11/13/23 08:05	CH	EET MID
Soluble	Analysis	300.0		1			66928	11/14/23 10:44	CH	EET MID

Client Sample ID: BH 23-01 2'
Date Collected: 11/09/23 09:05
Date Received: 11/09/23 15:44

Lab Sample ID: 890-5610-5
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	67061	11/15/23 11:41	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	67021	11/16/23 18:22	SM	EET MID
Total/NA	Analysis	Total BTEX		1			67297	11/16/23 18:22	AJ	EET MID
Total/NA	Analysis	8015 NM		1			67310	11/16/23 16:19	SM	EET MID
Total/NA	Prep	8015NM Prep			9.90 g	10 mL	67028	11/15/23 09:52	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	67152	11/16/23 16:19	SM	EET MID
Soluble	Leach	DI Leach			4.99 g	50 mL	66791	11/13/23 08:05	CH	EET MID
Soluble	Analysis	300.0		1			66928	11/14/23 10:49	CH	EET MID

Client Sample ID: BH 23-08 0'
Date Collected: 11/09/23 09:10
Date Received: 11/09/23 15:44

Lab Sample ID: 890-5610-6
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			4.97 g	5 mL	67061	11/15/23 11:41	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	67021	11/16/23 18:42	SM	EET MID
Total/NA	Analysis	Total BTEX		1			67297	11/16/23 18:42	AJ	EET MID
Total/NA	Analysis	8015 NM		1			67310	11/16/23 16:40	SM	EET MID
Total/NA	Prep	8015NM Prep			10.06 g	10 mL	67028	11/15/23 09:52	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	67152	11/16/23 16:40	SM	EET MID
Soluble	Leach	DI Leach			5.02 g	50 mL	66791	11/13/23 08:05	CH	EET MID
Soluble	Analysis	300.0		1			66928	11/14/23 14:23	CH	EET MID

Client Sample ID: BH 23-08 2'
Date Collected: 11/09/23 09:15
Date Received: 11/09/23 15:44

Lab Sample ID: 890-5610-7
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			4.95 g	5 mL	67061	11/15/23 11:41	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	67021	11/16/23 19:03	SM	EET MID
Total/NA	Analysis	Total BTEX		1			67297	11/16/23 19:03	AJ	EET MID
Total/NA	Analysis	8015 NM		1			67310	11/16/23 17:01	SM	EET MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	67028	11/15/23 09:52	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	67152	11/16/23 17:01	SM	EET MID

Eurofins Carlsbad

Lab Chronicle

Client: Vertex
Project/Site: PLU 29 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

Client Sample ID: BH 23-08 2'
Date Collected: 11/09/23 09:15
Date Received: 11/09/23 15:44

Lab Sample ID: 890-5610-7
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			4.96 g	50 mL	66791	11/13/23 08:05	CH	EET MID
Soluble	Analysis	300.0		10			66928	11/14/23 14:29	CH	EET MID

Client Sample ID: BH 23-08 4'
Date Collected: 11/09/23 09:20
Date Received: 11/09/23 15:44

Lab Sample ID: 890-5610-8
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			5.02 g	5 mL	67061	11/15/23 11:41	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	67021	11/16/23 19:23	SM	EET MID
Total/NA	Analysis	Total BTEX		1			67297	11/16/23 19:23	AJ	EET MID
Total/NA	Analysis	8015 NM		1			67310	11/16/23 17:22	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	67028	11/15/23 09:52	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	67152	11/16/23 17:22	SM	EET MID
Soluble	Leach	DI Leach			4.95 g	50 mL	66791	11/13/23 08:05	CH	EET MID
Soluble	Analysis	300.0		1			66928	11/14/23 11:06	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 WEST BIG SINKS

Job ID: 890-5610-1
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 WEST BIG SINKS

Job ID: 890-5610-1
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 WEST BIG SINKS

Job ID: 890-5610-1
SDG: 23E-05485

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-5610-1	BH 23-03 0'	Solid	11/08/23 09:00	11/09/23 15:44	0'
890-5610-2	BH 23-03 2'	Solid	11/08/23 09:05	11/09/23 15:44	2'
890-5610-3	BH 23-03 4'	Solid	11/08/23 09:10	11/09/23 15:44	4'
890-5610-4	BH 23-01 0'	Solid	11/09/23 09:00	11/09/23 15:44	0'
890-5610-5	BH 23-01 2'	Solid	11/09/23 09:05	11/09/23 15:44	2'
890-5610-6	BH 23-08 0'	Solid	11/09/23 09:10	11/09/23 15:44	0'
890-5610-7	BH 23-08 2'	Solid	11/09/23 09:15	11/09/23 15:44	2'
890-5610-8	BH 23-08 4'	Solid	11/09/23 09:20	11/09/23 15:44	4'





Environment Testing
Xenon

Chain of Custody

Houston, TX (281) 240-4200, Dallas, TX (214) 502-0300
Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3334
El Paso, TX (915) 585-3445, Lubbock, TX (806) 794-1296
Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Work Order No:

www.xenco.com Page of

Project Manager:	Chance Dixon	Bill to: (if different)	Barret Green
Company Name:	Vortex	Company Name:	XTD
Address:		Address:	
City, State ZIP:		City, State ZIP:	
Phone:		Email:	cdixon@vortex.ca

Work Order Comments	
Program:	UST/PST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>
State of Project:	
Reporting Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input type="checkbox"/> Level IV <input type="checkbox"/>	
Deliverables:	EDD <input type="checkbox"/> Adapt <input type="checkbox"/> Other: <input type="checkbox"/>

Project Name:	PLU 89 West Big Sink	Turn Around		Pres. Code	
Project Number:	73E-05485	<input checked="" type="checkbox"/> Routine <input type="checkbox"/> Rush			
Project Location:	Hammer Green	Due Date:			
Sample's Name:	Hammer Green	TAT starts the day received by the lab, if received by 4:30pm			
PO #:					
SAMPLE RECEIPT	Temp Blank: <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Wet Ice: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Samples Received Intact:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Thermometer ID:	IN1000		
Cooler Custody Seals:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Correction Factor:	-0.2		
Sample Custody Seals:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Temperature Reading	4.4		
Total Containers:		Corrected Temperature:	4.5		

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/Comp	# of Cont	CL	BTEX	TPH	ANALYSIS REQUEST	Preservative Codes	Sample Comments
EH23-043	0'	5.1	9:00		1		+	+	+		None, NO	DI Water, H ₂ O
BH23-03	2'		9:05				+	+	+		Cool, Cool	MeOH, Me
BH23-03	4'		9:10				+	+	+		HCL, HC	HNO ₃ , HN
BH23-01	0'	11	9:05				+	+	+		H ₂ SO ₄ , H ₂	NaOH, Na
BH23-01	2'		9:05				+	+	+		H ₃ PO ₄ , HP	
BH23-08	0'		9:10				+	+	+		NaHSO ₄ , NABIS	
BH23-08	2'		9:15				+	+	+		Na ₂ S ₂ O ₃ , NaSO ₃	
BH23-08	4'		9:20				+	+	+		Zn Acetate+NaOH, Zn	
BH23-08	4'		9:20				+	+	+		NaOH+Ascorbic Acid, SAPC	



890-5610 Chain of Custody

Total 200.7 / 6010 2008 / 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 Ti 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 Ti U Hg: 1631 / 245.1 / 7470 / 7471

Note: Signature of this document and relinquishment of sample constitutes a valid purchase order from client company to Eurofins Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Eurofins Xenco will be liable only for the costs of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Eurofins Xenco. A minimum charge of \$85.00 will be applied to each project and a charge of \$5 for each sample submitted to Eurofins Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Hammer Green	Barret Green	11/9			

Login Sample Receipt Checklist

Client: Vertex

Job Number: 890-5610-1

SDG Number: 23E-05485

Login Number: 5610

List Number: 1

Creator: Bruns, Shannon

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: 890-5610-1
SDG Number: 23E-05485

Login Number: 5610
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 11/13/23 09:24 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	



Environment Testing

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ANALYTICAL REPORT

PREPARED FOR

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

Generated 11/29/2023 11:53:34 AM

JOB DESCRIPTION

PLU #29 WEST BIG SINKS
23E-05485

JOB NUMBER

890-5632-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220

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
11/29/2023 11:53:34 AM

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

Client: Vertex
Project/Site: PLU #29 WEST BIG SINKS

Laboratory Job ID: 890-5632-1
SDG: 23E-05485

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Definitions/Glossary

Client: Vertex
Project/Site: PLU #29 WEST BIG SINKS

Job ID: 890-5632-1
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
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
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.
α	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/Site: PLU #29 WEST BIG SINKS

Job ID: 890-5632-1
SDG: 23E-05485

Job ID: 890-5632-1**Laboratory: Eurofins Carlsbad****Narrative****Job Narrative
890-5632-1**

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 11/15/2023 8:34 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.2°C

Receipt Exceptions

The following samples were received and analyzed from an unpreserved bulk soil jar: BH 23 - 13 0' (890-5632-1) and BH 23 - 13 1.5' (890-5632-2).

GC VOA

Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-67568 and analytical batch 880-67637 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 matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-67741 and analytical batch 880-67809 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: Surrogate recovery for the following sample was outside control limits: (890-5666-A-21-C). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis 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 880-67231 and analytical batch 880-67245 was outside the upper control limits.

Method 8015MOD_NM: Batch preparation batch 880-67231 and analytical batch 880-67245 is reported without a matrix spike/matrix spike duplicate (MS/MSD). The batch MS/MSD was originally performed on another client's sample, and this test was canceled at client request. This MS/MSD result does not have immediate bearing on any samples except for the actual sample spiked. The associated laboratory control sample (LCS) met acceptance criteria and provides long-term precision and accuracy for this batch.

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 WEST BIG SINKS

Job ID: 890-5632-1
SDG: 23E-05485

Client Sample ID: BH 23 - 13 0'

Lab Sample ID: 890-5632-1

Date Collected: 11/14/23 09:30

Matrix: Solid

Date Received: 11/15/23 08:34

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		11/27/23 11:00	11/28/23 11:55	1
Toluene	<0.00199	U	0.00199	mg/Kg		11/27/23 11:00	11/28/23 11:55	1
Ethylbenzene	<0.00199	U	0.00199	mg/Kg		11/27/23 11:00	11/28/23 11:55	1
m-Xylene & p-Xylene	<0.00398	U	0.00398	mg/Kg		11/27/23 11:00	11/28/23 11:55	1
o-Xylene	<0.00199	U	0.00199	mg/Kg		11/27/23 11:00	11/28/23 11:55	1
Xylenes, Total	<0.00398	U	0.00398	mg/Kg		11/27/23 11:00	11/28/23 11:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		70 - 130	11/27/23 11:00	11/28/23 11:55	1
1,4-Difluorobenzene (Surr)	71		70 - 130	11/27/23 11:00	11/28/23 11:55	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			11/28/23 11:55	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			11/17/23 22:24	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	49.7	mg/Kg		11/16/23 16:02	11/17/23 22:24	1
Diesel Range Organics (Over C10-C28)	<49.7	U	49.7	mg/Kg		11/16/23 16:02	11/17/23 22:24	1
Oil Range Organics (Over C28-C36)	<49.7	U	49.7	mg/Kg		11/16/23 16:02	11/17/23 22:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	100		70 - 130	11/16/23 16:02	11/17/23 22:24	1
o-Terphenyl	110		70 - 130	11/16/23 16:02	11/17/23 22:24	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	39.1		4.97	mg/Kg			11/17/23 12:57	1

Client Sample ID: BH 23 - 13 1.5'

Lab Sample ID: 890-5632-2

Date Collected: 11/14/23 09:45

Matrix: Solid

Date Received: 11/15/23 08:34

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		11/21/23 14:33	11/22/23 16:21	1
Toluene	<0.00202	U	0.00202	mg/Kg		11/21/23 14:33	11/22/23 16:21	1
Ethylbenzene	<0.00202	U	0.00202	mg/Kg		11/21/23 14:33	11/22/23 16:21	1
m-Xylene & p-Xylene	<0.00404	U	0.00404	mg/Kg		11/21/23 14:33	11/22/23 16:21	1
o-Xylene	<0.00202	U	0.00202	mg/Kg		11/21/23 14:33	11/22/23 16:21	1
Xylenes, Total	<0.00404	U	0.00404	mg/Kg		11/21/23 14:33	11/22/23 16:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		70 - 130	11/21/23 14:33	11/22/23 16:21	1
1,4-Difluorobenzene (Surr)	77		70 - 130	11/21/23 14:33	11/22/23 16:21	1

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Client Sample Results

Client: Vertex
Project/Site: PLU #29 WEST BIG SINKS

Job ID: 890-5632-1
SDG: 23E-05485

Client Sample ID: BH 23 - 13 1.5'
Date Collected: 11/14/23 09:45
Date Received: 11/15/23 08:34

Lab Sample ID: 890-5632-2
Matrix: Solid

Method: TAL SOP Total BTEX - Total BTEX Calculation									
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Total BTEX	<0.00404	U	0.00404	mg/Kg			11/22/23 16:21	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			11/17/23 22:46	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		11/16/23 16:02	11/17/23 22:46	1	
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9	mg/Kg		11/16/23 16:02	11/17/23 22:46	1	
Oil Range Organics (Over C28-C36)	<49.9	U	49.9	mg/Kg		11/16/23 16:02	11/17/23 22:46	1	
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
1-Chlorooctane	100		70 - 130			11/16/23 16:02	11/17/23 22:46	1	
o-Terphenyl	105		70 - 130			11/16/23 16:02	11/17/23 22:46	1	
Method: EPA 300.0 - Anions, Ion Chromatography - Soluble									
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Chloride	51.6		5.05	mg/Kg			11/17/23 13:02	1	

Surrogate Summary

Client: Vertex
Project/Site: PLU #29 WEST BIG SINKS

Job ID: 890-5632-1
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)
890-5632-1	BH 23 - 13 0'	96	71
890-5632-2	BH 23 - 13 1.5'	89	77
890-5632-A-1-F MS	890-5632-A-1-F MS	105	106
890-5632-A-1-G MSD	890-5632-A-1-G MSD	103	103
890-5666-A-21-A MS	Matrix Spike	90	84
890-5666-A-21-B MSD	Matrix Spike Duplicate	123	101
LCS 880-67568/1-A	Lab Control Sample	104	104
LCS 880-67741/1-A	Lab Control Sample	109	100
LCSD 880-67568/2-A	Lab Control Sample Dup	102	105
LCSD 880-67741/2-A	Lab Control Sample Dup	113	100
MB 880-67568/5-A	Method Blank	71	88
MB 880-67741/5-A	Method Blank	79	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)
890-5632-1	BH 23 - 13 0'	100	110
890-5632-2	BH 23 - 13 1.5'	100	105
LCS 880-67231/2-A	Lab Control Sample	93	107
LCSD 880-67231/3-A	Lab Control Sample Dup	90	103
MB 880-67231/1-A	Method Blank	115	133 S1+
Surrogate Legend			
1CO = 1-Chlorooctane			
OTPH = o-Terphenyl			

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	OTPH1
890-5635-A-5-C MS	Matrix Spike		
890-5635-A-5-D MSD	Matrix Spike Duplicate		
Surrogate Legend			
1CO = 1-Chlorooctane			
OTPH = o-Terphenyl			

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QC Sample Results

Client: Vertex
Project/Site: PLU #29 WEST BIG SINKS

Job ID: 890-5632-1
SDG: 23E-05485

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-67568/5-A

Matrix: Solid

Analysis Batch: 67637

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 67568

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		11/21/23 14:33	11/22/23 15:38	1
Toluene	<0.00200	U	0.00200	mg/Kg		11/21/23 14:33	11/22/23 15:38	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		11/21/23 14:33	11/22/23 15:38	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		11/21/23 14:33	11/22/23 15:38	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		11/21/23 14:33	11/22/23 15:38	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		11/21/23 14:33	11/22/23 15:38	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	71		70 - 130	11/21/23 14:33	11/22/23 15:38	1
1,4-Difluorobenzene (Surr)	88		70 - 130	11/21/23 14:33	11/22/23 15:38	1

Lab Sample ID: LCS 880-67568/1-A

Matrix: Solid

Analysis Batch: 67637

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 67568

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.08403		mg/Kg		84	70 - 130
Toluene	0.100	0.08136		mg/Kg		81	70 - 130
Ethylbenzene	0.100	0.08783		mg/Kg		88	70 - 130
m-Xylene & p-Xylene	0.200	0.1813		mg/Kg		91	70 - 130
o-Xylene	0.100	0.08648		mg/Kg		86	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	104		70 - 130
1,4-Difluorobenzene (Surr)	104		70 - 130

Lab Sample ID: LCSD 880-67568/2-A

Matrix: Solid

Analysis Batch: 67637

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 67568

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	0.100	0.08384		mg/Kg		84	70 - 130	0	35
Toluene	0.100	0.07787		mg/Kg		78	70 - 130	4	35
Ethylbenzene	0.100	0.08232		mg/Kg		82	70 - 130	6	35
m-Xylene & p-Xylene	0.200	0.1701		mg/Kg		85	70 - 130	6	35
o-Xylene	0.100	0.08106		mg/Kg		81	70 - 130	6	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	102		70 - 130
1,4-Difluorobenzene (Surr)	105		70 - 130

Lab Sample ID: 890-5632-A-1-F MS

Matrix: Solid

Analysis Batch: 67637

Client Sample ID: 890-5632-A-1-F MS

Prep Type: Total/NA

Prep Batch: 67568

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.0264	F1	0.0990	0.08324	F1	mg/Kg		57	70 - 130
Toluene	0.0663	F1	0.0990	0.07497	F1	mg/Kg		9	70 - 130

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QC Sample Results

Client: Vertex
Project/Site: PLU #29 WEST BIG SINKS

Job ID: 890-5632-1
SDG: 23E-05485

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

Lab Sample ID: 890-5632-A-1-F MS

Matrix: Solid

Analysis Batch: 67637

Client Sample ID: 890-5632-A-1-F MS

Prep Type: Total/NA

Prep Batch: 67568

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	0.0201	F1	0.0990	0.07512	F1	mg/Kg		56	70 - 130
m-Xylene & p-Xylene	0.0523	F1	0.198	0.1535	F1	mg/Kg		51	70 - 130
o-Xylene	0.0181	F1	0.0990	0.07435	F1	mg/Kg		57	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	105		70 - 130
1,4-Difluorobenzene (Surr)	106		70 - 130

Lab Sample ID: 890-5632-A-1-G MSD

Matrix: Solid

Analysis Batch: 67637

Client Sample ID: 890-5632-A-1-G MSD

Prep Type: Total/NA

Prep Batch: 67568

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	0.0264	F1	0.101	0.07268	F1	mg/Kg		46	70 - 130	14	35
Toluene	0.0663	F1	0.101	0.06436	F1	mg/Kg		-2	70 - 130	15	35
Ethylbenzene	0.0201	F1	0.101	0.06294	F1	mg/Kg		43	70 - 130	18	35
m-Xylene & p-Xylene	0.0523	F1	0.202	0.1282	F1	mg/Kg		38	70 - 130	18	35
o-Xylene	0.0181	F1	0.101	0.06264	F1	mg/Kg		44	70 - 130	17	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	103		70 - 130
1,4-Difluorobenzene (Surr)	103		70 - 130

Lab Sample ID: MB 880-67741/5-A

Matrix: Solid

Analysis Batch: 67809

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 67741

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		11/27/23 11:00	11/28/23 11:13	1
Toluene	<0.00200	U	0.00200	mg/Kg		11/27/23 11:00	11/28/23 11:13	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		11/27/23 11:00	11/28/23 11:13	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		11/27/23 11:00	11/28/23 11:13	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		11/27/23 11:00	11/28/23 11:13	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		11/27/23 11:00	11/28/23 11:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	79		70 - 130	11/27/23 11:00	11/28/23 11:13	1
1,4-Difluorobenzene (Surr)	84		70 - 130	11/27/23 11:00	11/28/23 11:13	1

Lab Sample ID: LCS 880-67741/1-A

Matrix: Solid

Analysis Batch: 67809

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 67741

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.08598		mg/Kg		86	70 - 130
Toluene	0.100	0.08396		mg/Kg		84	70 - 130
Ethylbenzene	0.100	0.09073		mg/Kg		91	70 - 130
m-Xylene & p-Xylene	0.200	0.1862		mg/Kg		93	70 - 130

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QC Sample Results

Client: Vertex
Project/Site: PLU #29 WEST BIG SINKS

Job ID: 890-5632-1
SDG: 23E-05485

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

Lab Sample ID: LCS 880-67741/1-A

Matrix: Solid

Analysis Batch: 67809

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 67741

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
o-Xylene	0.100	0.09278		mg/Kg		93	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	109		70 - 130
1,4-Difluorobenzene (Surr)	100		70 - 130

Lab Sample ID: LCSD 880-67741/2-A

Matrix: Solid

Analysis Batch: 67809

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 67741

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	0.100	0.07910		mg/Kg		79	70 - 130	8	35
Toluene	0.100	0.07830		mg/Kg		78	70 - 130	7	35
Ethylbenzene	0.100	0.08506		mg/Kg		85	70 - 130	6	35
m-Xylene & p-Xylene	0.200	0.1736		mg/Kg		87	70 - 130	7	35
o-Xylene	0.100	0.08534		mg/Kg		85	70 - 130	8	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	113		70 - 130
1,4-Difluorobenzene (Surr)	100		70 - 130

Lab Sample ID: 890-5666-A-21-A MS

Matrix: Solid

Analysis Batch: 67809

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 67741

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	<0.00199		0.0996	0.04428	F1	mg/Kg		28	70 - 130
Toluene	<0.00199		0.0996	0.04536	F1	mg/Kg		-52	70 - 130
Ethylbenzene	<0.00199		0.0996	0.04729	F1	mg/Kg		23	70 - 130
m-Xylene & p-Xylene	<0.00398		0.199	0.08896	F1	mg/Kg		13	70 - 130
o-Xylene	<0.00199		0.0996	0.04647	F1	mg/Kg		18	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	90		70 - 130
1,4-Difluorobenzene (Surr)	84		70 - 130

Lab Sample ID: 890-5666-A-21-B MSD

Matrix: Solid

Analysis Batch: 67809

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 67741

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00199	U F1 F2	0.0990	0.06350	F2 F1	mg/Kg		64	70 - 130	36	35
Toluene	<0.00199	U F1	0.0990	0.06178	F1	mg/Kg		62	70 - 130	31	35
Ethylbenzene	<0.00199	U F1 F2	0.0990	0.07379	F2	mg/Kg		75	70 - 130	44	35
m-Xylene & p-Xylene	<0.00398	U F1 F2	0.198	0.1495	F2	mg/Kg		75	70 - 130	51	35
o-Xylene	<0.00199	U F1 F2	0.0990	0.07229	F2	mg/Kg		73	70 - 130	43	35

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QC Sample Results

Client: Vertex
Project/Site: PLU #29 WEST BIG SINKS

Job ID: 890-5632-1
SDG: 23E-05485

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

Lab Sample ID: 890-5666-A-21-B MSD				Client Sample ID: Matrix Spike Duplicate			
Matrix: Solid				Prep Type: Total/NA			
Analysis Batch: 67809				Prep Batch: 67741			
	MSD	MSD					
Surrogate	%Recovery	Qualifier	Limits				
4-Bromofluorobenzene (Surr)	123		70 - 130				
1,4-Difluorobenzene (Surr)	101		70 - 130				

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

Lab Sample ID: MB 880-67231/1-A						Client Sample ID: Method Blank			
Matrix: Solid						Prep Type: Total/NA			
Analysis Batch: 67245						Prep Batch: 67231			
	MB	MB							
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0	mg/Kg		11/16/23 16:02	11/17/23 18:53		1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		11/16/23 16:02	11/17/23 18:53		1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		11/16/23 16:02	11/17/23 18:53		1
	MB	MB							
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
1-Chlorooctane	115		70 - 130			11/16/23 16:02	11/17/23 18:53		1
o-Terphenyl	133	S1+	70 - 130			11/16/23 16:02	11/17/23 18:53		1

Lab Sample ID: LCS 880-67231/2-A						Client Sample ID: Lab Control Sample				
Matrix: Solid						Prep Type: Total/NA				
Analysis Batch: 67245						Prep Batch: 67231				
Analyte			Spike	LCS	LCS	Unit	D	%Rec	%Rec	Limits
			Added	Result	Qualifier					
Gasoline Range Organics (GRO)-C6-C10			1000	1023		mg/Kg		102	70 - 130	
Diesel Range Organics (Over C10-C28)			1000	877.8		mg/Kg		88	70 - 130	
Surrogate	LCS		LCS							
	%Recovery	Qualifier	Limits							
1-Chlorooctane			93	70 - 130						
o-Terphenyl			107	70 - 130						

Lab Sample ID: LCSD 880-67231/3-A					Client Sample ID: Lab Control Sample Dup						
Matrix: Solid					Prep Type: Total/NA						
Analysis Batch: 67245					Prep Batch: 67231						
			Spike	LCSD	LCSD				%Rec		RPD
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline Range Organics (GRO)-C6-C10			1000	1068		mg/Kg		107	70 - 130	4	20
Diesel Range Organics (Over C10-C28)			1000	937.0		mg/Kg		94	70 - 130	7	20
			LCSD	LCSD							
Surrogate	%Recovery	Qualifier	Limits								
1-Chlorooctane	90		70 - 130								
o-Terphenyl	103		70 - 130								

QC Sample Results

Client: Vertex
Project/Site: PLU #29 WEST BIG SINKS

Job ID: 890-5632-1
SDG: 23E-05485

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

Lab Sample ID: 890-5635-A-5-C MS
Matrix: Solid
Analysis Batch: 67245

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 67231

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10			1010	1185		mg/Kg			
Diesel Range Organics (Over C10-C28)			1010	895.9		mg/Kg			
Surrogate	MS %Recovery	MS Qualifier	Limits						
1-Chlorooctane									
o-Terphenyl									

Lab Sample ID: 890-5635-A-5-D MSD
Matrix: Solid
Analysis Batch: 67245

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 67231

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			1010	1209		mg/Kg					
Diesel Range Organics (Over C10-C28)			1010	913.5		mg/Kg					
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1-Chlorooctane											
o-Terphenyl											

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-67161/1-A
Matrix: Solid
Analysis Batch: 67234

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			11/17/23 11:43	1

Lab Sample ID: LCS 880-67161/2-A
Matrix: Solid
Analysis Batch: 67234

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	250	248.7		mg/Kg		99	90 - 110

Lab Sample ID: LCSD 880-67161/3-A
Matrix: Solid
Analysis Batch: 67234

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	249.5		mg/Kg		100	90 - 110	0	20

QC Sample Results

Client: Vertex
Project/Site: PLU #29 WEST BIG SINKS

Job ID: 890-5632-1
SDG: 23E-05485

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 890-5631-A-1-B MS										Client Sample ID: Matrix Spike			
Matrix: Solid										Prep Type: Soluble			
Analysis Batch: 67234													
Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits				
Chloride	46.0		249	292.6		mg/Kg		99	90 - 110				

Lab Sample ID: 890-5631-A-1-C MSD										Client Sample ID: Matrix Spike Duplicate			
Matrix: Solid										Prep Type: Soluble			
Analysis Batch: 67234													
Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit		
Chloride	46.0		249	294.0		mg/Kg		100	90 - 110	0	20		

QC Association Summary

Client: Vertex
Project/Site: PLU #29 WEST BIG SINKS

Job ID: 890-5632-1
SDG: 23E-05485

GC VOA

Prep Batch: 67568

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5632-2	BH 23 - 13 1.5'	Total/NA	Solid	5035	
MB 880-67568/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-67568/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-67568/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-5632-A-1-F MS	890-5632-A-1-F MS	Total/NA	Solid	5035	
890-5632-A-1-G MSD	890-5632-A-1-G MSD	Total/NA	Solid	5035	

Analysis Batch: 67637

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5632-2	BH 23 - 13 1.5'	Total/NA	Solid	8021B	67568
MB 880-67568/5-A	Method Blank	Total/NA	Solid	8021B	67568
LCS 880-67568/1-A	Lab Control Sample	Total/NA	Solid	8021B	67568
LCSD 880-67568/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	67568
890-5632-A-1-F MS	890-5632-A-1-F MS	Total/NA	Solid	8021B	67568
890-5632-A-1-G MSD	890-5632-A-1-G MSD	Total/NA	Solid	8021B	67568

Prep Batch: 67741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5632-1	BH 23 - 13 0'	Total/NA	Solid	5035	
MB 880-67741/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-67741/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-67741/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-5666-A-21-A MS	Matrix Spike	Total/NA	Solid	5035	
890-5666-A-21-B MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 67764

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5632-1	BH 23 - 13 0'	Total/NA	Solid	Total BTEX	
890-5632-2	BH 23 - 13 1.5'	Total/NA	Solid	Total BTEX	

Analysis Batch: 67809

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5632-1	BH 23 - 13 0'	Total/NA	Solid	8021B	67741
MB 880-67741/5-A	Method Blank	Total/NA	Solid	8021B	67741
LCS 880-67741/1-A	Lab Control Sample	Total/NA	Solid	8021B	67741
LCSD 880-67741/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	67741
890-5666-A-21-A MS	Matrix Spike	Total/NA	Solid	8021B	67741
890-5666-A-21-B MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	67741

GC Semi VOA

Prep Batch: 67231

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5632-1	BH 23 - 13 0'	Total/NA	Solid	8015NM Prep	
890-5632-2	BH 23 - 13 1.5'	Total/NA	Solid	8015NM Prep	
MB 880-67231/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-67231/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-67231/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-5635-A-5-C MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-5635-A-5-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Eurofins Carlsbad

QC Association Summary

Client: Vertex
Project/Site: PLU #29 WEST BIG SINKS

Job ID: 890-5632-1
SDG: 23E-05485

GC Semi VOA

Analysis Batch: 67245

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5632-1	BH 23 - 13 0'	Total/NA	Solid	8015B NM	67231
890-5632-2	BH 23 - 13 1.5'	Total/NA	Solid	8015B NM	67231
MB 880-67231/1-A	Method Blank	Total/NA	Solid	8015B NM	67231
LCS 880-67231/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	67231
LCSD 880-67231/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	67231
890-5635-A-5-C MS	Matrix Spike	Total/NA	Solid	8015B NM	67231
890-5635-A-5-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	67231

Analysis Batch: 67446

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5632-1	BH 23 - 13 0'	Total/NA	Solid	8015 NM	
890-5632-2	BH 23 - 13 1.5'	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 67161

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5632-1	BH 23 - 13 0'	Soluble	Solid	DI Leach	
890-5632-2	BH 23 - 13 1.5'	Soluble	Solid	DI Leach	
MB 880-67161/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-67161/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-67161/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-5631-A-1-B MS	Matrix Spike	Soluble	Solid	DI Leach	
890-5631-A-1-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 67234

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5632-1	BH 23 - 13 0'	Soluble	Solid	300.0	67161
890-5632-2	BH 23 - 13 1.5'	Soluble	Solid	300.0	67161
MB 880-67161/1-A	Method Blank	Soluble	Solid	300.0	67161
LCS 880-67161/2-A	Lab Control Sample	Soluble	Solid	300.0	67161
LCSD 880-67161/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	67161
890-5631-A-1-B MS	Matrix Spike	Soluble	Solid	300.0	67161
890-5631-A-1-C MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	67161

Lab Chronicle

Client: Vertex
Project/Site: PLU #29 WEST BIG SINKS

Job ID: 890-5632-1
SDG: 23E-05485

Client Sample ID: BH 23 - 13 0'

Lab Sample ID: 890-5632-1

Date Collected: 11/14/23 09:30

Matrix: Solid

Date Received: 11/15/23 08:34

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	67741	11/27/23 11:00	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	67809	11/28/23 11:55	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			67764	11/28/23 11:55	SM	EET MID
Total/NA	Analysis	8015 NM		1			67446	11/17/23 22:24	SM	EET MID
Total/NA	Prep	8015NM Prep			10.06 g	10 mL	67231	11/16/23 16:02	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	67245	11/17/23 22:24	SM	EET MID
Soluble	Leach	DI Leach			5.03 g	50 mL	67161	11/16/23 11:00	SA	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	67234	11/17/23 12:57	SMC	EET MID

Client Sample ID: BH 23 - 13 1.5'

Lab Sample ID: 890-5632-2

Date Collected: 11/14/23 09:45

Matrix: Solid

Date Received: 11/15/23 08:34

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.95 g	5 mL	67568	11/21/23 14:33	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	67637	11/22/23 16:21	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			67764	11/22/23 16:21	SM	EET MID
Total/NA	Analysis	8015 NM		1			67446	11/17/23 22:46	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	67231	11/16/23 16:02	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	67245	11/17/23 22:46	SM	EET MID
Soluble	Leach	DI Leach			4.95 g	50 mL	67161	11/16/23 11:00	SA	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	67234	11/17/23 13:02	SMC	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 WEST BIG SINKS

Job ID: 890-5632-1
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 WEST BIG SINKS

Job ID: 890-5632-1
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 WEST BIG SINKS

Job ID: 890-5632-1
SDG: 23E-05485

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
890-5632-1	BH 23 - 13 0'	Solid	11/14/23 09:30	11/15/23 08:34
890-5632-2	BH 23 - 13 1.5'	Solid	11/14/23 09:45	11/15/23 08:34

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Chain of Custody

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3334
El Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296
Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Environment Testing

Xenco



Work Order No:

www.xenco.com Page _____ of _____

[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 SiO ₂ Na Sr Ti 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 Ti U Hg: 1631 / 245.1 / 7470 / 7471

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Eurofins Xeno, its affiliates and subcontractors. It assigns standard terms and conditions of service. Eurofins Xeno will be liable only for the cost of samples and will not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Eurofins Xeno. A minimum charge of \$45.00 will be applied to protect and a charge of \$5 for each sample submitted to Eurofins Xeno but not analyzed. These terms will be enforced unless previously negotiated in writing.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
		11-14	21527		
			4		
			6		

Revised Date: 08/25/2020 Rev. 2020.2

REVISED DATE: 00/2/2000 FIG. 7: 400000.0



890-5632 Chain of Custody

Chain of Custody

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3334
El Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296
Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Environment Testing

Other

5632

[illegible]

Login Sample Receipt Checklist

Client: Vertex

Job Number: 890-5632-1

SDG Number: 23E-05485

Login Number: 5632

List Number: 1

Creator: Bruns, Shannon

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: 890-5632-1

SDG Number: 23E-05485

Login Number: 5632

List Source: Eurofins Midland

List Number: 2

List Creation: 11/16/23 11:01 AM

Creator: Rodriguez, Leticia

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	



Environment Testing

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ANALYTICAL REPORT

PREPARED FOR

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

Generated 11/30/2023 2:42:17 PM

JOB DESCRIPTION

PLU 29 BIG SINKS CTB
23E-05935

JOB NUMBER

890-5683-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220



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
11/30/2023 2:42:17 PM

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

Client: Vertex
Project/Site: PLU 29 BIG SINKS CTB

Laboratory Job ID: 890-5683-1
SDG: 23E-05935

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Definitions/Glossary

Client: Vertex
Project/Site: PLU 29 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

Qualifiers

GC VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
S1+	Surrogate recovery exceeds control limits, high 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, 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
Project/Site: PLU 29 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

Job ID: 890-5683-1

Laboratory: Eurofins Carlsbad

Narrative**Job Narrative
890-5683-1**

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 11/27/2023 3:55 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was -0.6°C

Receipt Exceptions

The following samples were received and analyzed from an unpreserved bulk soil jar: BH 23 -14 0' (890-5683-1), BH 23 -14 2' (890-5683-2), BH 23 -15 0' (890-5683-3) and BH 23 -15 2' (890-5683-4).

GC VOA

Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-67907 and analytical batch 880-67899 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 surrogate recovery for the blank associated with preparation batch 880-67907 and analytical batch 880-67899 was outside the upper control limits.

Method 8021B: Surrogate recovery for the following sample was outside control limits: (890-5669-A-1-G). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis 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 880-67878 and analytical batch 880-67889 was outside the upper control limits.

Method 8015MOD_NM: Surrogate recovery for the following sample was outside control limits: BH 23 -14 2' (890-5683-2). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015MOD_NM: The method blank for preparation batch 880-67878 and analytical batch 880-67889 contained Diesel Range Organics (Over C10-C28) 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.

Method 8015MOD_NM: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 880-67878 and analytical batch 880-67889 recovered outside control limits for the following analytes: Gasoline Range Organics (GRO)-C6-C10.

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

HPLC/IC

Case Narrative

Client: Vertex
Project/Site: PLU 29 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

Job ID: 890-5683-1 (Continued)

Laboratory: Eurofins Carlsbad (Continued)

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

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

Client Sample ID: BH 23 -14 0'

Lab Sample ID: 890-5683-1

Date Collected: 11/21/23 12:00

Matrix: Solid

Date Received: 11/27/23 15:55

Sample Depth: 0'

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		11/29/23 10:24	11/29/23 23:40	1
Toluene	<0.00199	U	0.00199	mg/Kg		11/29/23 10:24	11/29/23 23:40	1
Ethylbenzene	<0.00199	U	0.00199	mg/Kg		11/29/23 10:24	11/29/23 23:40	1
m-Xylene & p-Xylene	<0.00398	U	0.00398	mg/Kg		11/29/23 10:24	11/29/23 23:40	1
o-Xylene	<0.00199	U	0.00199	mg/Kg		11/29/23 10:24	11/29/23 23:40	1
Xylenes, Total	<0.00398	U	0.00398	mg/Kg		11/29/23 10:24	11/29/23 23:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		70 - 130	11/29/23 10:24	11/29/23 23:40	1
1,4-Difluorobenzene (Surr)	119		70 - 130	11/29/23 10:24	11/29/23 23:40	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			11/29/23 23:40	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.3	U	50.3	mg/Kg			11/29/23 21:58	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	<50.3	U *1	50.3	mg/Kg		11/29/23 13:43	11/29/23 21:58	1
Diesel Range Organics (Over C10-C28)	<50.3	U	50.3	mg/Kg		11/29/23 13:43	11/29/23 21:58	1
Oil Range Organics (Over C28-C36)	<50.3	U	50.3	mg/Kg		11/29/23 13:43	11/29/23 21:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	125		70 - 130	11/29/23 13:43	11/29/23 21:58	1
o-Terphenyl	107		70 - 130	11/29/23 13:43	11/29/23 21:58	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.07		5.05	mg/Kg			11/30/23 00:38	1

Client Sample ID: BH 23 -14 2'

Lab Sample ID: 890-5683-2

Date Collected: 11/21/23 12:05

Matrix: Solid

Date Received: 11/27/23 15:55

Sample Depth: 2'

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		11/29/23 10:24	11/30/23 00:00	1
Toluene	<0.00199	U	0.00199	mg/Kg		11/29/23 10:24	11/30/23 00:00	1
Ethylbenzene	<0.00199	U	0.00199	mg/Kg		11/29/23 10:24	11/30/23 00:00	1
m-Xylene & p-Xylene	<0.00398	U	0.00398	mg/Kg		11/29/23 10:24	11/30/23 00:00	1
o-Xylene	<0.00199	U	0.00199	mg/Kg		11/29/23 10:24	11/30/23 00:00	1
Xylenes, Total	<0.00398	U	0.00398	mg/Kg		11/29/23 10:24	11/30/23 00:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		70 - 130	11/29/23 10:24	11/30/23 00:00	1

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

Client Sample ID: BH 23 -14 2'

Lab Sample ID: 890-5683-2

Date Collected: 11/21/23 12:05

Matrix: Solid

Date Received: 11/27/23 15:55

Sample Depth: 2'

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	120		70 - 130	11/29/23 10:24	11/30/23 00:00	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			11/30/23 00:00	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.4	U	50.4	mg/Kg			11/29/23 22:20	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	<50.4	U *1	50.4	mg/Kg		11/29/23 13:43	11/29/23 22:20	1
Diesel Range Organics (Over C10-C28)	<50.4	U	50.4	mg/Kg		11/29/23 13:43	11/29/23 22:20	1
Oil Range Organics (Over C28-C36)	<50.4	U	50.4	mg/Kg		11/29/23 13:43	11/29/23 22:20	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	134	S1+	70 - 130			11/29/23 13:43	11/29/23 22:20	1
o-Terphenyl	113		70 - 130			11/29/23 13:43	11/29/23 22:20	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.02	U	5.02	mg/Kg			11/30/23 00:43	1

Client Sample ID: BH 23 -15 0'

Lab Sample ID: 890-5683-3

Date Collected: 11/21/23 12:09

Matrix: Solid

Date Received: 11/27/23 15:55

Sample Depth: 0'

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		11/29/23 10:24	11/30/23 00:21	1
Toluene	<0.00200	U	0.00200	mg/Kg		11/29/23 10:24	11/30/23 00:21	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		11/29/23 10:24	11/30/23 00:21	1
m-Xylene & p-Xylene	<0.00399	U	0.00399	mg/Kg		11/29/23 10:24	11/30/23 00:21	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		11/29/23 10:24	11/30/23 00:21	1
Xylenes, Total	<0.00399	U	0.00399	mg/Kg		11/29/23 10:24	11/30/23 00:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		70 - 130	11/29/23 10:24	11/30/23 00:21	1
1,4-Difluorobenzene (Surr)	124		70 - 130	11/29/23 10:24	11/30/23 00:21	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			11/30/23 00:21	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.1	U	50.1	mg/Kg			11/29/23 22:41	1

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

Client Sample ID: BH 23 -15 0'

Lab Sample ID: 890-5683-3

Date Collected: 11/21/23 12:09

Matrix: Solid

Date Received: 11/27/23 15:55

Sample Depth: 0'

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	<50.1	U *1	50.1	mg/Kg		11/29/23 13:43	11/29/23 22:41	1
Diesel Range Organics (Over C10-C28)	<50.1	U	50.1	mg/Kg		11/29/23 13:43	11/29/23 22:41	1
Oil Range Organics (Over C28-C36)	<50.1	U	50.1	mg/Kg		11/29/23 13:43	11/29/23 22:41	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	119		70 - 130			11/29/23 13:43	11/29/23 22:41	1
o-Terphenyl	103		70 - 130			11/29/23 13:43	11/29/23 22:41	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00	mg/Kg			11/30/23 00:49	1

Client Sample ID: BH 23 -15 2'

Lab Sample ID: 890-5683-4

Date Collected: 11/21/23 12:11

Matrix: Solid

Date Received: 11/27/23 15:55

Sample Depth: 2'

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		11/29/23 10:24	11/30/23 00:41	1
Toluene	<0.00201	U	0.00201	mg/Kg		11/29/23 10:24	11/30/23 00:41	1
Ethylbenzene	<0.00201	U	0.00201	mg/Kg		11/29/23 10:24	11/30/23 00:41	1
m-Xylene & p-Xylene	<0.00402	U	0.00402	mg/Kg		11/29/23 10:24	11/30/23 00:41	1
o-Xylene	<0.00201	U	0.00201	mg/Kg		11/29/23 10:24	11/30/23 00:41	1
Xylenes, Total	<0.00402	U	0.00402	mg/Kg		11/29/23 10:24	11/30/23 00:41	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		70 - 130			11/29/23 10:24	11/30/23 00:41	1
1,4-Difluorobenzene (Surr)	113		70 - 130			11/29/23 10:24	11/30/23 00:41	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			11/30/23 00:41	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			11/29/23 23:04	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		11/29/23 13:43	11/29/23 23:04	1
Diesel Range Organics (Over C10-C28)	<49.7	U	49.7	mg/Kg		11/29/23 13:43	11/29/23 23:04	1
Oil Range Organics (Over C28-C36)	<49.7	U	49.7	mg/Kg		11/29/23 13:43	11/29/23 23:04	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	112		70 - 130			11/29/23 13:43	11/29/23 23:04	1
o-Terphenyl	100		70 - 130			11/29/23 13:43	11/29/23 23:04	1

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

Client Sample ID: BH 23 -15 2'
Date Collected: 11/21/23 12:11
Date Received: 11/27/23 15:55
Sample Depth: 2'

Lab Sample ID: 890-5683-4
Matrix: Solid

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble									
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Chloride	5.27		4.95	mg/Kg			11/30/23 00:54	1	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Surrogate Summary

Client: Vertex
Project/Site: PLU 29 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

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)
890-5669-A-1-E MS	Matrix Spike	104	108
890-5669-A-1-F MSD	Matrix Spike Duplicate	112	96
890-5683-1	BH 23 -14 0'	98	119
890-5683-2	BH 23 -14 2'	101	120
890-5683-3	BH 23 -15 0'	104	124
890-5683-4	BH 23 -15 2'	102	113
LCS 880-67907/1-A	Lab Control Sample	86	106
LCSD 880-67907/2-A	Lab Control Sample Dup	88	101
MB 880-67907/5-A	Method Blank	101	138 S1+
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)
880-36155-A-21-D MS	Matrix Spike	120	93
880-36155-A-21-E MSD	Matrix Spike Duplicate	126	87
890-5683-1	BH 23 -14 0'	125	107
890-5683-2	BH 23 -14 2'	134 S1+	113
890-5683-3	BH 23 -15 0'	119	103
890-5683-4	BH 23 -15 2'	112	100
LCS 880-67878/2-A	Lab Control Sample	86	92
LCSD 880-67878/3-A	Lab Control Sample Dup	116	114
MB 880-67878/1-A	Method Blank	144 S1+	139 S1+
Surrogate Legend			
1CO = 1-Chlorooctane			
OTPH = o-Terphenyl			

QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-67907/5-A

Matrix: Solid

Analysis Batch: 67899

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 67907

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		11/29/23 10:24	11/29/23 17:15	1
Toluene	<0.00200	U	0.00200	mg/Kg		11/29/23 10:24	11/29/23 17:15	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		11/29/23 10:24	11/29/23 17:15	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		11/29/23 10:24	11/29/23 17:15	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		11/29/23 10:24	11/29/23 17:15	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		11/29/23 10:24	11/29/23 17:15	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		70 - 130	11/29/23 10:24	11/29/23 17:15	1
1,4-Difluorobenzene (Surr)	138	S1+	70 - 130	11/29/23 10:24	11/29/23 17:15	1

Lab Sample ID: LCS 880-67907/1-A

Matrix: Solid

Analysis Batch: 67899

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 67907

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.08364		mg/Kg		84	70 - 130
Toluene	0.100	0.08172		mg/Kg		82	70 - 130
Ethylbenzene	0.100	0.07370		mg/Kg		74	70 - 130
m-Xylene & p-Xylene	0.200	0.1640		mg/Kg		82	70 - 130
o-Xylene	0.100	0.08002		mg/Kg		80	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	86		70 - 130
1,4-Difluorobenzene (Surr)	106		70 - 130

Lab Sample ID: LCSD 880-67907/2-A

Matrix: Solid

Analysis Batch: 67899

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 67907

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	0.100	0.08388		mg/Kg		84	70 - 130	0	35
Toluene	0.100	0.07696		mg/Kg		77	70 - 130	6	35
Ethylbenzene	0.100	0.07429		mg/Kg		74	70 - 130	1	35
m-Xylene & p-Xylene	0.200	0.1578		mg/Kg		79	70 - 130	4	35
o-Xylene	0.100	0.07676		mg/Kg		77	70 - 130	4	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	88		70 - 130
1,4-Difluorobenzene (Surr)	101		70 - 130

Lab Sample ID: 890-5669-A-1-E MS

Matrix: Solid

Analysis Batch: 67899

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 67907

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	<0.00200	U F1	0.0996	0.06867	F1	mg/Kg		69	70 - 130
Toluene	<0.00200	U F1	0.0996	0.05365	F1	mg/Kg		54	70 - 130

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

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

Lab Sample ID: 890-5669-A-1-E MS
Matrix: Solid
Analysis Batch: 67899

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 67907

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00200	U F1	0.0996	0.05484	F1	mg/Kg		55	70 - 130
m-Xylene & p-Xylene	<0.00399	U	0.199	0.1452		mg/Kg		73	70 - 130
o-Xylene	<0.00200	U	0.0996	0.07326		mg/Kg		74	70 - 130
Surrogate	MS %Recovery	MS Qualifier	Limits						
4-Bromofluorobenzene (Surr)	104		70 - 130						
1,4-Difluorobenzene (Surr)	108		70 - 130						

Lab Sample ID: 890-5669-A-1-F MSD
Matrix: Solid
Analysis Batch: 67899

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 67907

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00200	U F1	0.0994	0.07184		mg/Kg		72	70 - 130	5	35
Toluene	<0.00200	U F1	0.0994	0.06955		mg/Kg		70	70 - 130	26	35
Ethylbenzene	<0.00200	U F1	0.0994	0.07211		mg/Kg		73	70 - 130	27	35
m-Xylene & p-Xylene	<0.00399	U	0.199	0.1683		mg/Kg		85	70 - 130	15	35
o-Xylene	<0.00200	U	0.0994	0.08152		mg/Kg		82	70 - 130	11	35
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
4-Bromofluorobenzene (Surr)	112		70 - 130								
1,4-Difluorobenzene (Surr)	96		70 - 130								

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

Lab Sample ID: MB 880-67878/1-A
Matrix: Solid
Analysis Batch: 67889

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 67878

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		11/28/23 14:46	11/29/23 19:44	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		11/28/23 14:46	11/29/23 19:44	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		11/28/23 14:46	11/29/23 19:44	1
Surrogate	MB %Recovery	MB Qualifier	Limits					
1-Chlorooctane	144	S1+	70 - 130					
o-Terphenyl	139	S1+	70 - 130					

Lab Sample ID: LCS 880-67878/2-A
Matrix: Solid
Analysis Batch: 67889

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 67878

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	1000	870.5		mg/Kg		87	70 - 130
Diesel Range Organics (Over C10-C28)	1000	888.2		mg/Kg		89	70 - 130

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

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

Lab Sample ID: LCS 880-67878/2-A

Matrix: Solid

Analysis Batch: 67889

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 67878

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	86		70 - 130
o-Terphenyl	92		70 - 130

Lab Sample ID: LCSD 880-67878/3-A

Matrix: Solid

Analysis Batch: 67889

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 67878

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	1000	1085	*1	mg/Kg		109	70 - 130	22	20
Diesel Range Organics (Over C10-C28)	1000	1064		mg/Kg		106	70 - 130	18	20

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	116		70 - 130
o-Terphenyl	114		70 - 130

Lab Sample ID: 880-36155-A-21-D MS

Matrix: Solid

Analysis Batch: 67889

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 67878

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	<49.7	U *1	1010	903.7		mg/Kg		87	70 - 130		
Diesel Range Organics (Over C10-C28)	<49.7	U	1010	1292		mg/Kg		126	70 - 130		

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	120		70 - 130
o-Terphenyl	93		70 - 130

Lab Sample ID: 880-36155-A-21-E MSD

Matrix: Solid

Analysis Batch: 67889

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 67878

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	1010	889.0		mg/Kg		85	70 - 130	2	20
Diesel Range Organics (Over C10-C28)	<49.7	U	1010	1246		mg/Kg		122	70 - 130	4	20

	MSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	126		70 - 130
o-Terphenyl	87		70 - 130

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-67832/1-A Matrix: Solid Analysis Batch: 67963										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			11/29/23 22:05	1			

Lab Sample ID: LCS 880-67832/2-A Matrix: Solid Analysis Batch: 67963										Client Sample ID: Lab Control Sample Prep Type: Soluble	
Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	255.1		mg/Kg		102	90 - 110		

Lab Sample ID: LCSD 880-67832/3-A Matrix: Solid Analysis Batch: 67963										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	256.9		mg/Kg		103	90 - 110	1	20

Lab Sample ID: 880-36106-A-1-E MS Matrix: Solid Analysis Batch: 67963										Client Sample ID: Matrix Spike Prep Type: Soluble	
Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	8.30		251	264.5		mg/Kg		102	90 - 110		

Lab Sample ID: 880-36106-A-1-F MSD Matrix: Solid Analysis Batch: 67963										Client Sample ID: Matrix Spike Duplicate Prep Type: Soluble	
Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	8.30		251	265.3		mg/Kg		102	90 - 110	0	20

QC Association Summary

Client: Vertex
Project/Site: PLU 29 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

GC VOA

Analysis Batch: 67899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5683-1	BH 23 -14 0'	Total/NA	Solid	8021B	67907
890-5683-2	BH 23 -14 2'	Total/NA	Solid	8021B	67907
890-5683-3	BH 23 -15 0'	Total/NA	Solid	8021B	67907
890-5683-4	BH 23 -15 2'	Total/NA	Solid	8021B	67907
MB 880-67907/5-A	Method Blank	Total/NA	Solid	8021B	67907
LCS 880-67907/1-A	Lab Control Sample	Total/NA	Solid	8021B	67907
LCSD 880-67907/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	67907
890-5669-A-1-E MS	Matrix Spike	Total/NA	Solid	8021B	67907
890-5669-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	67907

Prep Batch: 67907

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5683-1	BH 23 -14 0'	Total/NA	Solid	5035	
890-5683-2	BH 23 -14 2'	Total/NA	Solid	5035	
890-5683-3	BH 23 -15 0'	Total/NA	Solid	5035	
890-5683-4	BH 23 -15 2'	Total/NA	Solid	5035	
MB 880-67907/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-67907/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-67907/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-5669-A-1-E MS	Matrix Spike	Total/NA	Solid	5035	
890-5669-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 68041

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5683-1	BH 23 -14 0'	Total/NA	Solid	Total BTEX	
890-5683-2	BH 23 -14 2'	Total/NA	Solid	Total BTEX	
890-5683-3	BH 23 -15 0'	Total/NA	Solid	Total BTEX	
890-5683-4	BH 23 -15 2'	Total/NA	Solid	Total BTEX	

GC Semi VOA

Prep Batch: 67878

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5683-1	BH 23 -14 0'	Total/NA	Solid	8015NM Prep	
890-5683-2	BH 23 -14 2'	Total/NA	Solid	8015NM Prep	
890-5683-3	BH 23 -15 0'	Total/NA	Solid	8015NM Prep	
890-5683-4	BH 23 -15 2'	Total/NA	Solid	8015NM Prep	
MB 880-67878/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-67878/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-67878/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
880-36155-A-21-D MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
880-36155-A-21-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 67889

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5683-1	BH 23 -14 0'	Total/NA	Solid	8015B NM	67878
890-5683-2	BH 23 -14 2'	Total/NA	Solid	8015B NM	67878
890-5683-3	BH 23 -15 0'	Total/NA	Solid	8015B NM	67878
890-5683-4	BH 23 -15 2'	Total/NA	Solid	8015B NM	67878
MB 880-67878/1-A	Method Blank	Total/NA	Solid	8015B NM	67878
LCS 880-67878/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	67878

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QC Association Summary

Client: Vertex
Project/Site: PLU 29 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

GC Semi VOA (Continued)

Analysis Batch: 67889 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 880-67878/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	67878
880-36155-A-21-D MS	Matrix Spike	Total/NA	Solid	8015B NM	67878
880-36155-A-21-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	67878

Analysis Batch: 68028

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5683-1	BH 23 -14 0'	Total/NA	Solid	8015 NM	
890-5683-2	BH 23 -14 2'	Total/NA	Solid	8015 NM	
890-5683-3	BH 23 -15 0'	Total/NA	Solid	8015 NM	
890-5683-4	BH 23 -15 2'	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 67832

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5683-1	BH 23 -14 0'	Soluble	Solid	DI Leach	
890-5683-2	BH 23 -14 2'	Soluble	Solid	DI Leach	
890-5683-3	BH 23 -15 0'	Soluble	Solid	DI Leach	
890-5683-4	BH 23 -15 2'	Soluble	Solid	DI Leach	
MB 880-67832/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-67832/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-67832/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
880-36106-A-1-E MS	Matrix Spike	Soluble	Solid	DI Leach	
880-36106-A-1-F MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 67963

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5683-1	BH 23 -14 0'	Soluble	Solid	300.0	67832
890-5683-2	BH 23 -14 2'	Soluble	Solid	300.0	67832
890-5683-3	BH 23 -15 0'	Soluble	Solid	300.0	67832
890-5683-4	BH 23 -15 2'	Soluble	Solid	300.0	67832
MB 880-67832/1-A	Method Blank	Soluble	Solid	300.0	67832
LCS 880-67832/2-A	Lab Control Sample	Soluble	Solid	300.0	67832
LCSD 880-67832/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	67832
880-36106-A-1-E MS	Matrix Spike	Soluble	Solid	300.0	67832
880-36106-A-1-F MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	67832

Lab Chronicle

Client: Vertex
Project/Site: PLU 29 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

Client Sample ID: BH 23 -14 0'

Lab Sample ID: 890-5683-1

Date Collected: 11/21/23 12:00

Matrix: Solid

Date Received: 11/27/23 15:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	67907	11/29/23 10:24	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	67899	11/29/23 23:40	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			68041	11/29/23 23:40	SM	EET MID
Total/NA	Analysis	8015 NM		1			68028	11/29/23 21:58	SM	EET MID
Total/NA	Prep	8015NM Prep			9.94 g	10 mL	67878	11/29/23 13:43	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	67889	11/29/23 21:58	SM	EET MID
Soluble	Leach	DI Leach			4.95 g	50 mL	67832	11/28/23 10:47	SA	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	67963	11/30/23 00:38	CH	EET MID

Client Sample ID: BH 23 -14 2'

Lab Sample ID: 890-5683-2

Date Collected: 11/21/23 12:05

Matrix: Solid

Date Received: 11/27/23 15:55

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	67907	11/29/23 10:24	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	67899	11/30/23 00:00	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			68041	11/30/23 00:00	SM	EET MID
Total/NA	Analysis	8015 NM		1			68028	11/29/23 22:20	SM	EET MID
Total/NA	Prep	8015NM Prep			9.92 g	10 mL	67878	11/29/23 13:43	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	67889	11/29/23 22:20	SM	EET MID
Soluble	Leach	DI Leach			4.98 g	50 mL	67832	11/28/23 10:47	SA	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	67963	11/30/23 00:43	CH	EET MID

Client Sample ID: BH 23 -15 0'

Lab Sample ID: 890-5683-3

Date Collected: 11/21/23 12:09

Matrix: Solid

Date Received: 11/27/23 15:55

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	67907	11/29/23 10:24	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	67899	11/30/23 00:21	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			68041	11/30/23 00:21	SM	EET MID
Total/NA	Analysis	8015 NM		1			68028	11/29/23 22:41	SM	EET MID
Total/NA	Prep	8015NM Prep			9.99 g	10 mL	67878	11/29/23 13:43	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	67889	11/29/23 22:41	SM	EET MID
Soluble	Leach	DI Leach			5.00 g	50 mL	67832	11/28/23 10:47	SA	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	67963	11/30/23 00:49	CH	EET MID

Client Sample ID: BH 23 -15 2'

Lab Sample ID: 890-5683-4

Date Collected: 11/21/23 12:11

Matrix: Solid

Date Received: 11/27/23 15:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.97 g	5 mL	67907	11/29/23 10:24	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	67899	11/30/23 00:41	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			68041	11/30/23 00:41	SM	EET MID

Eurofins Carlsbad

Lab Chronicle

Client: Vertex
Project/Site: PLU 29 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

Client Sample ID: BH 23 -15 2'

Lab Sample ID: 890-5683-4

Date Collected: 11/21/23 12:11

Matrix: Solid

Date Received: 11/27/23 15:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8015 NM		1			68028	11/29/23 23:04	SM	EET MID
Total/NA	Prep	8015NM Prep			10.07 g	10 mL	67878	11/29/23 13:43	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	67889	11/29/23 23:04	SM	EET MID
Soluble	Leach	DI Leach			5.05 g	50 mL	67832	11/28/23 10:47	SA	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	67963	11/30/23 00:54	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 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

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 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

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 BIG SINKS CTB

Job ID: 890-5683-1
SDG: 23E-05935

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-5683-1	BH 23 -14 0'	Solid	11/21/23 12:00	11/27/23 15:55	0'
890-5683-2	BH 23 -14 2'	Solid	11/21/23 12:05	11/27/23 15:55	2'
890-5683-3	BH 23 -15 0'	Solid	11/21/23 12:09	11/27/23 15:55	0'
890-5683-4	BH 23 -15 2'	Solid	11/21/23 12:11	11/27/23 15:55	2'

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Chain of Custody



Environment Testing
Xenco

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3334
El Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296
Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Work Order No: 1818831001

www.xenco.com Page of

Project Manager:	Chance Nixon	Bill to: (if different)	
Company Name:	Varco	Company Name:	Garnett Green
Address:	P.O. Box 1	Address:	ON FILE
City, State ZIP:		City, State ZIP:	
Phone:		Email:	

Project Name:	PLU-29 Big Sink	Turn Around	
Project Number:	23E-05435	<input type="checkbox"/> Routine <input checked="" type="checkbox"/> Rush	
Project Location:	PLU-29 Big Sink	Due Date:	Dec 1
Sampler's Name:	Thurston Estel	TAT starts the day received by the lab, if received by 4:30pm	
P.O. #:			

SAMPLE RECEIPT			
Samples Received Intact:	Temp Blank:	Yes No	Wet Ice:
Cooler Custody Seals:	Thermometer ID:	Yes No	
Sample Custody Seals:	Correction Factor:	Yes No	
Total Containers:	Temperature Reading:	Yes No	
	Corrected Temperature:	Yes No	

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grav Comp	# of Cont
BH23-14	soil	11-21-23	12:00	0'		4
BH23-14		12:03		2'		
BH23-15		12:09		0'		
BH23-15		12:11		2'		

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 SiO ₂ Na Sr Ti 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 Ti U Hg: 1631 / 245.1 / 7470 / 7471		

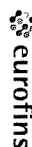
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1. [Signature]	2. [Signature]	
3. [Signature]	4. [Signature]	
5. [Signature]	6. [Signature]	

Revised Date: 08/25/2020 Rev. 2000.2

Eurofins Carlsbad

1089 N Canal St
Carlsbad NM 88220
Phone 575-988-3199 Fax 575-988-3199

Chain of Custody Record



Environment Testing

Client Information (Sub Contract Lab)		Sampler	Lab PM	Camera Tracking (Not's)	COC No.									
Client Contact:		Phone	Kramer Jessica		890-1858 1									
Shipping/Receiving			E-Mail Jessica.Kramer@eurofins.com	State of Origin New Mexico	Page 1 of 1									
Company Eurofins Environment Testing South Cent		Accreditations Required (See note)		Job #:	890-5683-1									
Address 1211 W Florida Ave,		Due Date Requested 12/1/2023	Analysis Requested											
City Midland		TA/T Requested (days):												
State Zip: TX, 79701		PO #:												
Phone: 432-704-5440(Tel)		WO #:												
Email:		Project #:												
Project Name PLU 29 BIG SINKS CTB		SSOW#:												
Site:														
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=metals, BT=tissue, A=air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8015MOD_NM/8015NM_S_Prep (MOD) Full TPH	8015MOD_Calc	300_ORGFN_28D/DI_LEACH Chloride	8021B/5035FP_Calc (MOD) BTEX	Total_BTEX_GCV	Total Number of containers	Special Instructions/Note
BH 23 -14 0' (890-5683-1)	11/21/23	12 00	Mountain	Solid		X	X	X	X	X	X	X	1	
BH 23 -14 2' (890-5683-2)	11/21/23	12 05	Mountain	Solid		X	X	X	X	X	X	X	1	
BH 23 -15 0' (890-5683-3)	11/21/23	12 09	Mountain	Solid		X	X	X	X	X	X	X	1	
BH 23 -15 2' (890-5683-4)	11/21/23	12 11	Mountain	Solid		X	X	X	X	X	X	X	1	
Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing South Central, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis, the samples must be shipped back to the Eurofins Environment Testing South Central, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing South Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing South Central, LLC.														
Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)												
Unconfirmed		<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months												
Deliverable Requested I, II, III, IV Other (specify)		Primary Deliverable Rank: 2		Special Instructions/QC Requirements										
Empty Kit Relinquished by		Date	Time	Method of Shipment										
Relinquished by		Date/Time	Company	Received by <i>J. Kramer</i> Date/Time <i>11/29/23</i> Company <i>ETC</i>										
Relinquished by		Date/Time	Company	Received by _____ Date/Time _____ Company _____										
Relinquished by		Date/Time	Company	Received by _____ Date/Time _____ Company _____										
Custody Seals Intact: Δ Yes Δ No		Custody Seal No		Cooler Temperature(s) °C and Other Remarks. 5.4/5.6										

Login Sample Receipt Checklist

Client: Vertex

Job Number: 890-5683-1

SDG Number: 23E-05935

Login Number: 5683

List Number: 1

Creator: Bruns, Shannon

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: 890-5683-1

SDG Number: 23E-05935

Login Number: 5683

List Number: 2

Creator: Kramer, Jessica

List Source: Eurofins Midland

List Creation: 11/29/23 11:34 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	



Environment Testing

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ANALYTICAL REPORT

PREPARED FOR

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

Generated 12/12/2023 3:34:13 PM

JOB DESCRIPTION

PLU 29 BIG SINKS
23E - 05485

JOB NUMBER

890-5756-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220



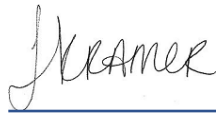
Eurofins Carlsbad

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



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Client: Vertex
Project/Site: PLU 29 BIG SINKS

Laboratory Job ID: 890-5756-1
SDG: 23E - 05485

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Definitions/Glossary

Client: Vertex
Project/Site: PLU 29 BIG SINKS

Job ID: 890-5756-1
SDG: 23E - 05485

Qualifiers

GC VOA

Qualifier	Qualifier Description
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.

GC Semi VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
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
Project/Site: PLU 29 BIG SINKS

Job ID: 890-5756-1
SDG: 23E - 05485

Job ID: 890-5756-1

Laboratory: Eurofins Carlsbad

Narrative**Job Narrative
890-5756-1**

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 12/8/2023 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 1.0°C

Receipt Exceptions

The following sample was received and analyzed from an unpreserved bulk soil jar: BH23 - 03 4.5' (890-5756-1).

GC VOA

Method 8021B: Surrogate recovery for the following samples were outside control limits: (CCV 880-68756/2) and (LCS 880-68841/1-A). Evidence of matrix interferences is not obvious.

Method 8021B: Surrogate recovery for the following sample was outside control limits: BH23 - 03 4.5' (890-5756-1). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: Surrogate recovery for the following samples were outside control limits: (890-5745-A-1-C MS) and (890-5745-A-1-D MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis 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 880-68852 and analytical batch 880-68750 was outside the upper control limits.

Method 8015MOD_NM: Surrogate recovery for the following samples were outside control limits: (CCV 880-68750/20), (CCV 880-68750/31), (CCV 880-68750/47), (CCV 880-68750/5), (CCV 880-68750/58) and (LCS 880-68852/2-A). Evidence of matrix interferences is not obvious.

Method 8015MOD_NM: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-68852 and analytical batch 880-68750 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

Job ID: 890-5756-1
SDG: 23E - 05485

Client Sample ID: BH23 - 03 4.5'

Lab Sample ID: 890-5756-1

Date Collected: 12/01/23 06:30

Matrix: Solid

Date Received: 12/08/23 08:00

Sample Depth: 4.5'

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		12/11/23 13:38	12/12/23 09:59	1
Toluene	<0.00200	U	0.00200	mg/Kg		12/11/23 13:38	12/12/23 09:59	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		12/11/23 13:38	12/12/23 09:59	1
m-Xylene & p-Xylene	<0.00399	U	0.00399	mg/Kg		12/11/23 13:38	12/12/23 09:59	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		12/11/23 13:38	12/12/23 09:59	1
Xylenes, Total	<0.00399	U	0.00399	mg/Kg		12/11/23 13:38	12/12/23 09:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	174	S1+	70 - 130	12/11/23 13:38	12/12/23 09:59	1
1,4-Difluorobenzene (Surr)	67	S1-	70 - 130	12/11/23 13:38	12/12/23 09:59	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			12/12/23 09:59	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0	mg/Kg			12/12/23 03:59	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	<50.0	U	50.0	mg/Kg		12/11/23 14:33	12/12/23 03:59	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		12/11/23 14:33	12/12/23 03:59	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		12/11/23 14:33	12/12/23 03:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	86		70 - 130	12/11/23 14:33	12/12/23 03:59	1
o-Terphenyl	81		70 - 130	12/11/23 14:33	12/12/23 03:59	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<4.99	U	4.99	mg/Kg			12/11/23 18:50	1

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Surrogate Summary

Client: Vertex
Project/Site: PLU 29 BIG SINKS

Job ID: 890-5756-1
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)
890-5745-A-1-C MS	Matrix Spike	167 S1+	154 S1+
890-5745-A-1-D MSD	Matrix Spike Duplicate	151 S1+	89
890-5756-1	BH23 - 03 4.5'	174 S1+	67 S1-
LCS 880-68841/1-A	Lab Control Sample	136 S1+	86
LCSD 880-68841/2-A	Lab Control Sample Dup	125	77
MB 880-68778/5-A	Method Blank	73	75
MB 880-68841/5-A	Method Blank	74	92
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)
880-36743-A-7-B MS	Matrix Spike	93	90
880-36743-A-7-C MSD	Matrix Spike Duplicate	95	85
890-5756-1	BH23 - 03 4.5'	86	81
LCS 880-68852/2-A	Lab Control Sample	130	148 S1+
LCSD 880-68852/3-A	Lab Control Sample Dup	102	117
MB 880-68852/1-A	Method Blank	124	134 S1+
Surrogate Legend			
1CO = 1-Chlorooctane			
OTPH = o-Terphenyl			

QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS

Job ID: 890-5756-1
SDG: 23E - 05485

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-68778/5-A
Matrix: Solid
Analysis Batch: 68756

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 68778

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		12/11/23 10:04	12/11/23 11:51	1
Toluene	<0.00200	U	0.00200	mg/Kg		12/11/23 10:04	12/11/23 11:51	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		12/11/23 10:04	12/11/23 11:51	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		12/11/23 10:04	12/11/23 11:51	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		12/11/23 10:04	12/11/23 11:51	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		12/11/23 10:04	12/11/23 11:51	1
Surrogate	MB %Recovery	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	73		70 - 130			12/11/23 10:04	12/11/23 11:51	1
1,4-Difluorobenzene (Surr)	75		70 - 130			12/11/23 10:04	12/11/23 11:51	1

Lab Sample ID: MB 880-68841/5-A
Matrix: Solid
Analysis Batch: 68756

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 68841

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		12/11/23 13:38	12/12/23 01:20	1
Toluene	<0.00200	U	0.00200	mg/Kg		12/11/23 13:38	12/12/23 01:20	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		12/11/23 13:38	12/12/23 01:20	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		12/11/23 13:38	12/12/23 01:20	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		12/11/23 13:38	12/12/23 01:20	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		12/11/23 13:38	12/12/23 01:20	1
Surrogate	MB %Recovery	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	74		70 - 130			12/11/23 13:38	12/12/23 01:20	1
1,4-Difluorobenzene (Surr)	92		70 - 130			12/11/23 13:38	12/12/23 01:20	1

Lab Sample ID: LCS 880-68841/1-A
Matrix: Solid
Analysis Batch: 68756

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 68841

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.09705		mg/Kg		97	70 - 130
Toluene	0.100	0.1014		mg/Kg		101	70 - 130
Ethylbenzene	0.100	0.07841		mg/Kg		78	70 - 130
m-Xylene & p-Xylene	0.200	0.1920		mg/Kg		96	70 - 130
o-Xylene	0.100	0.1058		mg/Kg		106	70 - 130
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
4-Bromofluorobenzene (Surr)	136	S1+	70 - 130				
1,4-Difluorobenzene (Surr)	86		70 - 130				

Lab Sample ID: LCSD 880-68841/2-A
Matrix: Solid
Analysis Batch: 68756

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 68841

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	0.100	0.08638		mg/Kg		86	70 - 130	12	35

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS

Job ID: 890-5756-1
SDG: 23E - 05485

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

Lab Sample ID: LCSD 880-68841/2-A

Matrix: Solid

Analysis Batch: 68756

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 68841

Analyte	Spike		LCSD	LCSD	Unit	D	%Rec	%Rec		RPD	
	Added	Result	Qualifier				Limits	RPD	Limit		
Toluene	0.100	0.1061			mg/Kg		106	70 - 130	5	35	
Ethylbenzene	0.100	0.09885			mg/Kg		99	70 - 130	23	35	
m-Xylene & p-Xylene	0.200	0.1787			mg/Kg		89	70 - 130	7	35	
o-Xylene	0.100	0.09863			mg/Kg		99	70 - 130	7	35	
LCSD		LCSD									
Surrogate	%Recovery	Qualifier	Limits								
4-Bromofluorobenzene (Surr)	125		70 - 130								
1,4-Difluorobenzene (Surr)	77		70 - 130								

Lab Sample ID: 890-5745-A-1-C MS

Matrix: Solid

Analysis Batch: 68756

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 68841

	Sample	Sample	Spike	MS	MS				%Rec		
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Benzene	<0.00199	U	0.0996	0.08256		mg/Kg		83	70 - 130		
Toluene	<0.00199	U	0.0996	0.09685		mg/Kg		97	70 - 130		
Ethylbenzene	<0.00199	U	0.0996	0.08965		mg/Kg		90	70 - 130		
m-Xylene & p-Xylene	<0.00398	U	0.199	0.2057		mg/Kg		103	70 - 130		
o-Xylene	<0.00199	U	0.0996	0.1012		mg/Kg		102	70 - 130		
	MS	MS									
Surrogate	%Recovery	Qualifier	Limits								
4-Bromofluorobenzene (Surr)	167	S1+	70 - 130								
1,4-Difluorobenzene (Surr)	154	S1+	70 - 130								

Lab Sample ID: 890-5745-A-1-D MSD

Matrix: Solid

Analysis Batch: 68756

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 68841

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits		Limit
Benzene	<0.00199	U	0.0990	0.08316		mg/Kg		84	70 - 130	1	35
Toluene	<0.00199	U	0.0990	0.09553		mg/Kg		96	70 - 130	1	35
Ethylbenzene	<0.00199	U	0.0990	0.08776		mg/Kg		89	70 - 130	2	35
m-Xylene & p-Xylene	<0.00398	U	0.198	0.1742		mg/Kg		88	70 - 130	17	35
o-Xylene	<0.00199	U	0.0990	0.08344		mg/Kg		84	70 - 130	19	35
	MSD	MSD									
Surrogate	%Recovery	Qualifier	Limits								
4-Bromofluorobenzene (Surr)	151	S1+	70 - 130								
1,4-Difluorobenzene (Surr)	89		70 - 130								

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

Lab Sample ID: MB 880-68852/1-A

Matrix: Solid

Analysis Batch: 68750

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 68852

Analyte	MB		RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0	mg/Kg		12/11/23 14:33	12/11/23 19:35	1

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS

Job ID: 890-5756-1
SDG: 23E - 05485

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

Lab Sample ID: MB 880-68852/1-A
Matrix: Solid
Analysis Batch: 68750

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 68852

Analyte	MB	MB	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		12/11/23 14:33	12/11/23 19:35	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		12/11/23 14:33	12/11/23 19:35	1
Surrogate	MB	MB	Limits			Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier						
1-Chlorooctane	124		70 - 130			12/11/23 14:33	12/11/23 19:35	1
o-Terphenyl	134	S1+	70 - 130			12/11/23 14:33	12/11/23 19:35	1

Lab Sample ID: LCS 880-68852/2-A
Matrix: Solid
Analysis Batch: 68750

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 68852

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	1000	813.0		mg/Kg		81	70 - 130
Diesel Range Organics (Over C10-C28)	1000	781.5		mg/Kg		78	70 - 130
Surrogate		LCS	LCS				
		%Recovery	Qualifier				
1-Chlorooctane		130					70 - 130
o-Terphenyl		148	S1+				70 - 130

Lab Sample ID: LCSD 880-68852/3-A
Matrix: Solid
Analysis Batch: 68750

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 68852

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	1000	877.4		mg/Kg		88	70 - 130	8	20
Diesel Range Organics (Over C10-C28)	1000	910.4		mg/Kg		91	70 - 130	15	20
Surrogate		LCSD	LCSD						
		%Recovery	Qualifier						
1-Chlorooctane		102					70 - 130		
o-Terphenyl		117					70 - 130		

Lab Sample ID: 880-36743-A-7-B MS
Matrix: Solid
Analysis Batch: 68750

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 68852

Analyte	Sample	Sample	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
	Result	Qualifier							
Gasoline Range Organics (GRO)-C6-C10	<50.4	U F1	1000	701.6	F1	mg/Kg		68	70 - 130
Diesel Range Organics (Over C10-C28)	<50.4	U F1	1000	722.3	F1	mg/Kg		68	70 - 130
Surrogate	MS	MS							
	%Recovery	Qualifier							
1-Chlorooctane	93							70 - 130	
o-Terphenyl	90							70 - 130	

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS

Job ID: 890-5756-1
SDG: 23E - 05485

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

Lab Sample ID: 880-36743-A-7-C MSD

Matrix: Solid

Analysis Batch: 68750

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 68852

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	<50.4	U F1	1000	727.5		mg/Kg		71	70 - 130	4	20
Diesel Range Organics (Over C10-C28)	<50.4	U F1	1000	708.9	F1	mg/Kg		67	70 - 130	2	20
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1-Chlorooctane	95		70 - 130								
o-Terphenyl	85		70 - 130								

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-68794/1-A

Matrix: Solid

Analysis Batch: 68825

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			12/11/23 14:35	1

Lab Sample ID: LCS 880-68794/2-A

Matrix: Solid

Analysis Batch: 68825

Client Sample ID: Lab Control Sample

Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	250	255.4		mg/Kg		102	90 - 110

Lab Sample ID: LCSD 880-68794/3-A

Matrix: Solid

Analysis Batch: 68825

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	253.3		mg/Kg		101	90 - 110	1	20

Lab Sample ID: 890-5744-A-2-C MS

Matrix: Solid

Analysis Batch: 68825

Client Sample ID: Matrix Spike

Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	185		249	434.6		mg/Kg		100	90 - 110

Lab Sample ID: 890-5744-A-2-D MSD

Matrix: Solid

Analysis Batch: 68825

Client Sample ID: Matrix Spike Duplicate

Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	185		249	432.4		mg/Kg		100	90 - 110	1	20

Eurofins Carlsbad

QC Association Summary

Client: Vertex
Project/Site: PLU 29 BIG SINKS

Job ID: 890-5756-1
SDG: 23E - 05485

GC VOA

Analysis Batch: 68756

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5756-1	BH23 - 03 4.5'	Total/NA	Solid	8021B	68841
MB 880-68778/5-A	Method Blank	Total/NA	Solid	8021B	68778
MB 880-68841/5-A	Method Blank	Total/NA	Solid	8021B	68841
LCS 880-68841/1-A	Lab Control Sample	Total/NA	Solid	8021B	68841
LCSD 880-68841/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	68841
890-5745-A-1-C MS	Matrix Spike	Total/NA	Solid	8021B	68841
890-5745-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	68841

Prep Batch: 68778

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-68778/5-A	Method Blank	Total/NA	Solid	5035	

Prep Batch: 68841

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5756-1	BH23 - 03 4.5'	Total/NA	Solid	5035	
MB 880-68841/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-68841/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-68841/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-5745-A-1-C MS	Matrix Spike	Total/NA	Solid	5035	
890-5745-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 68941

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5756-1	BH23 - 03 4.5'	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 68750

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5756-1	BH23 - 03 4.5'	Total/NA	Solid	8015B NM	68852
MB 880-68852/1-A	Method Blank	Total/NA	Solid	8015B NM	68852
LCS 880-68852/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	68852
LCSD 880-68852/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	68852
880-36743-A-7-B MS	Matrix Spike	Total/NA	Solid	8015B NM	68852
880-36743-A-7-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	68852

Prep Batch: 68852

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5756-1	BH23 - 03 4.5'	Total/NA	Solid	8015NM Prep	
MB 880-68852/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-68852/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-68852/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
880-36743-A-7-B MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
880-36743-A-7-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 68905

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5756-1	BH23 - 03 4.5'	Total/NA	Solid	8015 NM	

Eurofins Carlsbad

QC Association Summary

Client: Vertex
Project/Site: PLU 29 BIG SINKS

Job ID: 890-5756-1
SDG: 23E - 05485

HPLC/IC

Leach Batch: 68794

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5756-1	BH23 - 03 4.5'	Soluble	Solid	DI Leach	
MB 880-68794/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-68794/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-68794/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-5744-A-2-C MS	Matrix Spike	Soluble	Solid	DI Leach	
890-5744-A-2-D MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 68825

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5756-1	BH23 - 03 4.5'	Soluble	Solid	300.0	68794
MB 880-68794/1-A	Method Blank	Soluble	Solid	300.0	68794
LCS 880-68794/2-A	Lab Control Sample	Soluble	Solid	300.0	68794
LCSD 880-68794/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	68794
890-5744-A-2-C MS	Matrix Spike	Soluble	Solid	300.0	68794
890-5744-A-2-D MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	68794

Lab Chronicle

Client: Vertex
Project/Site: PLU 29 BIG SINKS

Job ID: 890-5756-1
SDG: 23E - 05485

Client Sample ID: BH23 - 03 4.5'
Date Collected: 12/01/23 06:30
Date Received: 12/08/23 08:00

Lab Sample ID: 890-5756-1
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	68841	12/11/23 13:38	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	68756	12/12/23 09:59	SM	EET MID
Total/NA	Analysis	Total BTEX		1			68941	12/12/23 09:59	SM	EET MID
Total/NA	Analysis	8015 NM		1			68905	12/12/23 03:59	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	68852	12/11/23 14:33	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	68750	12/12/23 03:59	SM	EET MID
Soluble	Leach	DI Leach			5.01 g	50 mL	68794	12/11/23 10:29	SA	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	68825	12/11/23 18:50	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 BIG SINKS

Job ID: 890-5756-1
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 BIG SINKS

Job ID: 890-5756-1
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 BIG SINKS

Job ID: 890-5756-1
SDG: 23E - 05485

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-5756-1	BH23 - 03 4.5'	Solid	12/01/23 06:30	12/08/23 08:00	4.5'

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Chain of Custody

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3333
El Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296
Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Environment Testing

Xenco

Work Order No: 1818831001

[illegible]

Login Sample Receipt Checklist

Client: Vertex

Job Number: 890-5756-1

SDG Number: 23E - 05485

Login Number: 5756

List Number: 1

Creator: Bruns, Shannon

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: 890-5756-1

SDG Number: 23E - 05485

Login Number: 5756

List Number: 2

Creator: Rodriguez, Leticia

List Source: Eurofins Midland

List Creation: 12/11/23 08:54 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	



Environment Testing

- 1
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ANALYTICAL REPORT

PREPARED FOR

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

Generated 1/15/2024 5:53:57 PM

JOB DESCRIPTION

PLU 29 BIG SINKS WEST CTB
23 E - 05485

JOB NUMBER

890-5931-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220



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
1/15/2024 5:53:57 PM

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

Client: Vertex
Project/Site: PLU 29 BIG SINKS WEST CTB

Laboratory Job ID: 890-5931-1
SDG: 23 E - 05485

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Definitions/Glossary

Client: Vertex
Project/Site: PLU 29 BIG SINKS WEST CTB

Job ID: 890-5931-1
SDG: 23 E - 05485

Qualifiers

GC VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
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
Project: PLU 29 BIG SINKS WEST CTB

Job ID: 890-5931-1

Job ID: 890-5931-1

Eurofins Carlsbad

Job Narrative 890-5931-1

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 1/9/2024 3:56 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.8°C

Receipt Exceptions

The following samples were received and analyzed from an unpreserved bulk soil jar: B E S 24 - 01 1' (890-5931-1), B E S 24 - 02 0.5' (890-5931-2), B E S 24 - 03 0.5' (890-5931-3), B E S 24 - 05 0.5' (890-5931-4) and B E S 24 - 06 0.5' (890-5931-5).

GC VOA

Method 8021B: Surrogate recovery for the following sample was outside control limits: B E S 24 - 06 0.5' (890-5931-5). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: The method blank for preparation batch 880-70783 and analytical batch 880-70807 contained o-Xylene 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 880-70668 and analytical batch 880-70803 was outside the upper control limits.

Method 8015MOD_NM: Surrogate recovery for the following samples were outside control limits: B E S 24 - 01 1' (890-5931-1), B E S 24 - 02 0.5' (890-5931-2), B E S 24 - 03 0.5' (890-5931-3), B E S 24 - 05 0.5' (890-5931-4), B E S 24 - 06 0.5' (890-5931-5), (890-5930-A-41-E), (890-5930-A-41-F MS) and (890-5930-A-41-G MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

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.

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS WEST CTB

Job ID: 890-5931-1
SDG: 23 E - 05485

Client Sample ID: B E S 24 - 01 1'

Lab Sample ID: 890-5931-1

Date Collected: 01/08/24 10:40

Matrix: Solid

Date Received: 01/09/24 15:56

Sample Depth: 1'

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		01/12/24 15:10	01/13/24 22:11	1
Toluene	<0.00201	U	0.00201	mg/Kg		01/12/24 15:10	01/13/24 22:11	1
Ethylbenzene	<0.00201	U	0.00201	mg/Kg		01/12/24 15:10	01/13/24 22:11	1
m-Xylene & p-Xylene	<0.00402	U	0.00402	mg/Kg		01/12/24 15:10	01/13/24 22:11	1
o-Xylene	<0.00201	U	0.00201	mg/Kg		01/12/24 15:10	01/13/24 22:11	1
Xylenes, Total	<0.00402	U	0.00402	mg/Kg		01/12/24 15:10	01/13/24 22:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	120		70 - 130	01/12/24 15:10	01/13/24 22:11	1
1,4-Difluorobenzene (Surr)	130		70 - 130	01/12/24 15:10	01/13/24 22:11	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			01/13/24 22:11	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			01/13/24 23:50	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	<49.6	U	49.6	mg/Kg		01/11/24 14:55	01/13/24 23:50	1
Diesel Range Organics (Over C10-C28)	<49.6	U	49.6	mg/Kg		01/11/24 14:55	01/13/24 23:50	1
Oil Range Organics (Over C28-C36)	<49.6	U	49.6	mg/Kg		01/11/24 14:55	01/13/24 23:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	167	S1+	70 - 130	01/11/24 14:55	01/13/24 23:50	1
o-Terphenyl	145	S1+	70 - 130	01/11/24 14:55	01/13/24 23:50	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7260		99.2	mg/Kg			01/12/24 13:33	20

Client Sample ID: B E S 24 - 02 0.5'

Lab Sample ID: 890-5931-2

Date Collected: 01/08/24 10:45

Matrix: Solid

Date Received: 01/09/24 15:56

Sample Depth: 0.5'

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		01/12/24 15:10	01/13/24 22:31	1
Toluene	<0.00200	U	0.00200	mg/Kg		01/12/24 15:10	01/13/24 22:31	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		01/12/24 15:10	01/13/24 22:31	1
m-Xylene & p-Xylene	<0.00401	U	0.00401	mg/Kg		01/12/24 15:10	01/13/24 22:31	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		01/12/24 15:10	01/13/24 22:31	1
Xylenes, Total	<0.00401	U	0.00401	mg/Kg		01/12/24 15:10	01/13/24 22:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		70 - 130	01/12/24 15:10	01/13/24 22:31	1

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS WEST CTB

Job ID: 890-5931-1
SDG: 23 E - 05485

Client Sample ID: B E S 24 - 02 0.5'

Lab Sample ID: 890-5931-2

Date Collected: 01/08/24 10:45

Matrix: Solid

Date Received: 01/09/24 15:56

Sample Depth: 0.5'

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	94		70 - 130	01/12/24 15:10	01/13/24 22:31	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00401	U	0.00401	mg/Kg			01/13/24 22:31	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	72.8		50.1	mg/Kg			01/14/24 00:11	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	<50.1	U	50.1	mg/Kg		01/11/24 14:55	01/14/24 00:11	1
Diesel Range Organics (Over C10-C28)	72.8		50.1	mg/Kg		01/11/24 14:55	01/14/24 00:11	1
Oil Range Organics (Over C28-C36)	<50.1	U	50.1	mg/Kg		01/11/24 14:55	01/14/24 00:11	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	142	S1+	70 - 130			01/11/24 14:55	01/14/24 00:11	1
o-Terphenyl	126		70 - 130			01/11/24 14:55	01/14/24 00:11	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7280		100	mg/Kg			01/12/24 13:38	20

Client Sample ID: B E S 24 - 03 0.5'

Lab Sample ID: 890-5931-3

Date Collected: 01/08/24 10:50

Matrix: Solid

Date Received: 01/09/24 15:56

Sample Depth: 0.5'

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		01/12/24 15:10	01/13/24 22:52	1
Toluene	<0.00199	U	0.00199	mg/Kg		01/12/24 15:10	01/13/24 22:52	1
Ethylbenzene	<0.00199	U	0.00199	mg/Kg		01/12/24 15:10	01/13/24 22:52	1
m-Xylene & p-Xylene	<0.00398	U	0.00398	mg/Kg		01/12/24 15:10	01/13/24 22:52	1
o-Xylene	<0.00199	U	0.00199	mg/Kg		01/12/24 15:10	01/13/24 22:52	1
Xylenes, Total	<0.00398	U	0.00398	mg/Kg		01/12/24 15:10	01/13/24 22:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		70 - 130	01/12/24 15:10	01/13/24 22:52	1
1,4-Difluorobenzene (Surr)	91		70 - 130	01/12/24 15:10	01/13/24 22:52	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			01/13/24 22:52	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	73.2		50.4	mg/Kg			01/14/24 00:32	1

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS WEST CTB

Job ID: 890-5931-1
SDG: 23 E - 05485

Client Sample ID: B E S 24 - 03 0.5'

Lab Sample ID: 890-5931-3

Date Collected: 01/08/24 10:50

Matrix: Solid

Date Received: 01/09/24 15:56

Sample Depth: 0.5'

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	<50.4	U	50.4	mg/Kg		01/11/24 14:55	01/14/24 00:32	1
Diesel Range Organics (Over C10-C28)	73.2		50.4	mg/Kg		01/11/24 14:55	01/14/24 00:32	1
Oil Range Organics (Over C28-C36)	<50.4	U	50.4	mg/Kg		01/11/24 14:55	01/14/24 00:32	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	167	S1+	70 - 130			01/11/24 14:55	01/14/24 00:32	1
o-Terphenyl	147	S1+	70 - 130			01/11/24 14:55	01/14/24 00:32	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	6700		101	mg/Kg			01/12/24 13:43	20

Client Sample ID: B E S 24 - 05 0.5'

Lab Sample ID: 890-5931-4

Date Collected: 01/08/24 11:35

Matrix: Solid

Date Received: 01/09/24 15:56

Sample Depth: 0.5'

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		01/12/24 15:10	01/14/24 00:42	1
Toluene	<0.00198	U	0.00198	mg/Kg		01/12/24 15:10	01/14/24 00:42	1
Ethylbenzene	<0.00198	U	0.00198	mg/Kg		01/12/24 15:10	01/14/24 00:42	1
m-Xylene & p-Xylene	<0.00396	U	0.00396	mg/Kg		01/12/24 15:10	01/14/24 00:42	1
o-Xylene	<0.00198	U	0.00198	mg/Kg		01/12/24 15:10	01/14/24 00:42	1
Xylenes, Total	<0.00396	U	0.00396	mg/Kg		01/12/24 15:10	01/14/24 00:42	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	86		70 - 130			01/12/24 15:10	01/14/24 00:42	1
1,4-Difluorobenzene (Surr)	102		70 - 130			01/12/24 15:10	01/14/24 00:42	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00396	U	0.00396	mg/Kg			01/14/24 00:42	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	1880		50.5	mg/Kg			01/14/24 01:14	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	<50.5	U	50.5	mg/Kg		01/11/24 14:55	01/14/24 01:14	1
Diesel Range Organics (Over C10-C28)	1880		50.5	mg/Kg		01/11/24 14:55	01/14/24 01:14	1
Oil Range Organics (Over C28-C36)	<50.5	U	50.5	mg/Kg		01/11/24 14:55	01/14/24 01:14	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	148	S1+	70 - 130			01/11/24 14:55	01/14/24 01:14	1
o-Terphenyl	133	S1+	70 - 130			01/11/24 14:55	01/14/24 01:14	1

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS WEST CTB

Job ID: 890-5931-1
SDG: 23 E - 05485

Client Sample ID: B E S 24 - 05 0.5'

Lab Sample ID: 890-5931-4

Date Collected: 01/08/24 11:35

Matrix: Solid

Date Received: 01/09/24 15:56

Sample Depth: 0.5'

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7270		50.2	mg/Kg			01/12/24 13:48	10

Client Sample ID: B E S 24 - 06 0.5'

Lab Sample ID: 890-5931-5

Date Collected: 01/08/24 11:40

Matrix: Solid

Date Received: 01/09/24 15:56

Sample Depth: 0.5'

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		01/12/24 15:10	01/14/24 01:02	1
Toluene	<0.00201	U	0.00201	mg/Kg		01/12/24 15:10	01/14/24 01:02	1
Ethylbenzene	<0.00201	U	0.00201	mg/Kg		01/12/24 15:10	01/14/24 01:02	1
m-Xylene & p-Xylene	<0.00402	U	0.00402	mg/Kg		01/12/24 15:10	01/14/24 01:02	1
o-Xylene	0.00248		0.00201	mg/Kg		01/12/24 15:10	01/14/24 01:02	1
Xylenes, Total	<0.00402	U	0.00402	mg/Kg		01/12/24 15:10	01/14/24 01:02	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	121		70 - 130			01/12/24 15:10	01/14/24 01:02	1
1,4-Difluorobenzene (Surr)	133	S1+	70 - 130			01/12/24 15:10	01/14/24 01:02	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			01/14/24 01:02	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	2860		50.2	mg/Kg			01/14/24 01:35	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	<50.2	U	50.2	mg/Kg		01/11/24 14:55	01/14/24 01:35	1
Diesel Range Organics (Over C10-C28)	2860		50.2	mg/Kg		01/11/24 14:55	01/14/24 01:35	1
Oil Range Organics (Over C28-C36)	<50.2	U	50.2	mg/Kg		01/11/24 14:55	01/14/24 01:35	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	159	S1+	70 - 130			01/11/24 14:55	01/14/24 01:35	1
o-Terphenyl	141	S1+	70 - 130			01/11/24 14:55	01/14/24 01:35	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4900		49.8	mg/Kg			01/12/24 13:53	10

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Surrogate Summary

Client: Vertex
Project/Site: PLU 29 BIG SINKS WEST CTB

Job ID: 890-5931-1
SDG: 23 E - 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)
880-37820-A-1-C MS	Matrix Spike	105	99
880-37820-A-1-D MSD	Matrix Spike Duplicate	116	120
890-5931-1	B E S 24 - 01 1'	120	130
890-5931-2	B E S 24 - 02 0.5'	106	94
890-5931-3	B E S 24 - 03 0.5'	104	91
890-5931-4	B E S 24 - 05 0.5'	86	102
890-5931-5	B E S 24 - 06 0.5'	121	133 S1+
LCS 880-70783/1-A	Lab Control Sample	77	117
LCSD 880-70783/2-A	Lab Control Sample Dup	101	108
MB 880-70783/5-A	Method Blank	107	122
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)
890-5930-A-41-F MS	Matrix Spike	132 S1+	107
890-5930-A-41-G MSD	Matrix Spike Duplicate	131 S1+	104
890-5931-1	B E S 24 - 01 1'	167 S1+	145 S1+
890-5931-2	B E S 24 - 02 0.5'	142 S1+	126
890-5931-3	B E S 24 - 03 0.5'	167 S1+	147 S1+
890-5931-4	B E S 24 - 05 0.5'	148 S1+	133 S1+
890-5931-5	B E S 24 - 06 0.5'	159 S1+	141 S1+
LCS 880-70668/2-A	Lab Control Sample	94	91
LCSD 880-70668/3-A	Lab Control Sample Dup	103	109
MB 880-70668/1-A	Method Blank	194 S1+	182 S1+
Surrogate Legend			
1CO = 1-Chlorooctane			
OTPH = o-Terphenyl			

QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS WEST CTB

Job ID: 890-5931-1
SDG: 23 E - 05485

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-70783/5-A					Client Sample ID: Method Blank				
Matrix: Solid					Prep Type: Total/NA				
Analysis Batch: 70807					Prep Batch: 70783				
Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Benzene	<0.00200	U	0.00200	mg/Kg		01/12/24 15:10	01/13/24 19:19	1	
Toluene	<0.00200	U	0.00200	mg/Kg		01/12/24 15:10	01/13/24 19:19	1	
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		01/12/24 15:10	01/13/24 19:19	1	
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		01/12/24 15:10	01/13/24 19:19	1	
o-Xylene	<0.00200	U	0.00200	mg/Kg		01/12/24 15:10	01/13/24 19:19	1	
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		01/12/24 15:10	01/13/24 19:19	1	
Surrogate	MB %Recovery	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac	
4-Bromofluorobenzene (Surr)	107		70 - 130			01/12/24 15:10	01/13/24 19:19	1	
1,4-Difluorobenzene (Surr)	122		70 - 130			01/12/24 15:10	01/13/24 19:19	1	

Lab Sample ID: LCS 880-70783/1-A						Client Sample ID: Lab Control Sample			
Matrix: Solid						Prep Type: Total/NA			
Analysis Batch: 70807						Prep Batch: 70783			
Analyte		Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits	
Benzene		0.100	0.1072		mg/Kg		107	70 - 130	
Toluene		0.100	0.09783		mg/Kg		98	70 - 130	
Ethylbenzene		0.100	0.08429		mg/Kg		84	70 - 130	
m-Xylene & p-Xylene		0.200	0.1853		mg/Kg		93	70 - 130	
o-Xylene		0.100	0.09331		mg/Kg		93	70 - 130	
Surrogate	LCS %Recovery	LCS Qualifier	Limits						
4-Bromofluorobenzene (Surr)	77		70 - 130						
1,4-Difluorobenzene (Surr)	117		70 - 130						

Lab Sample ID: LCSD 880-70783/2-A						Client Sample ID: Lab Control Sample Dup				
Matrix: Solid						Prep Type: Total/NA				
Analysis Batch: 70807						Prep Batch: 70783				
Analyte		Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
Benzene		0.100	0.1251		mg/Kg		125	70 - 130	15	35
Toluene		0.100	0.1007		mg/Kg		101	70 - 130	3	35
Ethylbenzene		0.100	0.1034		mg/Kg		103	70 - 130	20	35
m-Xylene & p-Xylene		0.200	0.2147		mg/Kg		107	70 - 130	15	35
o-Xylene		0.100	0.1078		mg/Kg		108	70 - 130	14	35
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits							
4-Bromofluorobenzene (Surr)	101		70 - 130							
1,4-Difluorobenzene (Surr)	108		70 - 130							

Lab Sample ID: 880-37820-A-1-C MS						Client Sample ID: Matrix Spike			
Matrix: Solid						Prep Type: Total/NA			
Analysis Batch: 70807						Prep Batch: 70783			
Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	<0.00198	U	0.100	0.1111		mg/Kg		111	70 - 130
Toluene	<0.00198	U	0.100	0.09664		mg/Kg		96	70 - 130

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS WEST CTB

Job ID: 890-5931-1
SDG: 23 E - 05485

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

Lab Sample ID: 880-37820-A-1-C MS
Matrix: Solid
Analysis Batch: 70807

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 70783

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00198	U	0.100	0.09823		mg/Kg		98	70 - 130
m-Xylene & p-Xylene	<0.00396	U	0.201	0.2071		mg/Kg		103	70 - 130
o-Xylene	<0.00198	U	0.100	0.1071		mg/Kg		107	70 - 130
Surrogate	MS %Recovery	MS Qualifier	Limits						
4-Bromofluorobenzene (Surr)	105		70 - 130						
1,4-Difluorobenzene (Surr)	99		70 - 130						

Lab Sample ID: 880-37820-A-1-D MSD
Matrix: Solid
Analysis Batch: 70807

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 70783

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00198	U	0.101	0.1149		mg/Kg		114	70 - 130	3	35
Toluene	<0.00198	U	0.101	0.07986		mg/Kg		79	70 - 130	19	35
Ethylbenzene	<0.00198	U	0.101	0.07243		mg/Kg		72	70 - 130	30	35
m-Xylene & p-Xylene	<0.00396	U	0.202	0.2054		mg/Kg		102	70 - 130	1	35
o-Xylene	<0.00198	U	0.101	0.1065		mg/Kg		106	70 - 130	1	35
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
4-Bromofluorobenzene (Surr)	116		70 - 130								
1,4-Difluorobenzene (Surr)	120		70 - 130								

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

Lab Sample ID: MB 880-70668/1-A
Matrix: Solid
Analysis Batch: 70803

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 70668

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		01/11/24 14:55	01/13/24 19:40	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		01/11/24 14:55	01/13/24 19:40	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		01/11/24 14:55	01/13/24 19:40	1
Surrogate	MB %Recovery	MB Qualifier	Limits					
1-Chlorooctane	194	S1+	70 - 130					
o-Terphenyl	182	S1+	70 - 130					

Lab Sample ID: LCS 880-70668/2-A
Matrix: Solid
Analysis Batch: 70803

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 70668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	1000	972.0		mg/Kg		97	70 - 130
Diesel Range Organics (Over C10-C28)	1000	974.2		mg/Kg		97	70 - 130

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS WEST CTB

Job ID: 890-5931-1
SDG: 23 E - 05485

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

Lab Sample ID: LCS 880-70668/2-A
Matrix: Solid
Analysis Batch: 70803

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 70668

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	94		70 - 130
o-Terphenyl	91		70 - 130

Lab Sample ID: LCSD 880-70668/3-A
Matrix: Solid
Analysis Batch: 70803

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 70668

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	999.4		mg/Kg		100	70 - 130	3	20
Diesel Range Organics (Over C10-C28)			1000	966.6		mg/Kg		97	70 - 130	1	20
Surrogate	LCSD	LCSD									
	%Recovery	Qualifier									
1-Chlorooctane	103										
o-Terphenyl	109										

Lab Sample ID: 890-5930-A-41-F MS
Matrix: Solid
Analysis Batch: 70803

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 70668

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	1010	1257		mg/Kg		122	70 - 130		
Diesel Range Organics (Over C10-C28)	<49.8	U	1010	1311		mg/Kg		127	70 - 130		
Surrogate	MS	MS									
	%Recovery	Qualifier									
1-Chlorooctane	132	S1+									
o-Terphenyl	107										

Lab Sample ID: 890-5930-A-41-G MSD
Matrix: Solid
Analysis Batch: 70803

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 70668

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	<49.8	U	1010	1252		mg/Kg		122	70 - 130	0	20
Diesel Range Organics (Over C10-C28)	<49.8	U	1010	1303		mg/Kg		126	70 - 130	1	20
Surrogate	MSD	MSD									
	%Recovery	Qualifier									
1-Chlorooctane	131	S1+									
o-Terphenyl	104										

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINKS WEST CTB

Job ID: 890-5931-1
SDG: 23 E - 05485

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-70714/1-A Matrix: Solid Analysis Batch: 70747										Client Sample ID: Method Blank Prep Type: Soluble			
Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analized	Dil Fac					
Chloride	<5.00	U	5.00	mg/Kg			01/12/24 12:26	1					

Lab Sample ID: LCS 880-70714/2-A Matrix: Solid Analysis Batch: 70747										Client Sample ID: Lab Control Sample Prep Type: Soluble			
Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits				
Chloride			250	249.8		mg/Kg		100	90 - 110				

Lab Sample ID: LCSD 880-70714/3-A Matrix: Solid Analysis Batch: 70747										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	249.9		mg/Kg		100	90 - 110	0	20		

Lab Sample ID: 890-5931-5 MS Matrix: Solid Analysis Batch: 70747										Client Sample ID: B E S 24 - 06 0.5' Prep Type: Soluble			
Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits				
Chloride	4900		2490	7280		mg/Kg		96	90 - 110				

Lab Sample ID: 890-5931-5 MSD Matrix: Solid Analysis Batch: 70747										Client Sample ID: B E S 24 - 06 0.5' Prep Type: Soluble			
Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit		
Chloride	4900		2490	7267		mg/Kg		95	90 - 110	0	20		

QC Association Summary

Client: Vertex
Project/Site: PLU 29 BIG SINKS WEST CTB

Job ID: 890-5931-1
SDG: 23 E - 05485

GC VOA

Prep Batch: 70783

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5931-1	B E S 24 - 01 1'	Total/NA	Solid	5035	
890-5931-2	B E S 24 - 02 0.5'	Total/NA	Solid	5035	
890-5931-3	B E S 24 - 03 0.5'	Total/NA	Solid	5035	
890-5931-4	B E S 24 - 05 0.5'	Total/NA	Solid	5035	
890-5931-5	B E S 24 - 06 0.5'	Total/NA	Solid	5035	
MB 880-70783/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-70783/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-70783/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-37820-A-1-C MS	Matrix Spike	Total/NA	Solid	5035	
880-37820-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 70807

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5931-1	B E S 24 - 01 1'	Total/NA	Solid	8021B	70783
890-5931-2	B E S 24 - 02 0.5'	Total/NA	Solid	8021B	70783
890-5931-3	B E S 24 - 03 0.5'	Total/NA	Solid	8021B	70783
890-5931-4	B E S 24 - 05 0.5'	Total/NA	Solid	8021B	70783
890-5931-5	B E S 24 - 06 0.5'	Total/NA	Solid	8021B	70783
MB 880-70783/5-A	Method Blank	Total/NA	Solid	8021B	70783
LCS 880-70783/1-A	Lab Control Sample	Total/NA	Solid	8021B	70783
LCSD 880-70783/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	70783
880-37820-A-1-C MS	Matrix Spike	Total/NA	Solid	8021B	70783
880-37820-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	70783

Analysis Batch: 70955

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5931-1	B E S 24 - 01 1'	Total/NA	Solid	Total BTEX	
890-5931-2	B E S 24 - 02 0.5'	Total/NA	Solid	Total BTEX	
890-5931-3	B E S 24 - 03 0.5'	Total/NA	Solid	Total BTEX	
890-5931-4	B E S 24 - 05 0.5'	Total/NA	Solid	Total BTEX	
890-5931-5	B E S 24 - 06 0.5'	Total/NA	Solid	Total BTEX	

GC Semi VOA

Prep Batch: 70668

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5931-1	B E S 24 - 01 1'	Total/NA	Solid	8015NM Prep	
890-5931-2	B E S 24 - 02 0.5'	Total/NA	Solid	8015NM Prep	
890-5931-3	B E S 24 - 03 0.5'	Total/NA	Solid	8015NM Prep	
890-5931-4	B E S 24 - 05 0.5'	Total/NA	Solid	8015NM Prep	
890-5931-5	B E S 24 - 06 0.5'	Total/NA	Solid	8015NM Prep	
MB 880-70668/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-70668/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-70668/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-5930-A-41-F MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-5930-A-41-G MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 70803

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5931-1	B E S 24 - 01 1'	Total/NA	Solid	8015B NM	70668
890-5931-2	B E S 24 - 02 0.5'	Total/NA	Solid	8015B NM	70668

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QC Association Summary

Client: Vertex
Project/Site: PLU 29 BIG SINKS WEST CTB

Job ID: 890-5931-1
SDG: 23 E - 05485

GC Semi VOA (Continued)

Analysis Batch: 70803 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5931-3	B E S 24 - 03 0.5'	Total/NA	Solid	8015B NM	70668
890-5931-4	B E S 24 - 05 0.5'	Total/NA	Solid	8015B NM	70668
890-5931-5	B E S 24 - 06 0.5'	Total/NA	Solid	8015B NM	70668
MB 880-70668/1-A	Method Blank	Total/NA	Solid	8015B NM	70668
LCS 880-70668/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	70668
LCSD 880-70668/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	70668
890-5930-A-41-F MS	Matrix Spike	Total/NA	Solid	8015B NM	70668
890-5930-A-41-G MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	70668

Analysis Batch: 70912

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5931-1	B E S 24 - 01 1'	Total/NA	Solid	8015 NM	
890-5931-2	B E S 24 - 02 0.5'	Total/NA	Solid	8015 NM	
890-5931-3	B E S 24 - 03 0.5'	Total/NA	Solid	8015 NM	
890-5931-4	B E S 24 - 05 0.5'	Total/NA	Solid	8015 NM	
890-5931-5	B E S 24 - 06 0.5'	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 70714

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5931-1	B E S 24 - 01 1'	Soluble	Solid	DI Leach	
890-5931-2	B E S 24 - 02 0.5'	Soluble	Solid	DI Leach	
890-5931-3	B E S 24 - 03 0.5'	Soluble	Solid	DI Leach	
890-5931-4	B E S 24 - 05 0.5'	Soluble	Solid	DI Leach	
890-5931-5	B E S 24 - 06 0.5'	Soluble	Solid	DI Leach	
MB 880-70714/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-70714/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-70714/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-5931-5 MS	B E S 24 - 06 0.5'	Soluble	Solid	DI Leach	
890-5931-5 MSD	B E S 24 - 06 0.5'	Soluble	Solid	DI Leach	

Analysis Batch: 70747

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5931-1	B E S 24 - 01 1'	Soluble	Solid	300.0	70714
890-5931-2	B E S 24 - 02 0.5'	Soluble	Solid	300.0	70714
890-5931-3	B E S 24 - 03 0.5'	Soluble	Solid	300.0	70714
890-5931-4	B E S 24 - 05 0.5'	Soluble	Solid	300.0	70714
890-5931-5	B E S 24 - 06 0.5'	Soluble	Solid	300.0	70714
MB 880-70714/1-A	Method Blank	Soluble	Solid	300.0	70714
LCS 880-70714/2-A	Lab Control Sample	Soluble	Solid	300.0	70714
LCSD 880-70714/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	70714
890-5931-5 MS	B E S 24 - 06 0.5'	Soluble	Solid	300.0	70714
890-5931-5 MSD	B E S 24 - 06 0.5'	Soluble	Solid	300.0	70714

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Lab Chronicle

Client: Vertex
Project/Site: PLU 29 BIG SINKS WEST CTB

Job ID: 890-5931-1
SDG: 23 E - 05485

Client Sample ID: B E S 24 - 01 1'

Lab Sample ID: 890-5931-1

Date Collected: 01/08/24 10:40

Matrix: Solid

Date Received: 01/09/24 15:56

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	70783	01/12/24 15:10	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	70807	01/13/24 22:11	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			70955	01/13/24 22:11	SM	EET MID
Total/NA	Analysis	8015 NM		1			70912	01/13/24 23:50	SM	EET MID
Total/NA	Prep	8015NM Prep			10.09 g	10 mL	70668	01/11/24 14:55	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	70803	01/13/24 23:50	SM	EET MID
Soluble	Leach	DI Leach			5.04 g	50 mL	70714	01/12/24 08:03	CH	EET MID
Soluble	Analysis	300.0		20			70747	01/12/24 13:33	CH	EET MID

Client Sample ID: B E S 24 - 02 0.5'

Lab Sample ID: 890-5931-2

Date Collected: 01/08/24 10:45

Matrix: Solid

Date Received: 01/09/24 15:56

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.99 g	5 mL	70783	01/12/24 15:10	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	70807	01/13/24 22:31	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			70955	01/13/24 22:31	SM	EET MID
Total/NA	Analysis	8015 NM		1			70912	01/14/24 00:11	SM	EET MID
Total/NA	Prep	8015NM Prep			9.98 g	10 mL	70668	01/11/24 14:55	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	70803	01/14/24 00:11	SM	EET MID
Soluble	Leach	DI Leach			4.98 g	50 mL	70714	01/12/24 08:03	CH	EET MID
Soluble	Analysis	300.0		20			70747	01/12/24 13:38	CH	EET MID

Client Sample ID: B E S 24 - 03 0.5'

Lab Sample ID: 890-5931-3

Date Collected: 01/08/24 10:50

Matrix: Solid

Date Received: 01/09/24 15:56

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	70783	01/12/24 15:10	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	70807	01/13/24 22:52	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			70955	01/13/24 22:52	SM	EET MID
Total/NA	Analysis	8015 NM		1			70912	01/14/24 00:32	SM	EET MID
Total/NA	Prep	8015NM Prep			9.92 g	10 mL	70668	01/11/24 14:55	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	70803	01/14/24 00:32	SM	EET MID
Soluble	Leach	DI Leach			4.95 g	50 mL	70714	01/12/24 08:03	CH	EET MID
Soluble	Analysis	300.0		20			70747	01/12/24 13:43	CH	EET MID

Client Sample ID: B E S 24 - 05 0.5'

Lab Sample ID: 890-5931-4

Date Collected: 01/08/24 11:35

Matrix: Solid

Date Received: 01/09/24 15:56

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	70783	01/12/24 15:10	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	70807	01/14/24 00:42	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			70955	01/14/24 00:42	SM	EET MID

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Lab Chronicle

Client: Vertex
Project/Site: PLU 29 BIG SINKS WEST CTB

Job ID: 890-5931-1
SDG: 23 E - 05485

Client Sample ID: B E S 24 - 05 0.5'

Lab Sample ID: 890-5931-4

Date Collected: 01/08/24 11:35

Matrix: Solid

Date Received: 01/09/24 15:56

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8015 NM		1			70912	01/14/24 01:14	SM	EET MID
Total/NA	Prep	8015NM Prep			9.90 g	10 mL	70668	01/11/24 14:55	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	70803	01/14/24 01:14	SM	EET MID
Soluble	Leach	DI Leach			4.98 g	50 mL	70714	01/12/24 08:03	CH	EET MID
Soluble	Analysis	300.0		10			70747	01/12/24 13:48	CH	EET MID

Client Sample ID: B E S 24 - 06 0.5'

Lab Sample ID: 890-5931-5

Date Collected: 01/08/24 11:40

Matrix: Solid

Date Received: 01/09/24 15:56

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	70783	01/12/24 15:10	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	70807	01/14/24 01:02	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			70955	01/14/24 01:02	SM	EET MID
Total/NA	Analysis	8015 NM		1			70912	01/14/24 01:35	SM	EET MID
Total/NA	Prep	8015NM Prep			9.96 g	10 mL	70668	01/11/24 14:55	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	70803	01/14/24 01:35	SM	EET MID
Soluble	Leach	DI Leach			5.02 g	50 mL	70714	01/12/24 08:03	CH	EET MID
Soluble	Analysis	300.0		10			70747	01/12/24 13:53	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 BIG SINKS WEST CTB

Job ID: 890-5931-1
SDG: 23 E - 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 BIG SINKS WEST CTB

Job ID: 890-5931-1
SDG: 23 E - 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 BIG SINKS WEST CTB

Job ID: 890-5931-1
SDG: 23 E - 05485

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-5931-1	B E S 24 - 01 1'	Solid	01/08/24 10:40	01/09/24 15:56	1'
890-5931-2	B E S 24 - 02 0.5'	Solid	01/08/24 10:45	01/09/24 15:56	0.5'
890-5931-3	B E S 24 - 03 0.5'	Solid	01/08/24 10:50	01/09/24 15:56	0.5'
890-5931-4	B E S 24 - 05 0.5'	Solid	01/08/24 11:35	01/09/24 15:56	0.5'
890-5931-5	B E S 24 - 06 0.5'	Solid	01/08/24 11:40	01/09/24 15:56	0.5'

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Chain of Custody

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3334
El Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296
Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Environment Testing

Xenco

Work Order No:

Page 1 of 1
www.xenco.com



Project Manager:	Chance Dixon	Bill to: (if different):	Garrett Green
Company Name:	Vortex	Company Name:	XTO
Address:	on file	Address:	on file
City, State ZIP:	1	City, State ZIP:	
Phone:		Email:	

Work Order Comments	
Program:	UST/PST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>
State of Project:	
Reporting:	Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input type="checkbox"/> Level IV <input type="checkbox"/>
Deliverables:	EDD <input type="checkbox"/> ADaPT <input type="checkbox"/> Other: <input type="checkbox"/>

Project Name:		Turn Around		Pres. Code		ANALYSIS REQUEST		Preservative Codes	
Project Number:		Routine <input type="checkbox"/> Rush <input type="checkbox"/>		Due Date:		TAT starts the day received by the lab, if received by 4:30pm		None: NO Cool: Cool HCL: HC H ₂ SO ₄ : H ₂ H ₃ PO ₄ : HP NaHSO ₄ : NABIS Na ₂ S ₂ O ₃ : NaSO ₃ Zn Acetate+NaOH: Zn NaOH+Ascorbic Acid: SAPC	
Project Location:		Temp Blank:		Thermometer ID:		Correction Factor:			
Sampler's Name:		Yes No		Yes No		Temperature Reading:			
PO #:		Yes No		Yes No		Corrected Temperature:			
SAMPLE RECEIPT Samples Received Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Cooler Custody Seals: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Sample Custody Seals: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Total Containers:									
Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/Comp	# of Cont			
BES24-01	Soil	1-8-24	10:40	1'	Comp	1			
BES24-02			10:45	0.5'		1			
BES24-03			10:50	0.5'		1			
BES24-05			11:35	0.5'		1			
BES24-06			11:40	0.5'		1			

Total	200.7 / 6010	200.8 / 6020:	8RCRA Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO ₂ Na Sr Ti 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	

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Eurofins Xenco. Its affiliates and subcontractors. It assigns standard terms and conditions of service. Eurofins Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Eurofins Xenco. A minimum charge of \$45.00 will be applied to each project and a charge of \$5.00 for each sample submitted to Eurofins Xenco, but not analyzed. These terms will be enforced unless previously negotiated in writing.

	Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1			11/9/24	2	1536	
3				4		
				6		

Revised Date: 09/25/2020 Rev: 2

Login Sample Receipt Checklist

Client: Vertex

Job Number: 890-5931-1

SDG Number: 23 E - 05485

Login Number: 5931

List Source: Eurofins Carlsbad

List Number: 1

Creator: Bruns, Shannon

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: 890-5931-1

SDG Number: 23 E - 05485

Login Number: 5931
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 01/11/24 11:21 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	



Environment Testing

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ANALYTICAL REPORT

PREPARED FOR

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

Generated 1/12/2024 2:11:10 PM

JOB DESCRIPTION

PLU 29 BS WEST CTB
23 - E - 05485

JOB NUMBER

890-5939-1



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



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1/12/2024 2:11:10 PM

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

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

Laboratory Job ID: 890-5939-1
SDG: 23 - E - 05485

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Definitions/Glossary

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

Job ID: 890-5939-1
SDG: 23 - E - 05485

Qualifiers

GC VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

HPLC/IC

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
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
Project: PLU 29 BS WEST CTB

Job ID: 890-5939-1

Job ID: 890-5939-1

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Job Narrative 890-5939-1

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 1/10/2024 8:55 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 -3.8°C

Receipt Exceptions

The following samples were received and analyzed from an unpreserved bulk soil jar: B E S 24 - 07 (890-5939-1), B E S 24 - 09 (890-5939-2) and B E S 24 - 10 (890-5939-3).

GC VOA

Method 8021B: The continuing calibration verification (CCV) associated with batch 880-70626 recovered under the lower control limit for Benzene and Toluene. The samples associated with this CCV were ran within 12 hours of passing CCV; therefore, the data have been reported.

Method 8021B: The laboratory control sample (LCS) associated with preparation batch 880-70640 and analytical batch 880-70626 was outside acceptance criteria. Re-extraction and/or re-analysis could not be performed; therefore, the data have been reported. The batch matrix spike/matrix spike duplicate (MS/MSD) was within acceptance limits and may be used to evaluate matrix performance.

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 880-70655 and analytical batch 880-70619 was outside the upper control limits.

Method 8015MOD_NM: Surrogate recovery for the following sample was outside control limits: (LCS 880-70655/2-A). Evidence of matrix interferences is not obvious.

Method 8015MOD_NM: Surrogate recovery for the following sample was outside control limits: B E S 24 - 07 (890-5939-1). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

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

HPLC/IC

Method 300_ORGFM_28D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 880-70612 and analytical batch 880-70696 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

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

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Client Sample Results

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

Job ID: 890-5939-1
SDG: 23 - E - 05485

Client Sample ID: B E S 24 - 07

Lab Sample ID: 890-5939-1

Date Collected: 01/09/24 09:45

Matrix: Solid

Date Received: 01/10/24 08:55

Sample Depth: 0.5'

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		01/11/24 12:30	01/11/24 21:59	1
Toluene	<0.00202	U	0.00202	mg/Kg		01/11/24 12:30	01/11/24 21:59	1
Ethylbenzene	<0.00202	U	0.00202	mg/Kg		01/11/24 12:30	01/11/24 21:59	1
m-Xylene & p-Xylene	<0.00404	U **	0.00404	mg/Kg		01/11/24 12:30	01/11/24 21:59	1
o-Xylene	<0.00202	U	0.00202	mg/Kg		01/11/24 12:30	01/11/24 21:59	1
Xylenes, Total	<0.00404	U	0.00404	mg/Kg		01/11/24 12:30	01/11/24 21:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	84		70 - 130	01/11/24 12:30	01/11/24 21:59	1
1,4-Difluorobenzene (Surr)	88		70 - 130	01/11/24 12:30	01/11/24 21:59	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00404	U	0.00404	mg/Kg			01/11/24 21:59	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.2	U	50.2	mg/Kg			01/11/24 23:30	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	<50.2	U	50.2	mg/Kg		01/11/24 13:50	01/11/24 23:30	1
Diesel Range Organics (Over C10-C28)	<50.2	U	50.2	mg/Kg		01/11/24 13:50	01/11/24 23:30	1
Oil Range Organics (Over C28-C36)	<50.2	U	50.2	mg/Kg		01/11/24 13:50	01/11/24 23:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	137	S1+	70 - 130	01/11/24 13:50	01/11/24 23:30	1
o-Terphenyl	147	S1+	70 - 130	01/11/24 13:50	01/11/24 23:30	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7030		49.7	mg/Kg			01/11/24 23:00	10

Client Sample ID: B E S 24 - 09

Lab Sample ID: 890-5939-2

Date Collected: 01/09/24 13:20

Matrix: Solid

Date Received: 01/10/24 08:55

Sample Depth: 0.5'

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		01/11/24 12:30	01/11/24 22:20	1
Toluene	<0.00201	U	0.00201	mg/Kg		01/11/24 12:30	01/11/24 22:20	1
Ethylbenzene	<0.00201	U	0.00201	mg/Kg		01/11/24 12:30	01/11/24 22:20	1
m-Xylene & p-Xylene	<0.00402	U **	0.00402	mg/Kg		01/11/24 12:30	01/11/24 22:20	1
o-Xylene	<0.00201	U	0.00201	mg/Kg		01/11/24 12:30	01/11/24 22:20	1
Xylenes, Total	<0.00402	U	0.00402	mg/Kg		01/11/24 12:30	01/11/24 22:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	92		70 - 130	01/11/24 12:30	01/11/24 22:20	1

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Client Sample Results

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

Job ID: 890-5939-1
SDG: 23 - E - 05485

Client Sample ID: B E S 24 - 09

Lab Sample ID: 890-5939-2

Date Collected: 01/09/24 13:20

Matrix: Solid

Date Received: 01/10/24 08:55

Sample Depth: 0.5'

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	85		70 - 130	01/11/24 12:30	01/11/24 22:20	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			01/11/24 22:20	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.1	U	50.1	mg/Kg			01/11/24 23:51	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	<50.1	U	50.1	mg/Kg		01/11/24 13:50	01/11/24 23:51	1
Diesel Range Organics (Over C10-C28)	<50.1	U	50.1	mg/Kg		01/11/24 13:50	01/11/24 23:51	1
Oil Range Organics (Over C28-C36)	<50.1	U	50.1	mg/Kg		01/11/24 13:50	01/11/24 23:51	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	110		70 - 130			01/11/24 13:50	01/11/24 23:51	1
o-Terphenyl	118		70 - 130			01/11/24 13:50	01/11/24 23:51	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4480		101	mg/Kg			01/11/24 23:05	20

Client Sample ID: B E S 24 - 10

Lab Sample ID: 890-5939-3

Date Collected: 01/09/24 13:25

Matrix: Solid

Date Received: 01/10/24 08:55

Sample Depth: 0.5'

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		01/11/24 12:30	01/11/24 22:40	1
Toluene	<0.00200	U	0.00200	mg/Kg		01/11/24 12:30	01/11/24 22:40	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		01/11/24 12:30	01/11/24 22:40	1
m-Xylene & p-Xylene	<0.00399	U *	0.00399	mg/Kg		01/11/24 12:30	01/11/24 22:40	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		01/11/24 12:30	01/11/24 22:40	1
Xylenes, Total	<0.00399	U	0.00399	mg/Kg		01/11/24 12:30	01/11/24 22:40	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		70 - 130			01/11/24 12:30	01/11/24 22:40	1
1,4-Difluorobenzene (Surr)	82		70 - 130			01/11/24 12:30	01/11/24 22:40	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			01/11/24 22:40	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.5	U	50.5	mg/Kg			01/12/24 00:14	1

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Client Sample Results

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

Job ID: 890-5939-1
SDG: 23 - E - 05485

Client Sample ID: B E S 24 - 10
Date Collected: 01/09/24 13:25
Date Received: 01/10/24 08:55
Sample Depth: 0.5'

Lab Sample ID: 890-5939-3
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	<50.5	U	50.5	mg/Kg		01/11/24 13:50	01/12/24 00:14	1	
Diesel Range Organics (Over C10-C28)	<50.5	U	50.5	mg/Kg		01/11/24 13:50	01/12/24 00:14	1	
Oil Range Organics (Over C28-C36)	<50.5	U	50.5	mg/Kg		01/11/24 13:50	01/12/24 00:14	1	
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
1-Chlorooctane	112		70 - 130			01/11/24 13:50	01/12/24 00:14	1	
o-Terphenyl	118		70 - 130			01/11/24 13:50	01/12/24 00:14	1	

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble									
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Chloride	5060		100	mg/Kg			01/11/24 23:10	20	

Surrogate Summary

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

Job ID: 890-5939-1
SDG: 23 - E - 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)
890-5939-1	B E S 24 - 07	84	88
890-5939-1 MS	B E S 24 - 07	125	107
890-5939-1 MSD	B E S 24 - 07	128	115
890-5939-2	B E S 24 - 09	92	85
890-5939-3	B E S 24 - 10	102	82
LCS 880-70640/1-A	Lab Control Sample	134 S1+	107
LCSD 880-70640/2-A	Lab Control Sample Dup	110	104
MB 880-70580/5-A	Method Blank	73	90
MB 880-70640/5-A	Method Blank	72	88
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)
890-5929-A-3-H MS	Matrix Spike	113	104
890-5929-A-3-I MSD	Matrix Spike Duplicate	115	106
890-5939-1	B E S 24 - 07	137 S1+	147 S1+
890-5939-2	B E S 24 - 09	110	118
890-5939-3	B E S 24 - 10	112	118
LCS 880-70655/2-A	Lab Control Sample	130	141 S1+
LCSD 880-70655/3-A	Lab Control Sample Dup	99	113
MB 880-70655/1-A	Method Blank	133 S1+	155 S1+
Surrogate Legend			
1CO = 1-Chlorooctane			
OTPH = o-Terphenyl			

QC Sample Results

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

Job ID: 890-5939-1
SDG: 23 - E - 05485

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-70580/5-A						Client Sample ID: Method Blank		
Matrix: Solid						Prep Type: Total/NA		
Analysis Batch: 70626						Prep Batch: 70580		
Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		01/10/24 14:02	01/11/24 11:00	1
Toluene	<0.00200	U	0.00200	mg/Kg		01/10/24 14:02	01/11/24 11:00	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		01/10/24 14:02	01/11/24 11:00	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		01/10/24 14:02	01/11/24 11:00	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		01/10/24 14:02	01/11/24 11:00	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		01/10/24 14:02	01/11/24 11:00	1
Surrogate	MB %Recovery	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	73		70 - 130			01/10/24 14:02	01/11/24 11:00	1
1,4-Difluorobenzene (Surr)	90		70 - 130			01/10/24 14:02	01/11/24 11:00	1

Lab Sample ID: MB 880-70640/5-A						Client Sample ID: Method Blank		
Matrix: Solid						Prep Type: Total/NA		
Analysis Batch: 70626						Prep Batch: 70640		
Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		01/11/24 12:30	01/11/24 21:37	1
Toluene	<0.00200	U	0.00200	mg/Kg		01/11/24 12:30	01/11/24 21:37	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		01/11/24 12:30	01/11/24 21:37	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		01/11/24 12:30	01/11/24 21:37	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		01/11/24 12:30	01/11/24 21:37	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		01/11/24 12:30	01/11/24 21:37	1
Surrogate	MB %Recovery	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	72		70 - 130			01/11/24 12:30	01/11/24 21:37	1
1,4-Difluorobenzene (Surr)	88		70 - 130			01/11/24 12:30	01/11/24 21:37	1

Lab Sample ID: LCS 880-70640/1-A						Client Sample ID: Lab Control Sample		
Matrix: Solid						Prep Type: Total/NA		
Analysis Batch: 70626						Prep Batch: 70640		
Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits	
Benzene	0.100	0.1159		mg/Kg		116	70 - 130	
Toluene	0.100	0.1082		mg/Kg		108	70 - 130	
Ethylbenzene	0.100	0.1213		mg/Kg		121	70 - 130	
m-Xylene & p-Xylene	0.200	0.2613	*+	mg/Kg		131	70 - 130	
o-Xylene	0.100	0.1246		mg/Kg		125	70 - 130	
Surrogate	LCS %Recovery	LCS Qualifier	Limits					
4-Bromofluorobenzene (Surr)	134	S1+	70 - 130					
1,4-Difluorobenzene (Surr)	107		70 - 130					

Lab Sample ID: LCSD 880-70640/2-A						Client Sample ID: Lab Control Sample Dup				
Matrix: Solid						Prep Type: Total/NA				
Analysis Batch: 70626						Prep Batch: 70640				
Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit	
Benzene	0.100	0.1046		mg/Kg		105	70 - 130	10	35	

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QC Sample Results

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

Job ID: 890-5939-1
SDG: 23 - E - 05485

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

Lab Sample ID: LCSD 880-70640/2-A

Matrix: Solid

Analysis Batch: 70626

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 70640

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Toluene	0.100	0.08721		mg/Kg		87	70 - 130	22		35
Ethylbenzene	0.100	0.09701		mg/Kg		97	70 - 130	22		35
m-Xylene & p-Xylene	0.200	0.1972		mg/Kg		99	70 - 130	28		35
o-Xylene	0.100	0.09543		mg/Kg		95	70 - 130	26		35

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	110		70 - 130
1,4-Difluorobenzene (Surr)	104		70 - 130

Lab Sample ID: 890-5939-1 MS

Matrix: Solid

Analysis Batch: 70626

Client Sample ID: B E S 24 - 07

Prep Type: Total/NA

Prep Batch: 70640

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec	
									Limits	RPD
Benzene	<0.00202	U	0.101	0.1109		mg/Kg		110	70 - 130	
Toluene	<0.00202	U	0.101	0.1034		mg/Kg		103	70 - 130	
Ethylbenzene	<0.00202	U	0.101	0.1187		mg/Kg		118	70 - 130	
m-Xylene & p-Xylene	<0.00404	U *	0.202	0.2456		mg/Kg		122	70 - 130	
o-Xylene	<0.00202	U	0.101	0.1158		mg/Kg		115	70 - 130	

Surrogate	MS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	125		70 - 130
1,4-Difluorobenzene (Surr)	107		70 - 130

Lab Sample ID: 890-5939-1 MSD

Matrix: Solid

Analysis Batch: 70626

Client Sample ID: B E S 24 - 07

Prep Type: Total/NA

Prep Batch: 70640

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
									Limits	RPD		
Benzene	<0.00202	U	0.0994	0.1048		mg/Kg		105	70 - 130	6		35
Toluene	<0.00202	U	0.0994	0.09392		mg/Kg		94	70 - 130	10		35
Ethylbenzene	<0.00202	U	0.0994	0.1074		mg/Kg		108	70 - 130	10		35
m-Xylene & p-Xylene	<0.00404	U *	0.199	0.2288		mg/Kg		115	70 - 130	7		35
o-Xylene	<0.00202	U	0.0994	0.1084		mg/Kg		109	70 - 130	7		35

Surrogate	MSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	128		70 - 130
1,4-Difluorobenzene (Surr)	115		70 - 130

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

Lab Sample ID: MB 880-70655/1-A

Matrix: Solid

Analysis Batch: 70619

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 70655

Analyte	MB		RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0	mg/Kg		01/11/24 13:50	01/11/24 20:57	1

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QC Sample Results

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

Job ID: 890-5939-1
SDG: 23 - E - 05485

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

Lab Sample ID: MB 880-70655/1-A
Matrix: Solid
Analysis Batch: 70619

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 70655

Analyte	MB	MB	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		01/11/24 13:50	01/11/24 20:57	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		01/11/24 13:50	01/11/24 20:57	1
Surrogate	MB	MB	Limits			Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier						
1-Chlorooctane	133	S1+	70 - 130			01/11/24 13:50	01/11/24 20:57	1
o-Terphenyl	155	S1+	70 - 130			01/11/24 13:50	01/11/24 20:57	1

Lab Sample ID: LCS 880-70655/2-A
Matrix: Solid
Analysis Batch: 70619

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 70655

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	1000	815.7		mg/Kg		82	70 - 130
Diesel Range Organics (Over C10-C28)	1000	986.4		mg/Kg		99	70 - 130
Surrogate		LCS	LCS				
		%Recovery	Qualifier				
1-Chlorooctane		130					70 - 130
o-Terphenyl		141	S1+				70 - 130

Lab Sample ID: LCSD 880-70655/3-A
Matrix: Solid
Analysis Batch: 70619

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 70655

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	1000	891.3		mg/Kg		89	70 - 130	9	20
Diesel Range Organics (Over C10-C28)	1000	968.6		mg/Kg		97	70 - 130	2	20
Surrogate		LCSD	LCSD						
		%Recovery	Qualifier						
1-Chlorooctane		99					70 - 130		
o-Terphenyl		113					70 - 130		

Lab Sample ID: 890-5929-A-3-H MS
Matrix: Solid
Analysis Batch: 70619

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 70655

Analyte	Sample	Sample	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
	Result	Qualifier							
Gasoline Range Organics (GRO)-C6-C10	<49.6	U	1010	1297		mg/Kg		126	70 - 130
Diesel Range Organics (Over C10-C28)	<49.6	U	1010	883.9		mg/Kg		85	70 - 130
Surrogate	MS	MS							
	%Recovery	Qualifier							
1-Chlorooctane	113							70 - 130	
o-Terphenyl	104							70 - 130	

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QC Sample Results

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

Job ID: 890-5939-1
SDG: 23 - E - 05485

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

Lab Sample ID: 890-5929-A-3-I MSD

Matrix: Solid

Analysis Batch: 70619

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 70655

	Sample	Sample	Spike	MSD	MSD			%Rec		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline Range Organics (GRO)-C6-C10	<49.6	U	1010	1322		mg/Kg		128	70 - 130	2	20
Diesel Range Organics (Over C10-C28)	<49.6	U	1010	908.2		mg/Kg		87	70 - 130	3	20
	MSD	MSD									
Surrogate	%Recovery	Qualifier	Limits								
1-Chlorooctane	115		70 - 130								
o-Terphenyl	106		70 - 130								

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-70612/1-A

Matrix: Solid

Analysis Batch: 70696

Client Sample ID: Method Blank

Prep Type: Soluble

Analyte	MB	MB	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Chloride	<5.00	U	5.00	mg/Kg			01/11/24 21:48	1

Lab Sample ID: LCS 880-70612/2-A

Matrix: Solid

Analysis Batch: 70696

Client Sample ID: Lab Control Sample

Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	250	248.4		mg/Kg		99	90 - 110

Lab Sample ID: LCSD 880-70612/3-A

Matrix: Solid

Analysis Batch: 70696

Client Sample ID: Lab Control Sample Dup

Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec	RPD	RPD
							Limits	RPD	Limit
Chloride	250	248.8		mg/Kg		100	90 - 110	0	20

Lab Sample ID: 880-37779-A-58-E MS

Matrix: Solid

Analysis Batch: 70696

Client Sample ID: Matrix Spike

Prep Type: Soluble

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec		
	Result	Qualifier	Added	Result	Qualifier				Limits		
Chloride	89.1	F1	249	311.2	F1	mg/Ka		89	90 - 110		

Lab Sample ID: 880-37779-A-58-F MSD

Matrix: Solid

Analysis Batch: 70696

Client Sample ID: Matrix Spike Duplicate

Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	89.1	F1	249	312.6		mg/Kg		90	90 - 110	0	20

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QC Association Summary

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

Job ID: 890-5939-1
SDG: 23 - E - 05485

GC VOA

Prep Batch: 70580

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-70580/5-A	Method Blank	Total/NA	Solid	5035	

Analysis Batch: 70626

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5939-1	B E S 24 - 07	Total/NA	Solid	8021B	70640
890-5939-2	B E S 24 - 09	Total/NA	Solid	8021B	70640
890-5939-3	B E S 24 - 10	Total/NA	Solid	8021B	70640
MB 880-70580/5-A	Method Blank	Total/NA	Solid	8021B	70580
MB 880-70640/5-A	Method Blank	Total/NA	Solid	8021B	70640
LCS 880-70640/1-A	Lab Control Sample	Total/NA	Solid	8021B	70640
LCSD 880-70640/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	70640
890-5939-1 MS	B E S 24 - 07	Total/NA	Solid	8021B	70640
890-5939-1 MSD	B E S 24 - 07	Total/NA	Solid	8021B	70640

Prep Batch: 70640

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5939-1	B E S 24 - 07	Total/NA	Solid	5035	
890-5939-2	B E S 24 - 09	Total/NA	Solid	5035	
890-5939-3	B E S 24 - 10	Total/NA	Solid	5035	
MB 880-70640/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-70640/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-70640/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-5939-1 MS	B E S 24 - 07	Total/NA	Solid	5035	
890-5939-1 MSD	B E S 24 - 07	Total/NA	Solid	5035	

Analysis Batch: 70770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5939-1	B E S 24 - 07	Total/NA	Solid	Total BTEX	
890-5939-2	B E S 24 - 09	Total/NA	Solid	Total BTEX	
890-5939-3	B E S 24 - 10	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 70619

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5939-1	B E S 24 - 07	Total/NA	Solid	8015B NM	70655
890-5939-2	B E S 24 - 09	Total/NA	Solid	8015B NM	70655
890-5939-3	B E S 24 - 10	Total/NA	Solid	8015B NM	70655
MB 880-70655/1-A	Method Blank	Total/NA	Solid	8015B NM	70655
LCS 880-70655/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	70655
LCSD 880-70655/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	70655
890-5929-A-3-H MS	Matrix Spike	Total/NA	Solid	8015B NM	70655
890-5929-A-3-I MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	70655

Prep Batch: 70655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5939-1	B E S 24 - 07	Total/NA	Solid	8015NM Prep	
890-5939-2	B E S 24 - 09	Total/NA	Solid	8015NM Prep	
890-5939-3	B E S 24 - 10	Total/NA	Solid	8015NM Prep	
MB 880-70655/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-70655/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	

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QC Association Summary

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

Job ID: 890-5939-1
SDG: 23 - E - 05485

GC Semi VOA (Continued)

Prep Batch: 70655 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 880-70655/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-5929-A-3-H MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-5929-A-3-I MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 70743

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5939-1	B E S 24 - 07	Total/NA	Solid	8015 NM	
890-5939-2	B E S 24 - 09	Total/NA	Solid	8015 NM	
890-5939-3	B E S 24 - 10	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 70612

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5939-1	B E S 24 - 07	Soluble	Solid	DI Leach	
890-5939-2	B E S 24 - 09	Soluble	Solid	DI Leach	
890-5939-3	B E S 24 - 10	Soluble	Solid	DI Leach	
MB 880-70612/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-70612/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-70612/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
880-37779-A-58-E MS	Matrix Spike	Soluble	Solid	DI Leach	
880-37779-A-58-F MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 70696

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5939-1	B E S 24 - 07	Soluble	Solid	300.0	70612
890-5939-2	B E S 24 - 09	Soluble	Solid	300.0	70612
890-5939-3	B E S 24 - 10	Soluble	Solid	300.0	70612
MB 880-70612/1-A	Method Blank	Soluble	Solid	300.0	70612
LCS 880-70612/2-A	Lab Control Sample	Soluble	Solid	300.0	70612
LCSD 880-70612/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	70612
880-37779-A-58-E MS	Matrix Spike	Soluble	Solid	300.0	70612
880-37779-A-58-F MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	70612

Lab Chronicle

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

Job ID: 890-5939-1
SDG: 23 - E - 05485

Client Sample ID: B E S 24 - 07
Date Collected: 01/09/24 09:45
Date Received: 01/10/24 08:55

Lab Sample ID: 890-5939-1
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			4.95 g	5 mL	70640	01/11/24 12:30	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	70626	01/11/24 21:59	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			70770	01/11/24 21:59	SM	EET MID
Total/NA	Analysis	8015 NM		1			70743	01/11/24 23:30	SM	EET MID
Total/NA	Prep	8015NM Prep			9.97 g	10 mL	70655	01/11/24 13:50	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	70619	01/11/24 23:30	SM	EET MID
Soluble	Leach	DI Leach			5.03 g	50 mL	70612	01/10/24 17:01	SA	EET MID
Soluble	Analysis	300.0		10			70696	01/11/24 23:00	CH	EET MID

Client Sample ID: B E S 24 - 09
Date Collected: 01/09/24 13:20
Date Received: 01/10/24 08:55

Lab Sample ID: 890-5939-2
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			4.98 g	5 mL	70640	01/11/24 12:30	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	70626	01/11/24 22:20	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			70770	01/11/24 22:20	SM	EET MID
Total/NA	Analysis	8015 NM		1			70743	01/11/24 23:51	SM	EET MID
Total/NA	Prep	8015NM Prep			9.98 g	10 mL	70655	01/11/24 13:50	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	70619	01/11/24 23:51	SM	EET MID
Soluble	Leach	DI Leach			4.95 g	50 mL	70612	01/10/24 17:01	SA	EET MID
Soluble	Analysis	300.0		20			70696	01/11/24 23:05	CH	EET MID

Client Sample ID: B E S 24 - 10
Date Collected: 01/09/24 13:25
Date Received: 01/10/24 08:55

Lab Sample ID: 890-5939-3
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			5.01 g	5 mL	70640	01/11/24 12:30	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	70626	01/11/24 22:40	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			70770	01/11/24 22:40	SM	EET MID
Total/NA	Analysis	8015 NM		1			70743	01/12/24 00:14	SM	EET MID
Total/NA	Prep	8015NM Prep			9.90 g	10 mL	70655	01/11/24 13:50	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	70619	01/12/24 00:14	SM	EET MID
Soluble	Leach	DI Leach			4.98 g	50 mL	70612	01/10/24 17:01	SA	EET MID
Soluble	Analysis	300.0		20			70696	01/11/24 23:10	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 BS WEST CTB

Job ID: 890-5939-1
SDG: 23 - E - 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 BS WEST CTB

Job ID: 890-5939-1
SDG: 23 - E - 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 BS WEST CTB

Job ID: 890-5939-1
SDG: 23 - E - 05485

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-5939-1	B E S 24 - 07	Solid	01/09/24 09:45	01/10/24 08:55	0.5'
890-5939-2	B E S 24 - 09	Solid	01/09/24 13:20	01/10/24 08:55	0.5'
890-5939-3	B E S 24 - 10	Solid	01/09/24 13:25	01/10/24 08:55	0.5'

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- 13
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Login Sample Receipt Checklist

Client: Vertex

Job Number: 890-5939-1

SDG Number: 23 - E - 05485

Login Number: 5939
List Number: 1
Creator: Bruns, Shannon

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: 890-5939-1
SDG Number: 23 - E - 05485

Login Number: 5939
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 01/11/24 11:21 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	



Environment Testing

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ANALYTICAL REPORT

PREPARED FOR

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

Generated 1/19/2024 2:13:46 PM

JOB DESCRIPTION

PLU 29 BIG SINK WEST CTB
23E-05485

JOB NUMBER

890-5975-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220



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



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1/19/2024 2:13:46 PM

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

Client: Vertex
Project/Site: PLU 29 BIG SINK WEST CTB

Laboratory Job ID: 890-5975-1
SDG: 23E-05485

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Definitions/Glossary

Client: Vertex
Project/Site: PLU 29 BIG SINK WEST CTB

Job ID: 890-5975-1
SDG: 23E-05485

Qualifiers

GC VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

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

HPLC/IC

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
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
Project: PLU 29 BIG SINK WEST CTB

Job ID: 890-5975-1

Job ID: 890-5975-1

Eurofins Carlsbad

Job Narrative 890-5975-1

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 1/16/2024 9:33 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 -7.8°C

Receipt Exceptions

The following samples were received and analyzed from an unpreserved bulk soil jar: BES 24 - 13 (890-5975-1), BES 24 - 14 (890-5975-2), BES 24 - 15 (890-5975-3) and BES 24 - 16 (890-5975-4).

GC VOA

Method 8021B: The surrogate recovery for the blank associated with preparation batch 880-71092 and analytical batch 880-71087 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.

GC Semi VOA

Method 8015MOD_NM: Surrogate recovery for the following samples were outside control limits: (880-38036-A-1-E), (880-38036-A-1-F MS) and (880-38036-A-1-G MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015MOD_NM: Surrogate recovery for the following samples were outside control limits: (880-38105-A-13-B MDLV) and (880-38105-A-14-B MDLV). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015MOD_NM: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-71122 and analytical batch 880-71082 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 8015MOD_NM: The continuing calibration verification (CCV) associated with batch 880-71082 recovered below the lower 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 880-71082/47).

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

HPLC/IC

Method 300_ORGFM_28D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 880-71073 and analytical batch 880-71091 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

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

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINK WEST CTB

Job ID: 890-5975-1
SDG: 23E-05485

Client Sample ID: BES 24 - 13

Lab Sample ID: 890-5975-1

Date Collected: 01/12/24 09:20

Matrix: Solid

Date Received: 01/16/24 09:33

Sample Depth: 0.5'

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		01/18/24 09:37	01/18/24 11:56	1
Toluene	<0.00199	U	0.00199	mg/Kg		01/18/24 09:37	01/18/24 11:56	1
Ethylbenzene	<0.00199	U	0.00199	mg/Kg		01/18/24 09:37	01/18/24 11:56	1
m-Xylene & p-Xylene	<0.00398	U	0.00398	mg/Kg		01/18/24 09:37	01/18/24 11:56	1
o-Xylene	<0.00199	U	0.00199	mg/Kg		01/18/24 09:37	01/18/24 11:56	1
Xylenes, Total	<0.00398	U	0.00398	mg/Kg		01/18/24 09:37	01/18/24 11:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	85		70 - 130	01/18/24 09:37	01/18/24 11:56	1
1,4-Difluorobenzene (Surr)	110		70 - 130	01/18/24 09:37	01/18/24 11:56	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			01/18/24 11:56	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			01/18/24 20:43	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	49.7	mg/Kg		01/18/24 13:49	01/18/24 20:43	1
Diesel Range Organics (Over C10-C28)	<49.7	U	49.7	mg/Kg		01/18/24 13:49	01/18/24 20:43	1
Oil Range Organics (Over C28-C36)	<49.7	U	49.7	mg/Kg		01/18/24 13:49	01/18/24 20:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	77		70 - 130	01/18/24 13:49	01/18/24 20:43	1
o-Terphenyl	78		70 - 130	01/18/24 13:49	01/18/24 20:43	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2420		50.4	mg/Kg			01/18/24 09:19	10

Client Sample ID: BES 24 - 14

Lab Sample ID: 890-5975-2

Date Collected: 01/12/24 09:25

Matrix: Solid

Date Received: 01/16/24 09:33

Sample Depth: 0.5'

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		01/18/24 09:37	01/18/24 12:17	1
Toluene	<0.00200	U	0.00200	mg/Kg		01/18/24 09:37	01/18/24 12:17	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		01/18/24 09:37	01/18/24 12:17	1
m-Xylene & p-Xylene	<0.00399	U	0.00399	mg/Kg		01/18/24 09:37	01/18/24 12:17	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		01/18/24 09:37	01/18/24 12:17	1
Xylenes, Total	<0.00399	U	0.00399	mg/Kg		01/18/24 09:37	01/18/24 12:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		70 - 130	01/18/24 09:37	01/18/24 12:17	1

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINK WEST CTB

Job ID: 890-5975-1
SDG: 23E-05485

Client Sample ID: BES 24 - 14

Lab Sample ID: 890-5975-2

Date Collected: 01/12/24 09:25

Matrix: Solid

Date Received: 01/16/24 09:33

Sample Depth: 0.5'

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	113		70 - 130	01/18/24 09:37	01/18/24 12:17	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			01/18/24 12:17	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			01/18/24 21:03	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		01/18/24 13:49	01/18/24 21:03	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9	mg/Kg		01/18/24 13:49	01/18/24 21:03	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9	mg/Kg		01/18/24 13:49	01/18/24 21:03	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	84		70 - 130			01/18/24 13:49	01/18/24 21:03	1
o-Terphenyl	85		70 - 130			01/18/24 13:49	01/18/24 21:03	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2320		49.7	mg/Kg			01/18/24 09:34	10

Client Sample ID: BES 24 - 15

Lab Sample ID: 890-5975-3

Date Collected: 01/12/24 12:30

Matrix: Solid

Date Received: 01/16/24 09:33

Sample Depth: 0.5'

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		01/18/24 09:37	01/18/24 12:37	1
Toluene	<0.00198	U	0.00198	mg/Kg		01/18/24 09:37	01/18/24 12:37	1
Ethylbenzene	<0.00198	U	0.00198	mg/Kg		01/18/24 09:37	01/18/24 12:37	1
m-Xylene & p-Xylene	<0.00397	U	0.00397	mg/Kg		01/18/24 09:37	01/18/24 12:37	1
o-Xylene	<0.00198	U	0.00198	mg/Kg		01/18/24 09:37	01/18/24 12:37	1
Xylenes, Total	<0.00397	U	0.00397	mg/Kg		01/18/24 09:37	01/18/24 12:37	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		70 - 130			01/18/24 09:37	01/18/24 12:37	1
1,4-Difluorobenzene (Surr)	112		70 - 130			01/18/24 09:37	01/18/24 12:37	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00397	U	0.00397	mg/Kg			01/18/24 12:37	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.3	U	50.3	mg/Kg			01/18/24 21:24	1

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINK WEST CTB

Job ID: 890-5975-1
SDG: 23E-05485

Client Sample ID: BES 24 - 15

Lab Sample ID: 890-5975-3

Date Collected: 01/12/24 12:30

Matrix: Solid

Date Received: 01/16/24 09:33

Sample Depth: 0.5'

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	<50.3	U	50.3	mg/Kg		01/18/24 13:49	01/18/24 21:24	1	
Diesel Range Organics (Over C10-C28)	<50.3	U	50.3	mg/Kg		01/18/24 13:49	01/18/24 21:24	1	
Oil Range Organics (Over C28-C36)	<50.3	U	50.3	mg/Kg		01/18/24 13:49	01/18/24 21:24	1	
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
1-Chlorooctane	75		70 - 130			01/18/24 13:49	01/18/24 21:24	1	
o-Terphenyl	74		70 - 130			01/18/24 13:49	01/18/24 21:24	1	

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble									
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Chloride	3470		49.6	mg/Kg			01/18/24 09:39	10	

Client Sample ID: BES 24 - 16

Lab Sample ID: 890-5975-4

Date Collected: 01/12/24 12:35

Matrix: Solid

Date Received: 01/16/24 09:33

Sample Depth: 0.5'

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		01/18/24 09:37	01/18/24 12:58	1	
Toluene	<0.00199	U	0.00199	mg/Kg		01/18/24 09:37	01/18/24 12:58	1	
Ethylbenzene	<0.00199	U	0.00199	mg/Kg		01/18/24 09:37	01/18/24 12:58	1	
m-Xylene & p-Xylene	<0.00398	U	0.00398	mg/Kg		01/18/24 09:37	01/18/24 12:58	1	
o-Xylene	<0.00199	U	0.00199	mg/Kg		01/18/24 09:37	01/18/24 12:58	1	
Xylenes, Total	<0.00398	U	0.00398	mg/Kg		01/18/24 09:37	01/18/24 12:58	1	
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
4-Bromofluorobenzene (Surr)	102		70 - 130			01/18/24 09:37	01/18/24 12:58	1	
1,4-Difluorobenzene (Surr)	105		70 - 130			01/18/24 09:37	01/18/24 12:58	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			01/18/24 12:58	1	

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC)									
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Total TPH	510		50.5	mg/Kg			01/18/24 21:45	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	<50.5	U	50.5	mg/Kg		01/18/24 13:49	01/18/24 21:45	1	
Diesel Range Organics (Over C10-C28)	510		50.5	mg/Kg		01/18/24 13:49	01/18/24 21:45	1	
Oil Range Organics (Over C28-C36)	<50.5	U	50.5	mg/Kg		01/18/24 13:49	01/18/24 21:45	1	
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
1-Chlorooctane	72		70 - 130			01/18/24 13:49	01/18/24 21:45	1	
o-Terphenyl	74		70 - 130			01/18/24 13:49	01/18/24 21:45	1	

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINK WEST CTB

Job ID: 890-5975-1
SDG: 23E-05485

Client Sample ID: BES 24 - 16
Date Collected: 01/12/24 12:35
Date Received: 01/16/24 09:33
Sample Depth: 0.5'

Lab Sample ID: 890-5975-4
Matrix: Solid

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble									
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Chloride	6060		99.4	mg/Kg			01/18/24 09:45	20	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Surrogate Summary

Client: Vertex
Project/Site: PLU 29 BIG SINK WEST CTB

Job ID: 890-5975-1
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)
890-5975-1	BES 24 - 13	85	110
890-5975-1 MS	BES 24 - 13	95	97
890-5975-1 MSD	BES 24 - 13	107	102
890-5975-2	BES 24 - 14	98	113
890-5975-3	BES 24 - 15	101	112
890-5975-4	BES 24 - 16	102	105
LCS 880-711092/1-A	Lab Control Sample	93	104
LCSD 880-711092/2-A	Lab Control Sample Dup	103	98
MB 880-711092/5-A	Method Blank	125	146 S1+
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)
880-38036-A-1-F MS	Matrix Spike	75	69 S1-
880-38036-A-1-G MSD	Matrix Spike Duplicate	76	69 S1-
890-5975-1	BES 24 - 13	77	78
890-5975-2	BES 24 - 14	84	85
890-5975-3	BES 24 - 15	75	74
890-5975-4	BES 24 - 16	72	74
LCS 880-71122/2-A	Lab Control Sample	95	114
LCSD 880-71122/3-A	Lab Control Sample Dup	88	104
MB 880-71122/1-A	Method Blank	97	103
Surrogate Legend			
1CO = 1-Chlorooctane			
OTPH = o-Terphenyl			

QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINK WEST CTB

Job ID: 890-5975-1
SDG: 23E-05485

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-71092/5-A					Client Sample ID: Method Blank				
Matrix: Solid					Prep Type: Total/NA				
Analysis Batch: 71087					Prep Batch: 71092				
Analyte	MB	MB	RL	Unit	D	Prepared	Analyzed	Dil Fac	
	Result	Qualifier							
Benzene	<0.00200	U	0.00200	mg/Kg		01/18/24 09:37	01/18/24 11:28	1	
Toluene	<0.00200	U	0.00200	mg/Kg		01/18/24 09:37	01/18/24 11:28	1	
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		01/18/24 09:37	01/18/24 11:28	1	
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		01/18/24 09:37	01/18/24 11:28	1	
o-Xylene	<0.00200	U	0.00200	mg/Kg		01/18/24 09:37	01/18/24 11:28	1	
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		01/18/24 09:37	01/18/24 11:28	1	
Surrogate	MB	MB	Limits			Prepared	Analyzed	Dil Fac	
	%Recovery	Qualifier							
4-Bromofluorobenzene (Surr)	125		70 - 130			01/18/24 09:37	01/18/24 11:28	1	
1,4-Difluorobenzene (Surr)	146	S1+	70 - 130			01/18/24 09:37	01/18/24 11:28	1	

Lab Sample ID: LCS 880-71092/1-A					Client Sample ID: Lab Control Sample				
Matrix: Solid					Prep Type: Total/NA				
Analysis Batch: 71087					Prep Batch: 71092				
Analyte		Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits	
Benzene		0.100	0.1076		mg/Kg		108	70 - 130	
Toluene		0.100	0.1029		mg/Kg		103	70 - 130	
Ethylbenzene		0.100	0.09780		mg/Kg		98	70 - 130	
m-Xylene & p-Xylene		0.200	0.2105		mg/Kg		105	70 - 130	
o-Xylene		0.100	0.1046		mg/Kg		105	70 - 130	
Surrogate	LCS %Recovery	LCS Qualifier	Limits						
4-Bromofluorobenzene (Surr)	93		70 - 130						
1,4-Difluorobenzene (Surr)	104		70 - 130						

Lab Sample ID: LCSD 880-71092/2-A					Client Sample ID: Lab Control Sample Dup				
Matrix: Solid					Prep Type: Total/NA				
Analysis Batch: 71087					Prep Batch: 71092				
Analyte		Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD Limit
Benzene		0.100	0.1026		mg/Kg		103	70 - 130	5 35
Toluene		0.100	0.09557		mg/Kg		96	70 - 130	7 35
Ethylbenzene		0.100	0.09616		mg/Kg		96	70 - 130	2 35
m-Xylene & p-Xylene		0.200	0.2111		mg/Kg		106	70 - 130	0 35
o-Xylene		0.100	0.1054		mg/Kg		105	70 - 130	1 35
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits						
4-Bromofluorobenzene (Surr)	103		70 - 130						
1,4-Difluorobenzene (Surr)	98		70 - 130						

Lab Sample ID: 890-5975-1 MS					Client Sample ID: BES 24 - 13				
Matrix: Solid					Prep Type: Total/NA				
Analysis Batch: 71087					Prep Batch: 71092				
Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	<0.00199	U	0.0996	0.1026		mg/Kg		103	70 - 130
Toluene	<0.00199	U	0.0996	0.09372		mg/Kg		94	70 - 130

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINK WEST CTB

Job ID: 890-5975-1
SDG: 23E-05485

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

Lab Sample ID: 890-5975-1 MS
Matrix: Solid
Analysis Batch: 71087

Client Sample ID: BES 24 - 13
Prep Type: Total/NA
Prep Batch: 71092

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00199	U	0.0996	0.08595		mg/Kg		86	70 - 130
m-Xylene & p-Xylene	<0.00398	U	0.199	0.1735		mg/Kg		87	70 - 130
o-Xylene	<0.00199	U	0.0996	0.09429		mg/Kg		94	70 - 130
Surrogate	MS %Recovery	MS Qualifier	Limits						
4-Bromofluorobenzene (Surr)	95		70 - 130						
1,4-Difluorobenzene (Surr)	97		70 - 130						

Lab Sample ID: 890-5975-1 MSD
Matrix: Solid
Analysis Batch: 71087

Client Sample ID: BES 24 - 13
Prep Type: Total/NA
Prep Batch: 71092

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00199	U	0.0990	0.1004		mg/Kg		101	70 - 130	2	35
Toluene	<0.00199	U	0.0990	0.09078		mg/Kg		92	70 - 130	3	35
Ethylbenzene	<0.00199	U	0.0990	0.09219		mg/Kg		93	70 - 130	7	35
m-Xylene & p-Xylene	<0.00398	U	0.198	0.2034		mg/Kg		103	70 - 130	16	35
o-Xylene	<0.00199	U	0.0990	0.09806		mg/Kg		98	70 - 130	4	35
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
4-Bromofluorobenzene (Surr)	107		70 - 130								
1,4-Difluorobenzene (Surr)	102		70 - 130								

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

Lab Sample ID: MB 880-71122/1-A
Matrix: Solid
Analysis Batch: 71082

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 71122

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		01/18/24 13:49	01/18/24 18:37	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		01/18/24 13:49	01/18/24 18:37	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		01/18/24 13:49	01/18/24 18:37	1
Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac		
1-Chlorooctane	97		70 - 130	01/18/24 13:49	01/18/24 18:37	1		
o-Terphenyl	103		70 - 130	01/18/24 13:49	01/18/24 18:37	1		

Lab Sample ID: LCS 880-71122/2-A
Matrix: Solid
Analysis Batch: 71082

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 71122

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	1000	925.5		mg/Kg		93	70 - 130
Diesel Range Organics (Over C10-C28)	1000	912.6		mg/Kg		91	70 - 130

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINK WEST CTB

Job ID: 890-5975-1
SDG: 23E-05485

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

Lab Sample ID: LCS 880-71122/2-A
Matrix: Solid
Analysis Batch: 71082

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 71122

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	95		70 - 130
o-Terphenyl	114		70 - 130

Lab Sample ID: LCSD 880-71122/3-A
Matrix: Solid
Analysis Batch: 71082

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 71122

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	962.9		mg/Kg		96	70 - 130	4	20
Diesel Range Organics (Over C10-C28)			1000	906.8		mg/Kg		91	70 - 130	1	20

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	88		70 - 130
o-Terphenyl	104		70 - 130

Lab Sample ID: 880-38036-A-1-F MS
Matrix: Solid
Analysis Batch: 71082

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 71122

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	<50.1	U	1010	738.9		mg/Kg		70	70 - 130		
Diesel Range Organics (Over C10-C28)	<50.1	U F1	1010	690.4	F1	mg/Kg		65	70 - 130		

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	75		70 - 130
o-Terphenyl	69	S1-	70 - 130

Lab Sample ID: 880-38036-A-1-G MSD
Matrix: Solid
Analysis Batch: 71082

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 71122

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	<50.1	U	1010	748.5		mg/Kg		71	70 - 130	1	20
Diesel Range Organics (Over C10-C28)	<50.1	U F1	1010	691.6	F1	mg/Kg		65	70 - 130	0	20

	MSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	76		70 - 130
o-Terphenyl	69	S1-	70 - 130

QC Sample Results

Client: Vertex
Project/Site: PLU 29 BIG SINK WEST CTB

Job ID: 890-5975-1
SDG: 23E-05485

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-71073/1-A Matrix: Solid Analysis Batch: 71091										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			01/18/24 08:12	1			

Lab Sample ID: LCS 880-71073/2-A Matrix: Solid Analysis Batch: 71091										Client Sample ID: Lab Control Sample Prep Type: Soluble	
Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	229.7		mg/Kg		92	90 - 110		

Lab Sample ID: LCSD 880-71073/3-A Matrix: Solid Analysis Batch: 71091										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	230.9		mg/Kg		92	90 - 110	1	20

Lab Sample ID: 880-38036-A-1-C MS Matrix: Solid Analysis Batch: 71091										Client Sample ID: Matrix Spike Prep Type: Soluble	
Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	393	F1	249	598.6	F1	mg/Kg		82	90 - 110		

Lab Sample ID: 880-38036-A-1-D MSD Matrix: Solid Analysis Batch: 71091										Client Sample ID: Matrix Spike Duplicate Prep Type: Soluble	
Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	393	F1	249	600.4	F1	mg/Kg		83	90 - 110	0	20

QC Association Summary

Client: Vertex
Project/Site: PLU 29 BIG SINK WEST CTB

Job ID: 890-5975-1
SDG: 23E-05485

GC VOA

Analysis Batch: 71087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5975-1	BES 24 - 13	Total/NA	Solid	8021B	71092
890-5975-2	BES 24 - 14	Total/NA	Solid	8021B	71092
890-5975-3	BES 24 - 15	Total/NA	Solid	8021B	71092
890-5975-4	BES 24 - 16	Total/NA	Solid	8021B	71092
MB 880-71092/5-A	Method Blank	Total/NA	Solid	8021B	71092
LCS 880-71092/1-A	Lab Control Sample	Total/NA	Solid	8021B	71092
LCSD 880-71092/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	71092
890-5975-1 MS	BES 24 - 13	Total/NA	Solid	8021B	71092
890-5975-1 MSD	BES 24 - 13	Total/NA	Solid	8021B	71092

Prep Batch: 71092

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5975-1	BES 24 - 13	Total/NA	Solid	5035	
890-5975-2	BES 24 - 14	Total/NA	Solid	5035	
890-5975-3	BES 24 - 15	Total/NA	Solid	5035	
890-5975-4	BES 24 - 16	Total/NA	Solid	5035	
MB 880-71092/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-71092/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-71092/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-5975-1 MS	BES 24 - 13	Total/NA	Solid	5035	
890-5975-1 MSD	BES 24 - 13	Total/NA	Solid	5035	

Analysis Batch: 71221

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5975-1	BES 24 - 13	Total/NA	Solid	Total BTEX	
890-5975-2	BES 24 - 14	Total/NA	Solid	Total BTEX	
890-5975-3	BES 24 - 15	Total/NA	Solid	Total BTEX	
890-5975-4	BES 24 - 16	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 71082

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5975-1	BES 24 - 13	Total/NA	Solid	8015B NM	71122
890-5975-2	BES 24 - 14	Total/NA	Solid	8015B NM	71122
890-5975-3	BES 24 - 15	Total/NA	Solid	8015B NM	71122
890-5975-4	BES 24 - 16	Total/NA	Solid	8015B NM	71122
MB 880-71122/1-A	Method Blank	Total/NA	Solid	8015B NM	71122
LCS 880-71122/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	71122
LCSD 880-71122/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	71122
880-38036-A-1-F MS	Matrix Spike	Total/NA	Solid	8015B NM	71122
880-38036-A-1-G MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	71122

Prep Batch: 71122

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5975-1	BES 24 - 13	Total/NA	Solid	8015NM Prep	
890-5975-2	BES 24 - 14	Total/NA	Solid	8015NM Prep	
890-5975-3	BES 24 - 15	Total/NA	Solid	8015NM Prep	
890-5975-4	BES 24 - 16	Total/NA	Solid	8015NM Prep	
MB 880-71122/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-71122/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	

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QC Association Summary

Client: Vertex
Project/Site: PLU 29 BIG SINK WEST CTB

Job ID: 890-5975-1
SDG: 23E-05485

GC Semi VOA (Continued)

Prep Batch: 71122 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 880-71122/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
880-38036-A-1-F MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
880-38036-A-1-G MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 71163

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5975-1	BES 24 - 13	Total/NA	Solid	8015 NM	
890-5975-2	BES 24 - 14	Total/NA	Solid	8015 NM	
890-5975-3	BES 24 - 15	Total/NA	Solid	8015 NM	
890-5975-4	BES 24 - 16	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 71073

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5975-1	BES 24 - 13	Soluble	Solid	DI Leach	
890-5975-2	BES 24 - 14	Soluble	Solid	DI Leach	
890-5975-3	BES 24 - 15	Soluble	Solid	DI Leach	
890-5975-4	BES 24 - 16	Soluble	Solid	DI Leach	
MB 880-71073/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-71073/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-71073/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
880-38036-A-1-C MS	Matrix Spike	Soluble	Solid	DI Leach	
880-38036-A-1-D MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 71091

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5975-1	BES 24 - 13	Soluble	Solid	300.0	71073
890-5975-2	BES 24 - 14	Soluble	Solid	300.0	71073
890-5975-3	BES 24 - 15	Soluble	Solid	300.0	71073
890-5975-4	BES 24 - 16	Soluble	Solid	300.0	71073
MB 880-71073/1-A	Method Blank	Soluble	Solid	300.0	71073
LCS 880-71073/2-A	Lab Control Sample	Soluble	Solid	300.0	71073
LCSD 880-71073/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	71073
880-38036-A-1-C MS	Matrix Spike	Soluble	Solid	300.0	71073
880-38036-A-1-D MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	71073

Lab Chronicle

Client: Vertex
Project/Site: PLU 29 BIG SINK WEST CTB

Job ID: 890-5975-1
SDG: 23E-05485

Client Sample ID: BES 24 - 13
Date Collected: 01/12/24 09:20
Date Received: 01/16/24 09:33

Lab Sample ID: 890-5975-1
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			5.03 g	5 mL	71092	01/18/24 09:37	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	71087	01/18/24 11:56	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			71221	01/18/24 11:56	SM	EET MID
Total/NA	Analysis	8015 NM		1			71163	01/18/24 20:43	SM	EET MID
Total/NA	Prep	8015NM Prep			10.06 g	10 mL	71122	01/18/24 13:49	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	71082	01/18/24 20:43	SM	EET MID
Soluble	Leach	DI Leach			4.96 g	50 mL	71073	01/17/24 15:48	SA	EET MID
Soluble	Analysis	300.0		10			71091	01/18/24 09:19	CH	EET MID

Client Sample ID: BES 24 - 14
Date Collected: 01/12/24 09:25
Date Received: 01/16/24 09:33

Lab Sample ID: 890-5975-2
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			5.01 g	5 mL	71092	01/18/24 09:37	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	71087	01/18/24 12:17	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			71221	01/18/24 12:17	SM	EET MID
Total/NA	Analysis	8015 NM		1			71163	01/18/24 21:03	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	71122	01/18/24 13:49	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	71082	01/18/24 21:03	SM	EET MID
Soluble	Leach	DI Leach			5.03 g	50 mL	71073	01/17/24 15:48	SA	EET MID
Soluble	Analysis	300.0		10			71091	01/18/24 09:34	CH	EET MID

Client Sample ID: BES 24 - 15
Date Collected: 01/12/24 12:30
Date Received: 01/16/24 09:33

Lab Sample ID: 890-5975-3
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			5.04 g	5 mL	71092	01/18/24 09:37	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	71087	01/18/24 12:37	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			71221	01/18/24 12:37	SM	EET MID
Total/NA	Analysis	8015 NM		1			71163	01/18/24 21:24	SM	EET MID
Total/NA	Prep	8015NM Prep			9.94 g	10 mL	71122	01/18/24 13:49	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	71082	01/18/24 21:24	SM	EET MID
Soluble	Leach	DI Leach			5.04 g	50 mL	71073	01/17/24 15:48	SA	EET MID
Soluble	Analysis	300.0		10			71091	01/18/24 09:39	CH	EET MID

Client Sample ID: BES 24 - 16
Date Collected: 01/12/24 12:35
Date Received: 01/16/24 09:33

Lab Sample ID: 890-5975-4
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			5.02 g	5 mL	71092	01/18/24 09:37	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	71087	01/18/24 12:58	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			71221	01/18/24 12:58	SM	EET MID

Eurofins Carlsbad

Lab Chronicle

Client: Vertex
Project/Site: PLU 29 BIG SINK WEST CTB

Job ID: 890-5975-1
SDG: 23E-05485

Client Sample ID: BES 24 - 16

Lab Sample ID: 890-5975-4

Date Collected: 01/12/24 12:35

Matrix: Solid

Date Received: 01/16/24 09:33

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8015 NM		1			71163	01/18/24 21:45	SM	EET MID
Total/NA	Prep	8015NM Prep			9.91 g	10 mL	71122	01/18/24 13:49	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	71082	01/18/24 21:45	SM	EET MID
Soluble	Leach	DI Leach			5.03 g	50 mL	71073	01/17/24 15:48	SA	EET MID
Soluble	Analysis	300.0		20			71091	01/18/24 09:45	CH	EET MID

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

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Accreditation/Certification Summary

Client: Vertex
Project/Site: PLU 29 BIG SINK WEST CTB

Job ID: 890-5975-1
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 BIG SINK WEST CTB

Job ID: 890-5975-1
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 BIG SINK WEST CTB

Job ID: 890-5975-1
SDG: 23E-05485

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-5975-1	BES 24 - 13	Solid	01/12/24 09:20	01/16/24 09:33	0.5'
890-5975-2	BES 24 - 14	Solid	01/12/24 09:25	01/16/24 09:33	0.5'
890-5975-3	BES 24 - 15	Solid	01/12/24 12:30	01/16/24 09:33	0.5'
890-5975-4	BES 24 - 16	Solid	01/12/24 12:35	01/16/24 09:33	0.5'

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Environment Testing
Xenco

Chain of Custody

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3334
El Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296
Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Work Order No: **181883100 1**

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Project Manager:	Chance Dixon	Bill to: (if different)	
Company Name:	Vortex	Company Name:	Garnett Gorum
Address:	onfile	Address:	xto onfile
City, State ZIP:		City, State ZIP:	
Phone:		Email:	

Project Name:	PLU 29 Big Sink West C1B	Turn Around	
Project Number:	23E-05485	<input type="checkbox"/> Routine <input checked="" type="checkbox"/> Rush	72
Project Location:	PLU 29	Due Date:	11/19/24
Sampler's Name:	Heuravon	TAT starts the day received by the lab, if received by 430pm	
P.O. #:		Temp Blank:	Yes No
		Year No	Thermometer ID: TUM00
		Yes No	Correction Factor: -0.2
		Yes No	Temperature Reading: -8.0
		Yes No	Corrected Temperature: -7.8

SAMPLE RECEIPT				ANALYSIS REQUEST				PRESERVATIVE CODES			
Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/Comp	# of Cont	Parameters	None: NO	DI Water: H ₂ O	Cool: Cool	MeOH: Me
BES 24-13	Soil	11/14/24	9:20	0.5	1	1		HCL: HC	HNO ₃ : HN	H ₂ SO ₄ : H ₂	NaOH: Na
BES 24-14	Soil	11/14/24	9:25	1	2	2		H ₃ PO ₄ : HP	NaHSO ₄ : NABIS		
BES 24-15	Soil	11/14/24	12:30	1	3	3		Na ₂ S ₂ O ₃ : NaSO ₃	Zn Acetate+NaOH: Zn		
BES 24-16	Soil	11/14/24	12:38	1	4	4		NaOH+Ascorbic Acid: SAPC			
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 SiO ₂ Na Sr Ti 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 Ti U	Hg: 1631 / 245.1 / 7470 / 7471

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Eurofins Xenco. Its affiliates and subcontractors. It assigns standard terms and conditions of service. Eurofins Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Eurofins Xenco. A minimum charge of \$85.00 will be applied to each project and a charge of \$5 for each sample submitted to Eurofins Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Heuravon Costa	Gorum	11/16/24
3	4	
5	6	

Revised Date 08/25/2020 Rev 2010.2

Login Sample Receipt Checklist

Client: Vertex

Job Number: 890-5975-1

SDG Number: 23E-05485

Login Number: 5975

List Number: 1

Creator: Bruns, Shannon

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: 890-5975-1

SDG Number: 23E-05485

Login Number: 5975
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 01/17/24 12:03 PM

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	



Environment Testing

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ANALYTICAL REPORT

PREPARED FOR

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

Generated 1/26/2024 4:23:14 PM

JOB DESCRIPTION

PLU 29 Big Sink West
23c-05485

JOB NUMBER

890-6015-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220



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



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

Client: Vertex
Project/Site: PLU 29 Big Sink West

Laboratory Job ID: 890-6015-1
SDG: 23c-05485

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Definitions/Glossary

Client: Vertex
Project/Site: PLU 29 Big Sink West

Job ID: 890-6015-1
SDG: 23c-05485

Qualifiers

GC VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high 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
F1	MS and/or MSD recovery exceeds control limits.
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
Project: PLU 29 Big Sink West

Job ID: 890-6015-1

Job ID: 890-6015-1

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Job Narrative 890-6015-1

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 1/23/2024 8:23 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 5.4°C

Receipt Exceptions

The following samples were received and analyzed from an unpreserved bulk soil jar: WES 24-05 (890-6015-1) and WES 24-06 (890-6015-2).

GC VOA

Method 8021B: Surrogate recovery for the following sample was outside control limits: (CCV 880-71559/20). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis 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

Method 300_ORGFM_28D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-71470 and analytical batch 880-71515 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.

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sink West

Job ID: 890-6015-1
SDG: 23c-05485

Client Sample ID: WES 24-05

Lab Sample ID: 890-6015-1

Date Collected: 01/22/24 14:30

Matrix: Solid

Date Received: 01/23/24 08:23

Sample Depth: 1

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		01/25/24 14:04	01/26/24 02:24	1
Toluene	<0.00199	U	0.00199	mg/Kg		01/25/24 14:04	01/26/24 02:24	1
Ethylbenzene	<0.00199	U **	0.00199	mg/Kg		01/25/24 14:04	01/26/24 02:24	1
m-Xylene & p-Xylene	<0.00398	U **	0.00398	mg/Kg		01/25/24 14:04	01/26/24 02:24	1
o-Xylene	<0.00199	U **	0.00199	mg/Kg		01/25/24 14:04	01/26/24 02:24	1
Xylenes, Total	<0.00398	U **	0.00398	mg/Kg		01/25/24 14:04	01/26/24 02:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		70 - 130	01/25/24 14:04	01/26/24 02:24	1
1,4-Difluorobenzene (Surr)	82		70 - 130	01/25/24 14:04	01/26/24 02:24	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			01/26/24 02:24	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	88.9		50.0	mg/Kg			01/26/24 03:39	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	<50.0	U	50.0	mg/Kg		01/25/24 08:57	01/26/24 03:39	1
Diesel Range Organics (Over C10-C28)	88.9		50.0	mg/Kg		01/25/24 08:57	01/26/24 03:39	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		01/25/24 08:57	01/26/24 03:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	87		70 - 130	01/25/24 08:57	01/26/24 03:39	1
o-Terphenyl	88		70 - 130	01/25/24 08:57	01/26/24 03:39	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	703		4.96	mg/Kg			01/24/24 17:18	1

Client Sample ID: WES 24-06

Lab Sample ID: 890-6015-2

Date Collected: 01/22/24 12:10

Matrix: Solid

Date Received: 01/23/24 08:23

Sample Depth: 1

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		01/25/24 14:04	01/26/24 02:44	1
Toluene	<0.00199	U	0.00199	mg/Kg		01/25/24 14:04	01/26/24 02:44	1
Ethylbenzene	<0.00199	U **	0.00199	mg/Kg		01/25/24 14:04	01/26/24 02:44	1
m-Xylene & p-Xylene	<0.00398	U **	0.00398	mg/Kg		01/25/24 14:04	01/26/24 02:44	1
o-Xylene	<0.00199	U **	0.00199	mg/Kg		01/25/24 14:04	01/26/24 02:44	1
Xylenes, Total	<0.00398	U **	0.00398	mg/Kg		01/25/24 14:04	01/26/24 02:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	86		70 - 130	01/25/24 14:04	01/26/24 02:44	1

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Client Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sink West

Job ID: 890-6015-1
SDG: 23c-05485

Client Sample ID: WES 24-06

Lab Sample ID: 890-6015-2

Date Collected: 01/22/24 12:10

Matrix: Solid

Date Received: 01/23/24 08:23

Sample Depth: 1

Method: SW846 8021B - Volatile Organic Compounds (GC) (Continued)									
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
1,4-Difluorobenzene (Surr)	78		70 - 130			01/25/24 14:04	01/26/24 02:44	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			01/26/24 02:44	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			01/26/24 04:01	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		01/25/24 08:57	01/26/24 04:01	1	
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8	mg/Kg		01/25/24 08:57	01/26/24 04:01	1	
Oil Range Organics (Over C28-C36)	<49.8	U	49.8	mg/Kg		01/25/24 08:57	01/26/24 04:01	1	
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
1-Chlorooctane	93		70 - 130			01/25/24 08:57	01/26/24 04:01	1	
o-Terphenyl	96		70 - 130			01/25/24 08:57	01/26/24 04:01	1	
Method: EPA 300.0 - Anions, Ion Chromatography - Soluble									
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Chloride	4790		49.9	mg/Kg			01/24/24 17:25	10	

Surrogate Summary

Client: Vertex
Project/Site: PLU 29 Big Sink West

Job ID: 890-6015-1
SDG: 23c-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)
880-38380-A-4-A MS	Matrix Spike	116	95
880-38380-A-4-B MSD	Matrix Spike Duplicate	112	125
890-6015-1	WES 24-05	87	82
890-6015-2	WES 24-06	86	78
LCS 880-71517/1-A	Lab Control Sample	118	113
LCSD 880-71517/2-A	Lab Control Sample Dup	114	110
MB 880-71461/5-A	Method Blank	74	93
MB 880-71517/5-A	Method Blank	74	87
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)
880-38285-A-101-F MS	Matrix Spike	92	86
880-38285-A-101-G MSD	Matrix Spike Duplicate	96	90
890-6015-1	WES 24-05	87	88
890-6015-2	WES 24-06	93	96
LCS 880-71494/2-A	Lab Control Sample	98	123
LCSD 880-71494/3-A	Lab Control Sample Dup	90	108
MB 880-71494/1-A	Method Blank	97	104
Surrogate Legend			
1CO = 1-Chlorooctane			
OTPH = o-Terphenyl			

QC Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sink West

Job ID: 890-6015-1
SDG: 23c-05485

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-71461/5-A						Client Sample ID: Method Blank		
Matrix: Solid						Prep Type: Total/NA		
Analysis Batch: 71559						Prep Batch: 71461		
Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		01/23/24 15:23	01/25/24 11:40	1
Toluene	<0.00200	U	0.00200	mg/Kg		01/23/24 15:23	01/25/24 11:40	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		01/23/24 15:23	01/25/24 11:40	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		01/23/24 15:23	01/25/24 11:40	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		01/23/24 15:23	01/25/24 11:40	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		01/23/24 15:23	01/25/24 11:40	1
Surrogate	MB %Recovery	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	74		70 - 130			01/23/24 15:23	01/25/24 11:40	1
1,4-Difluorobenzene (Surr)	93		70 - 130			01/23/24 15:23	01/25/24 11:40	1

Lab Sample ID: MB 880-71517/5-A						Client Sample ID: Method Blank		
Matrix: Solid						Prep Type: Total/NA		
Analysis Batch: 71559						Prep Batch: 71517		
Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		01/24/24 14:04	01/26/24 00:20	1
Toluene	<0.00200	U	0.00200	mg/Kg		01/24/24 14:04	01/26/24 00:20	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		01/24/24 14:04	01/26/24 00:20	1
m-Xylene & p-Xylene	<0.00399	U	0.00399	mg/Kg		01/24/24 14:04	01/26/24 00:20	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		01/24/24 14:04	01/26/24 00:20	1
Xylenes, Total	<0.00399	U	0.00399	mg/Kg		01/24/24 14:04	01/26/24 00:20	1
Surrogate	MB %Recovery	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	74		70 - 130			01/24/24 14:04	01/26/24 00:20	1
1,4-Difluorobenzene (Surr)	87		70 - 130			01/24/24 14:04	01/26/24 00:20	1

Lab Sample ID: LCS 880-71517/1-A						Client Sample ID: Lab Control Sample		
Matrix: Solid						Prep Type: Total/NA		
Analysis Batch: 71559						Prep Batch: 71517		
Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits	
Benzene	0.100	0.1218		mg/Kg		122	70 - 130	
Toluene	0.100	0.1126		mg/Kg		113	70 - 130	
Ethylbenzene	0.100	0.1341	*+	mg/Kg		134	70 - 130	
m-Xylene & p-Xylene	0.200	0.2659	*+	mg/Kg		133	70 - 130	
o-Xylene	0.100	0.1481	*+	mg/Kg		148	70 - 130	
Surrogate	LCS %Recovery	LCS Qualifier	Limits					
4-Bromofluorobenzene (Surr)	118		70 - 130					
1,4-Difluorobenzene (Surr)	113		70 - 130					

Lab Sample ID: LCSD 880-71517/2-A						Client Sample ID: Lab Control Sample Dup		
Matrix: Solid						Prep Type: Total/NA		
Analysis Batch: 71559						Prep Batch: 71517		
Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD Limit
Benzene	0.100	0.1153		mg/Kg		115	70 - 130	5 35

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sink West

Job ID: 890-6015-1
SDG: 23c-05485

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

Lab Sample ID: LCSD 880-71517/2-A

Matrix: Solid

Analysis Batch: 71559

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 71517

Analyte	Spike		LCSD		Unit	D	%Rec	%Rec		RPD
	Added	Result	Qualifier	Limit				Limits	RPD	
Toluene	0.100	0.1052			mg/Kg		105	70 - 130	7	35
Ethylbenzene	0.100	0.1168			mg/Kg		117	70 - 130	14	35
m-Xylene & p-Xylene	0.200	0.2334			mg/Kg		117	70 - 130	13	35
o-Xylene	0.100	0.1213			mg/Kg		121	70 - 130	20	35

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	114		70 - 130
1,4-Difluorobenzene (Surr)	110		70 - 130

Lab Sample ID: 880-38380-A-4-A MS

Matrix: Solid

Analysis Batch: 71559

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 71517

Analyte	Sample		Spike	MS		Unit	D	%Rec	%Rec	
	Result	Qualifier	Added	Result	Qualifier				Limits	RPD
Benzene	<0.00201	U	0.0996	0.09654		mg/Kg		97	70 - 130	
Toluene	<0.00201	U	0.0996	0.08790		mg/Kg		88	70 - 130	
Ethylbenzene	<0.00201	U *	0.0996	0.09146		mg/Kg		92	70 - 130	
m-Xylene & p-Xylene	<0.00402	U *	0.199	0.1768		mg/Kg		89	70 - 130	
o-Xylene	<0.00201	U *	0.0996	0.08824		mg/Kg		89	70 - 130	

Surrogate	MS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	116		70 - 130
1,4-Difluorobenzene (Surr)	95		70 - 130

Lab Sample ID: 880-38380-A-4-B MSD

Matrix: Solid

Analysis Batch: 71559

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 71517

Analyte	Sample		Spike	MSD		Unit	D	%Rec	%Rec		RPD
	Result	Qualifier	Added	Result	Qualifier				Limits	RPD	
Benzene	<0.00201	U	0.0994	0.1087		mg/Kg		109	70 - 130	12	35
Toluene	<0.00201	U	0.0994	0.09197		mg/Kg		92	70 - 130	5	35
Ethylbenzene	<0.00201	U *	0.0994	0.09820		mg/Kg		99	70 - 130	7	35
m-Xylene & p-Xylene	<0.00402	U *	0.199	0.1906		mg/Kg		96	70 - 130	8	35
o-Xylene	<0.00201	U *	0.0994	0.09673		mg/Kg		97	70 - 130	9	35

Surrogate	MSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	112		70 - 130
1,4-Difluorobenzene (Surr)	125		70 - 130

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

Lab Sample ID: MB 880-71494/1-A

Matrix: Solid

Analysis Batch: 71545

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 71494

Analyte	MB		RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0	mg/Kg		01/24/24 09:03	01/25/24 19:43	1

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sink West

Job ID: 890-6015-1
SDG: 23c-05485

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

Lab Sample ID: MB 880-71494/1-A
Matrix: Solid
Analysis Batch: 71545

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 71494

Analyte	MB	MB	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		01/24/24 09:03	01/25/24 19:43	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		01/24/24 09:03	01/25/24 19:43	1
Surrogate	MB	MB	Limits			Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier						
1-Chlorooctane	97		70 - 130			01/24/24 09:03	01/25/24 19:43	1
o-Terphenyl	104		70 - 130			01/24/24 09:03	01/25/24 19:43	1

Lab Sample ID: LCS 880-71494/2-A
Matrix: Solid
Analysis Batch: 71545

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 71494

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits	
Gasoline Range Organics (GRO)-C6-C10	1000	991.7		mg/Kg		99	70 - 130	
Diesel Range Organics (Over C10-C28)	1000	988.8		mg/Kg		99	70 - 130	
Surrogate		LCS	LCS			%Recovery	Qualifier	Limits
		%Recovery						
1-Chlorooctane		98						70 - 130
o-Terphenyl		123						70 - 130

Lab Sample ID: LCSD 880-71494/3-A
Matrix: Solid
Analysis Batch: 71545

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 71494

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	1000	976.2		mg/Kg		98	70 - 130	2	20
Diesel Range Organics (Over C10-C28)	1000	963.2		mg/Kg		96	70 - 130	3	20
Surrogate		LCSD	LCSD			%Recovery	Qualifier	Limits	
		%Recovery							
1-Chlorooctane		90						70 - 130	
o-Terphenyl		108						70 - 130	

Lab Sample ID: 880-38285-A-101-F MS
Matrix: Solid
Analysis Batch: 71545

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 71494

Analyte	Sample	Sample	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits	
	Result	Qualifier								
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	999	871.2		mg/Kg		87	70 - 130	
Diesel Range Organics (Over C10-C28)	<49.8	U	999	963.8		mg/Kg		94	70 - 130	
Surrogate	MS	MS		%Recovery	Qualifier			Limits		
	%Recovery									
1-Chlorooctane	92							70 - 130		
o-Terphenyl	86							70 - 130		

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sink West

Job ID: 890-6015-1
SDG: 23c-05485

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

Lab Sample ID: 880-38285-A-101-G MSD

Matrix: Solid

Analysis Batch: 71545

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 71494

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	<49.8	U	999	905.0		mg/Kg		91	70 - 130	4	20
Diesel Range Organics (Over C10-C28)	<49.8	U	999	1023		mg/Kg		100	70 - 130	6	20
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1-Chlorooctane	96		70 - 130								
o-Terphenyl	90		70 - 130								

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-71470/1-A

Matrix: Solid

Analysis Batch: 71515

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			01/24/24 12:43	1

Lab Sample ID: LCS 880-71470/2-A

Matrix: Solid

Analysis Batch: 71515

Client Sample ID: Lab Control Sample

Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	250	262.4		mg/Kg		105	90 - 110

Lab Sample ID: LCSD 880-71470/3-A

Matrix: Solid

Analysis Batch: 71515

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	262.1		mg/Kg		105	90 - 110	0	20

Lab Sample ID: 880-38127-A-2-B MS

Matrix: Solid

Analysis Batch: 71515

Client Sample ID: Matrix Spike

Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	5650	F1	2530	8505	F1	mg/Kg		113	90 - 110

Lab Sample ID: 880-38127-A-2-C MSD

Matrix: Solid

Analysis Batch: 71515

Client Sample ID: Matrix Spike Duplicate

Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	5650	F1	2530	8470	F1	mg/Kg		112	90 - 110	0	20

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QC Sample Results

Client: Vertex
Project/Site: PLU 29 Big Sink West

Job ID: 890-6015-1
SDG: 23c-05485

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 880-38400-A-1-B MS						Client Sample ID: Matrix Spike					
Matrix: Solid						Prep Type: Soluble					
Analysis Batch: 71515											
Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	426		252	675.4		mg/Kg		99	90 - 110		

Lab Sample ID: 880-38400-A-1-C MSD						Client Sample ID: Matrix Spike Duplicate					
Matrix: Solid						Prep Type: Soluble					
Analysis Batch: 71515											
Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	426		252	671.8		mg/Kg		98	90 - 110	1	20

QC Association Summary

Client: Vertex
Project/Site: PLU 29 Big Sink West

Job ID: 890-6015-1
SDG: 23c-05485

GC VOA

Prep Batch: 71461

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-71461/5-A	Method Blank	Total/NA	Solid	5035	

Prep Batch: 71517

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6015-1	WES 24-05	Total/NA	Solid	5035	
890-6015-2	WES 24-06	Total/NA	Solid	5035	
MB 880-71517/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-71517/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-71517/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-38380-A-4-A MS	Matrix Spike	Total/NA	Solid	5035	
880-38380-A-4-B MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 71559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6015-1	WES 24-05	Total/NA	Solid	8021B	71517
890-6015-2	WES 24-06	Total/NA	Solid	8021B	71517
MB 880-71461/5-A	Method Blank	Total/NA	Solid	8021B	71461
MB 880-71517/5-A	Method Blank	Total/NA	Solid	8021B	71517
LCS 880-71517/1-A	Lab Control Sample	Total/NA	Solid	8021B	71517
LCSD 880-71517/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	71517
880-38380-A-4-A MS	Matrix Spike	Total/NA	Solid	8021B	71517
880-38380-A-4-B MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	71517

Analysis Batch: 71713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6015-1	WES 24-05	Total/NA	Solid	Total BTEX	
890-6015-2	WES 24-06	Total/NA	Solid	Total BTEX	

GC Semi VOA

Prep Batch: 71494

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6015-1	WES 24-05	Total/NA	Solid	8015NM Prep	
890-6015-2	WES 24-06	Total/NA	Solid	8015NM Prep	
MB 880-71494/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-71494/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-71494/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
880-38285-A-101-F MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
880-38285-A-101-G MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 71545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6015-1	WES 24-05	Total/NA	Solid	8015B NM	71494
890-6015-2	WES 24-06	Total/NA	Solid	8015B NM	71494
MB 880-71494/1-A	Method Blank	Total/NA	Solid	8015B NM	71494
LCS 880-71494/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	71494
LCSD 880-71494/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	71494
880-38285-A-101-F MS	Matrix Spike	Total/NA	Solid	8015B NM	71494
880-38285-A-101-G MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	71494

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QC Association Summary

Client: Vertex
Project/Site: PLU 29 Big Sink West

Job ID: 890-6015-1
SDG: 23c-05485

GC Semi VOA

Analysis Batch: 71664

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6015-1	WES 24-05	Total/NA	Solid	8015 NM	
890-6015-2	WES 24-06	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 71470

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6015-1	WES 24-05	Soluble	Solid	DI Leach	
890-6015-2	WES 24-06	Soluble	Solid	DI Leach	
MB 880-71470/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-71470/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-71470/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
880-38127-A-2-B MS	Matrix Spike	Soluble	Solid	DI Leach	
880-38127-A-2-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	
880-38400-A-1-B MS	Matrix Spike	Soluble	Solid	DI Leach	
880-38400-A-1-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 71515

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-6015-1	WES 24-05	Soluble	Solid	300.0	71470
890-6015-2	WES 24-06	Soluble	Solid	300.0	71470
MB 880-71470/1-A	Method Blank	Soluble	Solid	300.0	71470
LCS 880-71470/2-A	Lab Control Sample	Soluble	Solid	300.0	71470
LCSD 880-71470/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	71470
880-38127-A-2-B MS	Matrix Spike	Soluble	Solid	300.0	71470
880-38127-A-2-C MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	71470
880-38400-A-1-B MS	Matrix Spike	Soluble	Solid	300.0	71470
880-38400-A-1-C MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	71470

Lab Chronicle

Client: Vertex
Project/Site: PLU 29 Big Sink West

Job ID: 890-6015-1
SDG: 23c-05485

Client Sample ID: WES 24-05

Lab Sample ID: 890-6015-1

Date Collected: 01/22/24 14:30

Matrix: Solid

Date Received: 01/23/24 08:23

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	71517	01/25/24 14:04	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	71559	01/26/24 02:24	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			71713	01/26/24 02:24	AJ	EET MID
Total/NA	Analysis	8015 NM		1			71664	01/26/24 03:39	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	71494	01/25/24 08:57	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	71545	01/26/24 03:39	AJ	EET MID
Soluble	Leach	DI Leach			5.04 g	50 mL	71470	01/24/24 15:00	SA	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	71515	01/24/24 17:18	SMC	EET MID

Client Sample ID: WES 24-06

Lab Sample ID: 890-6015-2

Date Collected: 01/22/24 12:10

Matrix: Solid

Date Received: 01/23/24 08:23

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	71517	01/25/24 14:04	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	71559	01/26/24 02:44	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			71713	01/26/24 02:44	AJ	EET MID
Total/NA	Analysis	8015 NM		1			71664	01/26/24 04:01	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.05 g	10 mL	71494	01/25/24 08:57	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	71545	01/26/24 04:01	AJ	EET MID
Soluble	Leach	DI Leach			5.01 g	50 mL	71470	01/24/24 15:00	SA	EET MID
Soluble	Analysis	300.0		10	50 mL	50 mL	71515	01/24/24 17:25	SMC	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 Big Sink West

Job ID: 890-6015-1
SDG: 23c-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 Big Sink West

Job ID: 890-6015-1
SDG: 23c-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 Big Sink West

Job ID: 890-6015-1
SDG: 23c-05485

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-6015-1	WES 24-05	Solid	01/22/24 14:30	01/23/24 08:23	1
890-6015-2	WES 24-06	Solid	01/22/24 12:10	01/23/24 08:23	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Loc: 890
6015

890-6015 Chain of Custody

Chain of Custody

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
 Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3334
 El Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296
 Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Environment Testing
 Xenco



www.xenco.com Page 1 of 1

Work Order Comments

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

State of Project: ☐ Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV

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

Deliverables: ☐ EDD ☐ ADAPT ☐ Other:

Project Manager: Phenice Dixon

Company Name: Vortex / XCO

Address: gn file

City, State ZIP: gn file

Phone: gn file

Bill to: (if different)

Company Name:

Address:

City, State ZIP:

Email:

Project Name: PLU 29 (80150) TAT

Project Number: 23E-05485

Project Location: PLU 29 (80150) TAT

Sample's Name: Phenice Dixon

P.O. #: gn file

SAMPLE RECEIPT

Samples Received Intact: ☒ Yes ☐ No

Cooler Custody Seals: ☒ Yes ☐ No

Sample Custody Seals: ☒ Yes ☐ No

Total Containers: 5.4

Temp Blank: ☒ Yes ☐ No

Thermometer ID: 7

Correction Factor: 0.2

Temperature Reading: 5.8

Corrected Temperature: 5.4

Wet Ice: ☒ Yes ☐ No

Due Date: 1.25.24

TAT starts the day received by the lab, if received by 4:30pm

Parameters

Pres Code

ANALYSIS REQUEST

None: NO

DI Water: H₂O

Cool: Cool

MeOH: Me

HCL: HC

HNO₃: HN

H₂SO₄: H₂

NaOH: Na

H₃PO₄: HP

NaHSO₄: NABIS

Na₂S₂O₅: NaSO₃

Zn Acetate+NaOH: Zn

NaOH+Ascorbic Acid: SAPC

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 Ti 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 Ti U Hg: 1631 / 245.1 / 7470 / 7471

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Eurofins Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Eurofins Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Eurofins Xenco. A minimum charge of \$85.00 will be applied to each project and a charge of \$5 for each sample submitted to Eurofins Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature) Phenice Dixon Received by: (Signature) gn file Date/Time 8-23 1/23

3

5

Revised Date: 08/25/2023 Rev. 2020.2

Work Order No: 481834001
38422

Chain of Custody

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
 Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3334
 El Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296
 Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Environment Testing
Xenco

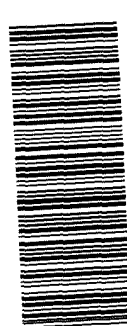


Project Manager: Charmice Dixon		Bill to: (If different)		Work Order Comments	
Company Name: Vertex / XTO		Company Name:		Program: <input type="checkbox"/> UST/PST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund	
Address: file		Address:		State of Project:	
City, State ZIP: gn file		City, State ZIP:		Reporting: Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input type="checkbox"/> Level IV <input type="checkbox"/>	
Phone: gn		Email:		Deliverables: EDD <input type="checkbox"/> ADaPT <input type="checkbox"/> Other:	

Project Name: PLU 29 Hg Subsites		Turn Around: 0.5		ANALYSIS REQUEST		Preservative Codes	
Project Number: 23E-05485		<input type="checkbox"/> Routine <input checked="" type="checkbox"/> Rush Due Date: 1.25.24					
Project Location: PLU 29 Hg Subsites		TAT starts the day received by the lab, if received by 4:30pm					
Sampler's Name: Hewittson Carter		PO #:					

SAMPLE RECEIPT		Temp Blank: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		Wet Ice: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	
Samples Received Intact: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		Thermometer ID: 940007		Cooler Custody Seals: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	
Cooler Custody Seals: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		Correction Factor: 0.2		Temperature Reading: 5.8	
Sample Custody Seals: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		Corrected Temperature: 5.4		Total Containers:	

Sample Identification	Date Sampled	Time Sampled	Depth	Grab/Comp	# of Cont	Parameters	Pres. Code
WES 24-05	1.22.24	14:30	11"	<input checked="" type="radio"/> Grab <input type="radio"/> Comp	1	TEX (8021)	
WES 24-06	1.22.24	14:30	11"	<input checked="" type="radio"/> Grab <input type="radio"/> Comp	2	TEX (8021)	



890-6015 Chain of Custody

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 SiO ₂ Na Sr Ti 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 Ti U Hg: 1631 / 245.1 / 7470 / 7471	

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Eurofins Xenco. Its affiliates and subcontractors. It assigns standard terms and conditions of service. Eurofins Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Eurofins Xenco. A minimum charge of \$95.00 will be applied to each project and a charge of \$5 for each sample submitted to Eurofins Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature) Hewittson	Received by: (Signature) WES	Relinquished by: (Signature)	Received by: (Signature)
Date: 1.23	Date/Time: 14:30	Date/Time	Date/Time

Login Sample Receipt Checklist

Client: Vertex

Job Number: 890-6015-1

SDG Number: 23c-05485

Login Number: 6015

List Source: Eurofins Carlsbad

List Number: 1

Creator: Lopez, Abraham

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: 890-6015-1
SDG Number: 23c-05485

Login Number: 6015
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 01/24/24 02:02 PM

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	



*Eurofins Environment Testing South
Central, LLC
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com*

February 13, 2024

Chance Dixon
Vertex Resources Services, Inc.
3101 Boyd Drive
Carlsbad, NM 88220
TEL: (505) 506-0040
FAX:

RE: PLU 29 BS WEST CTB

OrderNo.: 2402015

Dear Chance Dixon:

Eurofins Environment Testing South Central, LLC received 7 sample(s) on 2/1/2024 for the analyses presented in the following report.

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

Please do not hesitate to contact Eurofins Albuquerque for any additional information or clarifications.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order 2402015
Date Reported: 2/13/2024

CLIENT: Vertex Resources Services, Inc. Client Sample ID: BES24-04 0.5'
Project: PLU 29 BS WEST CTB Collection Date: 1/30/2024 11:00:00 AM
Lab ID: 2402015-001 Matrix: SOIL Received Date: 2/1/2024 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	20	9.3		mg/Kg	1	2/3/2024 12:06:39 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	2/3/2024 12:06:39 AM
Surr: DNOP	101	61.2-134		%Rec	1	2/3/2024 12:06:39 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	2/5/2024 9:23:56 PM
Surr: BFB	103	15-244		%Rec	1	2/5/2024 9:23:56 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	2/5/2024 9:23:56 PM
Toluene	ND	0.046		mg/Kg	1	2/5/2024 9:23:56 PM
Ethylbenzene	ND	0.046		mg/Kg	1	2/5/2024 9:23:56 PM
Xylenes, Total	ND	0.091		mg/Kg	1	2/5/2024 9:23:56 PM
Surr: 4-Bromofluorobenzene	92.1	39.1-146		%Rec	1	2/5/2024 9:23:56 PM
EPA METHOD 300.0: ANIONS						Analyst: RBC
Chloride	3100	150		mg/Kg	50	2/5/2024 11:08:00 AM

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order 2402015
Date Reported: 2/13/2024

CLIENT: Vertex Resources Services, Inc. Client Sample ID: BES24-08 1'
Project: PLU 29 BS WEST CTB Collection Date: 1/30/2024 11:05:00 AM
Lab ID: 2402015-002 Matrix: SOIL Received Date: 2/1/2024 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	17	9.3		mg/Kg	1	2/3/2024 12:29:59 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	2/3/2024 12:29:59 AM
Surr: DNOP	113	61.2-134		%Rec	1	2/3/2024 12:29:59 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	2/5/2024 10:11:09 PM
Surr: BFB	100	15-244		%Rec	1	2/5/2024 10:11:09 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	2/5/2024 10:11:09 PM
Toluene	ND	0.047		mg/Kg	1	2/5/2024 10:11:09 PM
Ethylbenzene	ND	0.047		mg/Kg	1	2/5/2024 10:11:09 PM
Xylenes, Total	ND	0.094		mg/Kg	1	2/5/2024 10:11:09 PM
Surr: 4-Bromofluorobenzene	89.3	39.1-146		%Rec	1	2/5/2024 10:11:09 PM
EPA METHOD 300.0: ANIONS						Analyst: RBC
Chloride	2500	150		mg/Kg	50	2/5/2024 11:23:09 AM

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order 2402015
Date Reported: 2/13/2024

CLIENT: Vertex Resources Services, Inc. Client Sample ID: BES24-11 0.5'
Project: PLU 29 BS WEST CTB Collection Date: 1/30/2024 11:10:00 AM
Lab ID: 2402015-003 Matrix: SOIL Received Date: 2/1/2024 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	21	9.5		mg/Kg	1	2/3/2024 12:53:15 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	2/3/2024 12:53:15 AM
Surr: DNOP	116	61.2-134		%Rec	1	2/3/2024 12:53:15 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	2/5/2024 10:34:45 PM
Surr: BFB	101	15-244		%Rec	1	2/5/2024 10:34:45 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	2/5/2024 10:34:45 PM
Toluene	ND	0.047		mg/Kg	1	2/5/2024 10:34:45 PM
Ethylbenzene	ND	0.047		mg/Kg	1	2/5/2024 10:34:45 PM
Xylenes, Total	ND	0.093		mg/Kg	1	2/5/2024 10:34:45 PM
Surr: 4-Bromofluorobenzene	89.3	39.1-146		%Rec	1	2/5/2024 10:34:45 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2600	150		mg/Kg	50	2/6/2024 9:48:15 AM

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order 2402015
Date Reported: 2/13/2024

CLIENT: Vertex Resources Services, Inc. Client Sample ID: BES24-12 0.5'
Project: PLU 29 BS WEST CTB Collection Date: 1/30/2024 11:15:00 AM
Lab ID: 2402015-004 Matrix: SOIL Received Date: 2/1/2024 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: JKU
Diesel Range Organics (DRO)	18	9.1		mg/Kg	1	2/5/2024 12:52:34 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	2/5/2024 12:52:34 PM
Surr: DNOP	85.3	61.2-134		%Rec	1	2/5/2024 12:52:34 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	2/6/2024 9:05:00 PM
Surr: BFB	103	15-244		%Rec	1	2/6/2024 9:05:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	2/6/2024 9:05:00 PM
Toluene	ND	0.050		mg/Kg	1	2/6/2024 9:05:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	2/6/2024 9:05:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	2/6/2024 9:05:00 PM
Surr: 4-Bromofluorobenzene	96.0	39.1-146		%Rec	1	2/6/2024 9:05:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2500	150		mg/Kg	50	2/6/2024 10:03:25 AM

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order 2402015
Date Reported: 2/13/2024

CLIENT: Vertex Resources Services, Inc. Client Sample ID: WES24-01 0-0.5'
Project: PLU 29 BS WEST CTB Collection Date: 1/30/2024 11:20:00 AM
Lab ID: 2402015-005 Matrix: SOIL Received Date: 2/1/2024 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: JKU
Diesel Range Organics (DRO)	24	9.1		mg/Kg	1	2/5/2024 1:28:56 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	2/5/2024 1:28:56 PM
Surr: DNOP	81.6	61.2-134		%Rec	1	2/5/2024 1:28:56 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	2/6/2024 10:11:00 PM
Surr: BFB	108	15-244		%Rec	1	2/6/2024 10:11:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	2/6/2024 10:11:00 PM
Toluene	ND	0.050		mg/Kg	1	2/6/2024 10:11:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	2/6/2024 10:11:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	2/6/2024 10:11:00 PM
Surr: 4-Bromofluorobenzene	98.0	39.1-146		%Rec	1	2/6/2024 10:11:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	3000	150		mg/Kg	50	2/6/2024 10:18:33 AM

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order 2402015
Date Reported: 2/13/2024

CLIENT: Vertex Resources Services, Inc. Client Sample ID: WES24-02 0-0.5'
Project: PLU 29 BS WEST CTB Collection Date: 1/30/2024 11:25:00 AM
Lab ID: 2402015-006 Matrix: SOIL Received Date: 2/1/2024 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: JKU
Diesel Range Organics (DRO)	30	9.5		mg/Kg	1	2/5/2024 1:41:03 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	2/5/2024 1:41:03 PM
Surr: DNOP	82.1	61.2-134		%Rec	1	2/5/2024 1:41:03 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	2/6/2024 11:17:00 PM
Surr: BFB	104	15-244		%Rec	1	2/6/2024 11:17:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	2/6/2024 11:17:00 PM
Toluene	ND	0.050		mg/Kg	1	2/6/2024 11:17:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	2/6/2024 11:17:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	2/6/2024 11:17:00 PM
Surr: 4-Bromofluorobenzene	96.7	39.1-146		%Rec	1	2/6/2024 11:17:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	3900	150		mg/Kg	50	2/6/2024 10:33:44 AM

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order 2402015
Date Reported: 2/13/2024

CLIENT: Vertex Resources Services, Inc. Client Sample ID: WES24-03 0-0.5'
Project: PLU 29 BS WEST CTB Collection Date: 1/30/2024 11:30:00 AM
Lab ID: 2402015-007 Matrix: SOIL Received Date: 2/1/2024 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: JKU
Diesel Range Organics (DRO)	35	9.1		mg/Kg	1	2/5/2024 1:53:23 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	2/5/2024 1:53:23 PM
Surr: DNOP	87.2	61.2-134		%Rec	1	2/5/2024 1:53:23 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/6/2024 11:39:00 PM
Surr: BFB	106	15-244		%Rec	1	2/6/2024 11:39:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	2/6/2024 11:39:00 PM
Toluene	ND	0.048		mg/Kg	1	2/6/2024 11:39:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	2/6/2024 11:39:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	2/6/2024 11:39:00 PM
Surr: 4-Bromofluorobenzene	96.9	39.1-146		%Rec	1	2/6/2024 11:39:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2500	150		mg/Kg	50	2/6/2024 10:48:53 AM

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2402015
13-Feb-24

Client: Vertex Resources Services, Inc.
Project: PLU 29 BS WEST CTB

Sample ID: MB-80236	SampType: MBLK	TestCode: EPA Method 300.0: Anions
Client ID: PBS	Batch ID: 80236	RunNo: 102858
Prep Date: 2/2/2024	Analysis Date: 2/3/2024	SeqNo: 3800520 Units: mg/Kg
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	ND	1.5

Sample ID: LCS-80236	SampType: LCS	TestCode: EPA Method 300.0: Anions
Client ID: LCSS	Batch ID: 80236	RunNo: 102858
Prep Date: 2/2/2024	Analysis Date: 2/3/2024	SeqNo: 3800521 Units: mg/Kg
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	14	1.5 15.00 0 95.3 90 110

Sample ID: MB-80268	SampType: MBLK	TestCode: EPA Method 300.0: Anions
Client ID: PBS	Batch ID: 80268	RunNo: 102887
Prep Date: 2/5/2024	Analysis Date: 2/5/2024	SeqNo: 3801903 Units: mg/Kg
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	ND	1.5

Sample ID: LCS-80268	SampType: LCS	TestCode: EPA Method 300.0: Anions
Client ID: LCSS	Batch ID: 80268	RunNo: 102887
Prep Date: 2/5/2024	Analysis Date: 2/5/2024	SeqNo: 3801904 Units: mg/Kg
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	14	1.5 15.00 0 92.9 90 110

Qualifiers:

- *

Value exceeds Maximum Contaminant Level.
- D

Sample Diluted Due to Matrix
- H

Holding times for preparation or analysis exceeded
- ND

Not Detected at the Reporting Limit
- PQL

Practical Quantitative Limit
- S

% Recovery outside of standard limits. If undiluted results may be estimated.

B

Analyte detected in the associated Method Blank

E

Above Quantitation Range/Estimated Value

J

Analyte detected below quantitation limits

P

Sample pH Not In Range

RL

Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2402015

13-Feb-24

Client: Vertex Resources Services, Inc.

Project: PLU 29 BS WEST CTB

Sample ID: MB-80224	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 80224		RunNo: 102843							
Prep Date: 2/1/2024	Analysis Date: 2/2/2024		SeqNo: 3800103		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	12		10.00		123	61.2	134			

Sample ID: LCS-80224	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 80224		RunNo: 102843							
Prep Date: 2/1/2024	Analysis Date: 2/2/2024		SeqNo: 3800104		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	6.4		5.000		127	69	147			

Sample ID: MB-80220	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 80220		RunNo: 102843							
Prep Date: 2/1/2024	Analysis Date: 2/2/2024		SeqNo: 3800108		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		110	61.2	134			

Sample ID: LCS-80220	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 80220		RunNo: 102843							
Prep Date: 2/1/2024	Analysis Date: 2/2/2024		SeqNo: 3800109		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	59	10	50.00	0	117	61.9	130			
Surr: DNOP	5.9		5.000		119	69	147			

Sample ID: LCS-80234	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 80234		RunNo: 102868							
Prep Date: 2/2/2024	Analysis Date: 2/5/2024		SeqNo: 3800879		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	40	10	50.00	0	79.6	59.7	135			
Surr: DNOP	4.3		5.000		86.3	61.2	134			

Sample ID: MB-80234	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 80234		RunNo: 102868							
Prep Date: 2/2/2024	Analysis Date: 2/5/2024		SeqNo: 3801344		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2402015
13-Feb-24

Client: Vertex Resources Services, Inc.
Project: PLU 29 BS WEST CTB

Sample ID: MB-80234	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 80234	RunNo: 102868								
Prep Date: 2/2/2024	Analysis Date: 2/5/2024	SeqNo: 3801344		Units: mg/Kg						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.4		10.00		93.7	61.2	134			

Sample ID: 2402015-004AMS	SampType: MS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: BES24-12 0.5'	Batch ID: 80234	RunNo: 102868								
Prep Date: 2/2/2024	Analysis Date: 2/5/2024	SeqNo: 3801349		Units: mg/Kg						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	63	9.4	47.13	18.17	94.3	43.7	136			
Surr: DNOP	4.1		4.713		88.0	61.2	134			

Sample ID: 2402015-004AMSD	SampType: MSD	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: BES24-12 0.5'	Batch ID: 80234	RunNo: 102868								
Prep Date: 2/2/2024	Analysis Date: 2/5/2024	SeqNo: 3801350		Units: mg/Kg						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	9.1	45.45	18.17	70.8	43.7	136	21.7	31.3	
Surr: DNOP	3.9		4.545		86.3	61.2	134	0	0	

Qualifiers:

- *

Value exceeds Maximum Contaminant Level.
- D

Sample Diluted Due to Matrix
- H

Holding times for preparation or analysis exceeded
- ND

Not Detected at the Reporting Limit
- PQL

Practical Quantitative Limit
- S

% Recovery outside of standard limits. If undiluted results may be estimated.
- B

Analyte detected in the associated Method Blank
- E

Above Quantitation Range/Estimated Value
- J

Analyte detected below quantitation limits
- P

Sample pH Not In Range
- RL

Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2402015

13-Feb-24

Client: Vertex Resources Services, Inc.

Project: PLU 29 BS WEST CTB

Sample ID: lcs-80203	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 80203		RunNo: 102873							
Prep Date: 2/1/2024	Analysis Date: 2/5/2024		SeqNo: 3800986		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	102	70	130			
Surr: BFB	2100		1000		206	15	244			

Sample ID: mb-80203	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 80203		RunNo: 102873							
Prep Date: 2/1/2024	Analysis Date: 2/5/2024		SeqNo: 3800987		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	990		1000		99.1	15	244			

Sample ID: lcs-80229	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 80229		RunNo: 102909							
Prep Date: 2/2/2024	Analysis Date: 2/6/2024		SeqNo: 3802679		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	97.2	70	130			
Surr: BFB	2200		1000		215	15	244			

Sample ID: mb-80229	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 80229		RunNo: 102909							
Prep Date: 2/2/2024	Analysis Date: 2/6/2024		SeqNo: 3802680		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1100		1000		105	15	244			

Sample ID: 2402015-004ams	SampType: MS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: BES24-12 0.5'	Batch ID: 80229		RunNo: 102909							
Prep Date: 2/2/2024	Analysis Date: 2/6/2024		SeqNo: 3802683		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	24.98	0	101	70	130			
Surr: BFB	2200		999.0		225	15	244			

Sample ID: 2402015-004amsd	SampType: MSD		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: BES24-12 0.5'	Batch ID: 80229		RunNo: 102909							
Prep Date: 2/2/2024	Analysis Date: 2/6/2024		SeqNo: 3802685		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2402015

13-Feb-24

Client: Vertex Resources Services, Inc.
Project: PLU 29 BS WEST CTB

Sample ID: 2402015-004amsd		SampType: MSD		TestCode: EPA Method 8015D: Gasoline Range						
Client ID: BES24-12 0.5'		Batch ID: 80229		RunNo: 102909						
Prep Date: 2/2/2024		Analysis Date: 2/6/2024		SeqNo: 3802685			Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	24.78	0	97.8	70	130	4.10	20	
Surr: BFB	2200		991.1		221	15	244	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of standard limits. If undiluted results may be estimated.
- B Analyte detected in the associated Method Blank

E Above Quantitation Range/Estimated Value

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2402015

13-Feb-24

Client: Vertex Resources Services, Inc.

Project: PLU 29 BS WEST CTB

Sample ID: LCS-80203	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 80203		RunNo: 102873							
Prep Date: 2/1/2024	Analysis Date: 2/5/2024		SeqNo: 3800993		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.84	0.025	1.000	0	84.4	70	130			
Toluene	0.84	0.050	1.000	0	84.2	70	130			
Ethylbenzene	0.85	0.050	1.000	0	85.4	70	130			
Xylenes, Total	2.6	0.10	3.000	0	85.8	70	130			
Surr: 4-Bromofluorobenzene	0.91		1.000		91.1	39.1	146			

Sample ID: mb-80203	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 80203		RunNo: 102873							
Prep Date: 2/1/2024	Analysis Date: 2/5/2024		SeqNo: 3800994		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.89		1.000		88.6	39.1	146			

Sample ID: lcs-80229	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 80229		RunNo: 102909							
Prep Date: 2/2/2024	Analysis Date: 2/6/2024		SeqNo: 3803025		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.90	0.025	1.000	0	89.6	70	130			
Toluene	0.90	0.050	1.000	0	89.9	70	130			
Ethylbenzene	0.91	0.050	1.000	0	91.4	70	130			
Xylenes, Total	2.8	0.10	3.000	0	91.9	70	130			
Surr: 4-Bromofluorobenzene	0.98		1.000		97.6	39.1	146			

Sample ID: mb-80229	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 80229		RunNo: 102909							
Prep Date: 2/2/2024	Analysis Date: 2/6/2024		SeqNo: 3803026		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.96		1.000		95.8	39.1	146			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank
E Above Quantitation Range/Estimated Value
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2402015
13-Feb-24

Client: Vertex Resources Services, Inc.
Project: PLU 29 BS WEST CTB

Sample ID: 2402015-005ams		SampType: MS			TestCode: EPA Method 8021B: Volatiles					
Client ID:	WES24-01 0-0.5'	Batch ID: 80229			RunNo: 102909					
Prep Date:	2/2/2024	Analysis Date: 2/6/2024			SeqNo: 3803029		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.87	0.025	1.000	0	87.3	70	130			
Toluene	0.88	0.050	1.000	0	87.8	70	130			
Ethylbenzene	0.90	0.050	1.000	0	89.7	70	130			
Xylenes, Total	2.7	0.10	3.000	0	90.4	70	130			
Surr: 4-Bromofluorobenzene	0.97		1.000		97.1	39.1	146			

Sample ID: 2402015-005AMSD		SampType: MSD			TestCode: EPA Method 8021B: Volatiles					
Client ID:	WES24-01 0-0.5'	Batch ID: 80229			RunNo: 102909					
Prep Date:	2/2/2024	Analysis Date: 2/6/2024			SeqNo: 3803030		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.89	0.025	0.9980	0	89.0	70	130	1.66	20	
Toluene	0.89	0.050	0.9980	0	89.5	70	130	1.74	20	
Ethylbenzene	0.90	0.050	0.9980	0	90.5	70	130	0.607	20	
Xylenes, Total	2.7	0.10	2.994	0	90.8	70	130	0.259	20	
Surr: 4-Bromofluorobenzene	0.98		0.9980		97.9	39.1	146	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank

E Above Quantitation Range/Estimated Value

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

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Environment Testin

Eurofins Environment Testing South
Central, LLC4901 Hawkins NE
Albuquerque, NM 87109

TEL: 505-345-3975 FAX: 505-345-4107

Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Vertex Resources

Work Order Number: 2402015

RcptNo: 1

Received By: Tracy Casarrubias 2/1/2024 7:30:00 AM

Completed By: Desiree Dominguez 2/1/2024 9:19:19 AM

Reviewed By: *[Signature]* 2-1-24*[Signature]*Chain of Custody

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

Log In

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

of preserved
bottles checked
for pH:

(<2 or >12 unless noted)

Adjusted?

Checked by: *[Signature]* 2/1/24Special Handling (if applicable)

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

Person Notified: _____

Date: _____

By Whom: _____

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

Mailing address, phone number and Email/Fax are missing on COC- DAD 2/1/24

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.0	Good	Yes	Yogi		



Incident Number: nAPP2326151503

Release Assessment and Closure

PLU 29 Big Sinks West CTB

Unit F, Section 29, Township 25 South, Range 31 East

County: Eddy

Vertex File Number: 23E-05485

Prepared for:

XTO Energy, Inc.

Prepared by:

Vertex Resource Services Inc.

Date:

June 2024

XTO Energy, Inc.
PLU 29 Big Sinks West CTB

Release Assessment and Closure
June 2024

Release Assessment and Closure
PLU 29 Big Sinks West CTB
Unit F, Section 29, Township 25 South, Range 31 East
County: Eddy

Prepared for:
XTO Energy, Inc.
3104 East Greene Street
Carlsbad, New Mexico 88220

New Mexico Oil Conservation Division – District 2
508 West Texas Avenue
Artesia, New Mexico 88210

Prepared by:
Vertex Resource Services Inc.
3101 Boyd Drive
Carlsbad, New Mexico 88220

Lakin Pullman

Lakin Pullman, B.Sc.
ENVIRONMENTAL SPECIALIST, REPORTING

June 5, 2024

Date

Chance Dixon

Chance Dixon, B.Sc.
PROJECT MANAGER, REPORT REVIEW

June 5, 2024

Date

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XTO Energy, Inc.
PLU 29 Big Sinks West CTB

Release Assessment and Closure
June 2024

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XTO Energy, Inc.
PLU 29 Big Sinks West CTB

Release Assessment and Closure
June 2024

1.0 Introduction

XTO Energy, Inc. (XTO) retained Vertex Resource Services Inc. (Vertex) to conduct a Release Assessment and Closure for a produced water release that occurred on September 7, 2023, at PLU 29 Big Sinks West CTB (hereafter referred to as the "site"). Incident ID number nAPP2326151503 was assigned to this incident. A remediation plan for the site was submitted and approved by the New Mexico Oil Conservation Division (NMOCD) on May 10, 2024.

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

2.0 Incident Description

The release occurred on September 7, 2023, due to interior corrosion caused by a pinhole on Bulk 701 6" CS water line resulting in the release of approximately 12.99 barrels (bbl) of produced water under equipment on the facility pad. No fluids were recovered.

3.0 Site Characteristics

The site is located approximately 17.5 miles southeast of Malaga, New Mexico. The legal location for the site is Unit F, Section 29, Township 25 South and Range 31 East in Eddy County, New Mexico. The release area is located on Bureau of Land Management property. An aerial photograph and site schematic are presented on Figure 1.

The location is typical of oil and gas exploration and production sites in the Permian Basin and is currently used for oil and gas production and storage. The following sections specifically describe the release area under the equipment east of the tank battery on or in proximity to the constructed pad (Figure 1).

The *Geological Map of New Mexico* (New Mexico Bureau of Geology and Mineral Resources, 2024) indicates the site's surface geology primarily comprises Qep - Eolian and Piedmont deposits (New Mexico Bureau of Geology and Mineral Resources, 2024). The karst geology potential for the site is medium (United States Department of the Interior, Bureau of Land Management, 2018). The surrounding landscape is associated with plains, alluvial fans, and flood plains with elevations ranging between 1,800 and 5,000 feet. The climate is semiarid with average annual precipitation ranging between 8 and 24 inches. Predominant soil textures around the site are gravelly fine sandy loam and silty clay loam, resulting in well-drained soils with runoff classes ranging from very low to very high. Using information from the United States Department of Agriculture, the dominant vegetation was determined to be grasses interspersed with shrubs (United States Department of Agriculture, Natural Resources Conservation Service, 2024). Limited to no vegetation is allowed to grow on the compacted facility pad.

XTO Energy, Inc.
PLU 29 Big Sinks West CTB

Release Assessment and Closure
June 2024

4.0 Closure Criteria Determination

The depth to groundwater was determined by drilling a borehole permitted by the New Mexico Office of the State Engineer (NMOSE) within a 0.5 mile radius of the site. The borehole was advanced to a depth of 55 feet. The borehole was left to recharge as per the requirements on the WR-07 Application for Permit to Drill a Well with No Water Rights, and an interface probe was utilized to determine whether groundwater was present at the conclusion of the 72-hour recharge period. No water was found to be present at that time. The borehole was plugged and abandoned according to the WR-08 permit, Well Plugging Plan of Operations, filed with NMOSE. Documentation related to the exploratory borehole is included in Appendix A.

There is no surface water present at the site. The nearest significant watercourse, as defined in Subsection P of 19.15.17.7 NMAC, as defined in Subsection P of 19.15.17.7 NMAC, is an intermittent stream located approximately 4,121 feet south of the site (United States Fish and Wildlife Service, 2024). At the site, there are no continuously flowing watercourses or significant watercourses, lakebeds, sinkholes, playa lakes, or other critical water or community features as outlined in Paragraph (4) of Subsection C of 19.15.29.12 NMAC.

XTO Energy, Inc.
PLU 29 Big Sinks West CTB

Release Assessment and Closure
June 2024

Table 1. 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
1	Depth to Groundwater (nearest reference)	>55	feet
	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
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	12,657	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	61,108	feet
5	i) Within 500 feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, or	6,935	feet
	ii) Within 1000 feet of any fresh water well or spring	6,935	feet
6	Within incorporated municipal boundaries or within a defined municipal fresh water field covered under a municipal ordinance adopted pursuant to Section 3-27-3 NMSA 1978 as amended, unless the municipality specifically approves	No	(Y/N)
7	Within 300 feet of a wetland	7,255	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
	Distance between release and nearest registered mine	73,190	feet
9	Within an unstable area (Karst Map)	Medium	Critical High Medium Low
	Distance between release and nearest high- or critical-karst zone	0.65	Miles
10	Within a 100-year Floodplain	No	year
	Distance between release and nearest FEMA Zone A (100-year Floodplain)	4,455	feet
11	Soil Type	SM - Simona-Bippus Complex	
12	Ecological Classification	Shallow sandy, bottomland	
13	Geology	Eolian and piedmont deposits	
	NMAC 19.15.29.12 E (Table 1) Closure Criteria	51-100'	<50' 51-100' >100'

The depth to groundwater reference was within 0.5 miles from the release area; therefore, the closure criteria for remediation and reclamation of the site was determined to be associated with the second strictest constituent concentration limits as presented in Table 2.

Table 2. Closure Criteria for Soils Impacted by a Release		
Minimum depth below any point within the horizontal boundary of the release to groundwater less than 10,000 mg/l TDS	Constituent	Limit
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

5.0 Remedial Actions Taken

Inspection and site characterization of the release around the infrastructure was completed by Vertex between November 8 and December 1, 2023, including vertical and horizontal delineation. The impacted area was determined to be approximately 71 feet long and 87 feet wide; the total affected area was determined to be approximately 3,699 square feet. The Daily Field Reports (DFRs) associated with the site visits are included in Appendix B. Characterization sample locations and approximate release areas are presented on Figure 1. Characterization field screening and laboratory results are summarized in Table 3.

On November 30, 2023, XTO requested an extension to January 5, 2024, for incident nAPP2326151503, which was approved on December 1, 2023. The extension request is included in Appendix C.

Remediation efforts began on January 4, 2024, and were finalized on January 30, 2024. Vertex personnel supervised the removal of impacted soils under the production equipment. Field screening was completed on a total of 18 sample points and consisted of analysis using a Photo Ionization Detector (volatile hydrocarbons), Dexsil Petroflag using EPA SW-846 Method 9074 (extractable hydrocarbons) and Silver Nitrate titrations (chlorides). Field screening results were used to identify areas requiring further remediation. These materials were removed to a depth of 0.5 to 1 feet below ground surface. Impacted soil was transported by a licensed waste hauler and disposed of at an approved waste management facility. The final DFR with photographs of the remediated site prior to backfill is included in Appendix B.

Notifications that confirmatory samples were being collected was provided to the NMOCD as required and are included in Appendix C. Confirmatory composite samples, each representative of no more than 200 square feet, were collected from the base and walls of the excavation. A total of 18 samples were collected for laboratory analysis following NMOCD soil sampling procedures. Samples were submitted to Eurofins South Central under chain-of-custody protocols and analyzed for BTEX (EPA Method 8021B), total petroleum hydrocarbons (GRO, DRO, MRO – EPA Method 8015D) and

total chlorides (EPA Method 300.0). Confirmation sampling laboratory results are presented in Table 4, and the laboratory data reports are included in Appendix D. All confirmatory samples collected and analyzed were below closure criteria for the site.

6.0 Closure Request

The release area was fully delineated, remediated, and backfilled with local soils. Confirmatory samples were analyzed by the laboratory and found to be below allowable concentrations as per the NMAC Closure Criteria for Soils Impacted by a Release locations "51-100 feet depth to groundwater". Based on these findings, XTO requests that this release be closed. The reclamation requirements set forth in 19.15.29.13 NMAC for the top 4 feet will be completed when the site is decommissioned and all oil and gas activities are terminated.

7.0 References

- New Mexico Bureau of Geology and Mineral Resources. (2024). *Interactive Geologic Map*. Retrieved from <https://maps.nmt.edu/>
- New Mexico Office of the State Engineer. (2024). *Point of Diversion Location Report - New Mexico Water Rights Reporting System*. Retrieved from <http://nmwrrs.ose.state.nm.us/nmwrrs/wellSurfaceDiversion.html>
- New Mexico Oil Conservation Division. (2018). *New Mexico Administrative Code – Natural Resources and Wildlife Oil and Gas Releases*. Santa Fe, New Mexico.
- United States Department of Agriculture, Natural Resources Conservation Service. (2024). *Web Soil Survey*. Retrieved from <https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>
- United States Department of the Interior, Bureau of Land Management. (2018). *New Mexico Cave/Karst*. Retrieved from https://www.nm.blm.gov/shapeFiles/cfo/carlsbad_spatial_data.html
- United States Fish and Wildlife Service. (2024). *National Wetland Inventory - Surface Waters and Wetlands*. Retrieved from <https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/>

XTO Energy, Inc.
PLU 29 Big Sinks West CTB

Release Assessment and Closure
June 2024

8.0 Limitations

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

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

FIGURES

FIGURES

Document Path: C:\Users\scott\Vertex Resource Group Ltd\Vertex US Operations - General\Environmental Services\10 - Geomatics\SPC\XTO 23E-05485 PLU 29 Big Sinks West CTB\Figure 1, Characterization_PLU 29 Big Sinks West CTB_17521.pdf.mxd



✦ Borehole (Prefixed by "BH23-")

Release Area (~3,699 sq.ft.)



0 12.5 25 ft
Map Center:
Lat/Long: 32.104424, -103.801921

NAD 1983 UTM Zone 13N
Date: Dec 12/23



Characterization Sampling Site Schematic PLU 29 Big Sinks West CTB

FIGURE:

1



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. Approximate lease boundary from imagery by Vertex Professional Services Ltd. (Vertex), 2023. Site features from GPS, Vertex, 2023.

VERSATILITY. EXPERTISE.



- Base Sample (Excavated) (Prefixed by "BES24-")
- ▲ Wall Sample (Excavated) (Prefixed by "WES24-")

- Excavation to 0.5' bgs (~ 4,770 sq. ft.)
- Excavation to 1 ft. bgs (~332 sq.ft.)

- Excavation to 1' bgs (~ 170 sq. ft.)



0 4 8 16 ft
Map Center:
Lat/Long: 32.104442, -103.801913

NAD 1983 UTM Zone 13N
Date: Jun 05/24



Confirmation Sampling Site Schematic PLU 29 Big Sinks West CTB

FIGURE:

2



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.

TABLES

Client Name: XTO Energy, Inc.

Site Name: PLU 29 Big Sinks West CTB

NMOCD Tracking #: nAPP2326151503

Project #: 23E-05485

Lab Reports: 890-5610-1, 890-5632-1, 890-5683-1, and 890-5756-1

Table 3. Initial Characterization Sample Field Screen and Laboratory Results - Depth to Groundwater 51-100 feet bgs												
Sample Description			Field Screening		Laboratory Results							
Sample ID	Depth (ft)	Sample Date	Extractable Organic Compounds (PetroFlag)	Chloride Concentration	Petroleum Hydrocarbons							Inorganic
					Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(ppm)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BH23-01	0	November 9, 2023	61	37	ND	ND	ND	ND	ND	ND	ND	78.9
	2	November 9, 2023	24	37	ND	ND	ND	ND	ND	ND	ND	15.7
BH23-03	0	November 8, 2023	67	7,729	ND	ND	ND	ND	ND	ND	ND	9920
	2	November 8, 2023	49	3,204	ND	ND	ND	ND	ND	ND	ND	601
	4	November 8, 2023	50	353	ND	ND	ND	ND	ND	ND	ND	3040
	4.5	December 1, 2023	85	418	ND	ND	ND	ND	ND	ND	ND	ND
BH23-06	0	November 10, 2023	56	1,010	-	-	-	-	-	-	-	-
	1.5	November 10, 2023	52	581	-	-	-	-	-	-	-	-
BH23-08	0	November 9, 2023	48	2,226	ND	ND	ND	ND	ND	ND	ND	58.8
	2	November 9, 2023	57	1,957	ND	ND	ND	ND	ND	ND	ND	460
	4	November 9, 2023	49	33	ND	ND	ND	ND	ND	ND	ND	34.7
BH23-10	0	November 14, 2023	73	1,033	-	-	-	-	-	-	-	-
	2	November 14, 2023	28	648	-	-	-	-	-	-	-	-
BH23-11	0	November 14, 2023	36	854	-	-	-	-	-	-	-	-
	2	November 14, 2023	23	99	-	-	-	-	-	-	-	-
BH23-13	0	November 14, 2023	82	186	ND	ND	ND	ND	ND	ND	ND	39.1
	1.5	November 14, 2023	41	89	ND	ND	ND	ND	ND	ND	ND	51.6
BH23-14	0	November 21, 2023	ND	172	ND	ND	ND	ND	ND	ND	ND	5.07
	2	November 21, 2023	ND	315	ND	ND	ND	ND	ND	ND	ND	ND
BH23-15	0	November 21, 2023	200	215	ND	ND	ND	ND	ND	ND	ND	ND
	2	November 21, 2023	232	242	ND	ND	ND	ND	ND	ND	ND	5.27

"ND" Not Detected at the Reporting Limit

"- " indicates not analyzed/assessed

Bold and grey shaded indicates exceedance outside of NMOCD Remediation Closure Criteria

Client Name: XTO Energy, Inc.

Site Name: PLU 29 Big Sinks West CTB

NMOCD Tracking #: nAPP2326151503

Project #: 23E-05485-01

Lab Reports: 890-5931, 890-5939, 890-5975, 890-6015, 890-5966, 2402015

Table 4. Confirmatory Sample Field Screen and Laboratory Results - Depth to Groundwater 51-100 feet bgs												
Sample Description			Field Screening		Petroleum Hydrocarbons							Inorganic
Sample ID	Depth (ft)	Sample Date	Extractable Organic Compounds (PetroFlag)	Chloride Concentration	Volatile		Extractable					
					Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	
			(ppm)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BES24-01	1	January 8, 2024	83	9,603	ND	ND	ND	ND	ND	ND	ND	7,260
BES24-02	0.5	January 8, 2024	99	9,268	ND	ND	ND	73	ND	73	73	7,280
BES24-03	0.5	January 8, 2024	111	8,575	ND	ND	ND	72	ND	72	72	6,700
BES24-04	0.5	January 30, 2024	-	-	ND	ND	ND	20	ND	20	20	3,100
BES24-05	0.5	January 8, 2024	861	9,230	ND	ND	ND	1,880	ND	1,880	1,880	7,270
	1	January 22, 2024	163	6,300	ND	ND	ND	89	ND	89	89	703
BES24-06	0.5	January 8, 2024	1,134	6,565	ND	ND	ND	2,860	ND	2,860	2,860	4,900
	1	January 22, 2024	142	1,600	ND	ND	ND	ND	ND	ND	ND	4,790
BES24-07	0.5	January 9, 2024	53	7,350	ND	ND	ND	ND	ND	ND	ND	7,030
BES24-08	1	January 30, 2024	-	-	ND	ND	ND	17	ND	17	17	2,500
BES24-09	0.5	January 9, 2024	61	5,750	ND	ND	ND	ND	ND	ND	ND	4,480
BES24-10	0.5	January 9, 2024	184	5,900	ND	ND	ND	ND	ND	ND	ND	5,060
BES24-11	0.5	January 30, 2024	-	-	ND	ND	ND	21	ND	21	21	2,600
BES24-12	0.5	January 30, 2024	-	-	ND	ND	ND	18	ND	18	18	2,500
BES24-13	0.5	January 12, 2024	84	7,200	ND	ND	ND	ND	ND	ND	ND	2,420
BES24-14	0.5	January 12, 2024	78	3,032	ND	ND	ND	ND	ND	ND	ND	2,320
BES24-15	0.5	January 12, 2024	153	6,630	ND	ND	ND	ND	ND	ND	ND	3,470
BES24-16	0.5	January 12, 2024	615	7,100	ND	ND	ND	510	ND	510	510	6,060
WES24-01	0.5	January 30, 2024	-	-	ND	ND	ND	24	ND	24	24	3000
WES24-02	0.5	January 30, 2024	-	-	ND	ND	ND	30	ND	30	30	3900
WES24-03	0.5	January 30, 2024	-	-	ND	ND	ND	35	ND	35	35	2500
WES24-05	1	January 22, 2024	-	-	ND	ND	ND	89	ND	89	89	703
WES24-06	1	January 22, 2024	-	-	ND	ND	ND	ND	ND	ND	ND	4,790

"ND" Not Detected at the Reporting Limit

"- " indicates not analyzed/assessed

Bold and grey shaded indicates exceedance outside of NMOCD Remediation Closure Criteria 51-100 ft. bgs

APPENDIX A – Closure Criteria Research Documentation

APPENDIX B – Daily Field Reports

Daily Site Visit Report



Site Photos

Viewing Direction: South



Western portion of spill area between equipment.

Viewing Direction: East



Southern spill area with surface crystallization.

Viewing Direction: East



Southeastern portion of spill area behind equipment.

Viewing Direction: South



Northeastern spill area.



Daily Site Visit Report

Viewing Direction: West



Description Photo: 6
Viewing Direction: West
Spill Southern spill area with extensive staining.
Created: 11/8/2023 11:18:18 AM
Lat: 33.104390, Long: -103.801853

Southern spill area with surface staining.

Daily Site Visit Report



Site Photos

Viewing Direction: North



Site Placard

Viewing Direction: North



BH23-15 at 2

Viewing Direction: Southwest



BH23-14 at 2'

Daily Site Visit Report



Site Photos

Viewing Direction: East



WES24-13 at 0.5

Viewing Direction: East



WES24-14 at 0.5

Viewing Direction: South



WES24-15 at 0.5

Viewing Direction: South



WES24-16 at 0.5'

Daily Site Visit Report



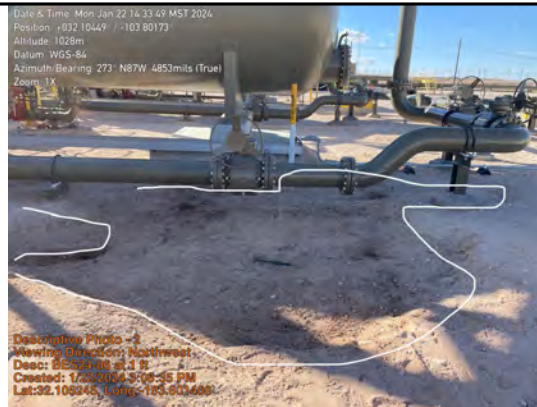
Site Photos

Viewing Direction: Southeast



BES24-05 at 1 ft

Viewing Direction: Northwest



BES24-06 at 1 ft

APPENDIX C – Notifications and Extension Request

FW: XTO - Extension Request - nAPP2326151503 PLU 29 Big Sinks West

Chance Dixon <cdixon@vertexresource.com>

Tue 6/4/2024 9:11 AM

To: Sally Carttar <SCarttar@vertexresource.com>

From: Hamlet, Robert, EMNRD <Robert.Hamlet@emnrd.nm.gov>

Sent: Friday, December 1, 2023 8:40 AM

To: Green, Garrett J <garrett.green@exxonmobil.com>

Cc: Chance Dixon <cdixon@vertex.ca>; Collins, Melanie Suzanne <melanie.collins@exxonmobil.com>; Bratcher, Michael, EMNRD <mike.bratcher@emnrd.nm.gov>; Rodgers, Scott, EMNRD <Scott.Rodgers@emnrd.nm.gov>; Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>

Subject: XTO - Extension Request - nAPP2326151503 PLU 29 Big Sinks West

RE: Incident #NAPP2326151503

Garrett,

Your request for an extension to **January 5th, 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: Thursday, November 30, 2023 2:21 PM

To: Hamlet, Robert, EMNRD <Robert.Hamlet@emnrd.nm.gov>

Subject: FW: [EXTERNAL] XTO - Extension Request - nAPP2326151503 PLU 29 Big Sinks West

Scott Rodgers • Environmental Specialist

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: Green, Garrett J <garrett.green@exxonmobil.com>
Sent: Thursday, November 30, 2023 11:42 AM
To: Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>
Cc: Chance Dixon <cdixon@vertex.ca>; Collins, Melanie <melanie.collins@exxonmobil.com>
Subject: [EXTERNAL] XTO - Extension Request - nAPP2326151503 PLU 29 Big Sinks West

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

All,

XTO is requesting an extension for the current deadline of December 12, 2023 to complete remedial activities and submitting a report required in 19.15.29.12.B.(1) NMAC at the PLU 29 Big Sinks West Battery (nAPP2326151503). In order to complete all remedial activities and submit a report, XTO requests an extension until January 5, 2024.

Garrett Green
Environmental Coordinator
Delaware Business Unit
(575) 200-0729
Garrett.Green@ExxonMobil.com

XTO Energy, Inc.
3104 E. Greene Street | Carlsbad, NM 88220 | M: (575)200-0729

OCD Permitting

Home Operator Data Action Status Action Search Results Action Status Item Details

[NOTIFY] Notification Of Sampling (C-141N) Application

Submission Information

Submission ID:	298365	Districts:	Artesia
Operator:	[5380] XTO ENERGY, INC	Counties:	Eddy
Description:	XTO ENERGY, INC [5380] , PLU 29 BIG SINKS WEST CTB , nAPP2326151503		
Status:	APPROVED		
Status Date:	12/29/2023		
References (1):	nAPP2326151503		

Forms

This application type does not have attachments.

Questions

Prerequisites

Incident ID (n#)	nAPP2326151503
Incident Name	NAPP2326151503 PLU 29 BIG SINKS WEST CTB @ 0
Incident Type	Produced Water Release
Incident Status	Initial C-141 Received

Location of Release Source

Site Name	PLU 29 BIG SINKS WEST CTB
Date Release Discovered	09/07/2023
Surface Owner	Federal

Sampling Event General Information

Please answer all the questions in this group.

What is the sampling surface area in square feet	4,000
What is the estimated number of samples that will be gathered	25
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	01/04/2024
Time sampling will commence	08:00 AM
<div>Warning: Notification can not be less than two business days prior to conducting final sampling.</div>	
Please provide any information necessary for observers to contact samplers	Garrett Green 575-637-1752
Please provide any information necessary for navigation to sampling site	PLU 29 Big Sinks West CTB F-29-25S-31E Open access

Comments

No comments found for this submission.

Conditions

Summary: *ggreen* (12/29/2023), Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.

Reasons

No reasons found for this submission.

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Home Operator Data Action Status Action Search Results Action Status Item Details

[NOTIFY] Notification Of Sampling (C-141N) Application

Submission Information

Submission ID:	298366	Districts:	Artesia
Operator:	[5380] XTO ENERGY, INC	Counties:	Eddy
Description:	XTO ENERGY, INC [5380] , PLU 29 BIG SINKS WEST CTB , nAPP2326151503		
Status:	APPROVED		
Status Date:	12/29/2023		
References (1):	nAPP2326151503		

Forms

This application type does not have attachments.

Questions

Prerequisites

Incident ID (n#)	nAPP2326151503
Incident Name	NAPP2326151503 PLU 29 BIG SINKS WEST CTB @ 0
Incident Type	Produced Water Release
Incident Status	Initial C-141 Received

Location of Release Source

Site Name	PLU 29 BIG SINKS WEST CTB
Date Release Discovered	09/07/2023
Surface Owner	Federal

Sampling Event General Information

Please answer all the questions in this group.

What is the sampling surface area in square feet	4,000
What is the estimated number of samples that will be gathered	25
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	01/05/2024
Time sampling will commence	08:00 AM
Warning: Notification can not be less than two business days prior to conducting final sampling.	
Please provide any information necessary for observers to contact samplers	575-200-0729
Please provide any information necessary for navigation to sampling site	PLU 29 Big Sinks West CTB F-29-25S-31E Open Access

Comments

No comments found for this submission.

Conditions

Summary: *ggreen* (12/29/2023), Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.

Reasons

No reasons found for this submission.

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[NOTIFY] Notification Of Sampling (C-141N) Application

Submission Information

Submission ID:	300283	Districts:	Artesia
Operator:	[5380] XTO ENERGY, INC	Counties:	Eddy
Description:	XTO ENERGY, INC [5380] , PLU 29 BIG SINKS WEST CTB , nAPP2326151503		
Status:	APPROVED		
Status Date:	01/05/2024		
References (1):	nAPP2326151503		

Forms

This application type does not have attachments.

Questions

Prerequisites

Incident ID (n#)	nAPP2326151503
Incident Name	NAPP2326151503 PLU 29 BIG SINKS WEST CTB @ 0
Incident Type	Produced Water Release
Incident Status	Initial C-141 Received

Location of Release Source

Site Name	PLU 29 BIG SINKS WEST CTB
Date Release Discovered	09/07/2023
Surface Owner	Federal

Sampling Event General Information

Please answer all the questions in this group.

What is the sampling surface area in square feet	4,000
What is the estimated number of samples that will be gathered	25
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	01/09/2024
Time sampling will commence	08:00 AM
Warning: Notification can not be less than two business days prior to conducting final sampling.	
Please provide any information necessary for observers to contact samplers	Garrett Green 5752000729
Please provide any information necessary for navigation to sampling site	PLU 29 Big Sinks West CTB, F-29-25S-31E

Comments

No comments found for this submission.

Conditions

Summary: *ggreen* (1/5/2024), Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.

Reasons

No reasons found for this submission.

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Home Operator Data Action Status Action Search Results Action Status Item Details

[NOTIFY] Notification Of Sampling (C-141N) Application

Submission Information

Submission ID:	300285	Districts:	Artesia
Operator:	[5380] XTO ENERGY, INC	Counties:	Eddy
Description:	XTO ENERGY, INC [5380] , PLU 29 BIG SINKS WEST CTB , nAPP2326151503		
Status:	APPROVED		
Status Date:	01/05/2024		
References (1):	nAPP2326151503		

Forms

This application type does not have attachments.

Questions

Prerequisites

Incident ID (n#)	nAPP2326151503
Incident Name	NAPP2326151503 PLU 29 BIG SINKS WEST CTB @ 0
Incident Type	Produced Water Release
Incident Status	Initial C-141 Received

Location of Release Source

Site Name	PLU 29 BIG SINKS WEST CTB
Date Release Discovered	09/07/2023
Surface Owner	Federal

Sampling Event General Information

Please answer all the questions in this group.

What is the sampling surface area in square feet	4,000
What is the estimated number of samples that will be gathered	25
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	01/10/2024
Time sampling will commence	08:00 AM
<div>Warning: Notification can not be less than two business days prior to conducting final sampling.</div>	
Please provide any information necessary for observers to contact samplers	Garrett Green 5752000729
Please provide any information necessary for navigation to sampling site	Open access, PLU 29 Big Sinks West CTB, F-29-25S-31E

Comments

No comments found for this submission.

Conditions

Summary: *ggreen* (1/5/2024), Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.

Reasons

No reasons found for this submission.

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Home Operator Data Action Status Action Search Results Action Status Item Details

[NOTIFY] Notification Of Sampling (C-141N) Application

Submission Information

Submission ID:	301936	Districts:	Artesia
Operator:	[5380] XTO ENERGY, INC	Counties:	Eddy
Description:	XTO ENERGY, INC [5380] , PLU 29 BIG SINKS WEST CTB , nAPP2326151503		
Status:	APPROVED		
Status Date:	01/10/2024		
References (1):	nAPP2326151503		

Forms

This application type does not have attachments.

Questions

Prerequisites

Incident ID (n#)	nAPP2326151503
Incident Name	NAPP2326151503 PLU 29 BIG SINKS WEST CTB @ 0
Incident Type	Produced Water Release
Incident Status	Remediation Plan Received

Location of Release Source

Site Name	PLU 29 BIG SINKS WEST CTB
Date Release Discovered	09/07/2023
Surface Owner	Federal

Sampling Event General Information

Please answer all the questions in this group.

What is the sampling surface area in square feet	4,000
What is the estimated number of samples that will be gathered	25
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	01/12/2024
Time sampling will commence	08:00 AM
Warning: Notification can not be less than two business days prior to conducting final sampling.	
Please provide any information necessary for observers to contact samplers	Garrett Green 5752000729
Please provide any information necessary for navigation to sampling site	F-29-25S-31E - 32.10427,-103.80211 Open access

Comments

No comments found for this submission.

Conditions

Summary:

ggreen (1/10/2024), Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.

Reasons

No reasons found for this submission.

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OCD Permitting

Home Operator Data Action Status Action Search Results Action Status Item Details

[NOTIFY] Notification Of Sampling (C-141N) Application

Submission Information

Submission ID:	304953	Districts:	Artesia
Operator:	[5380] XTO ENERGY, INC	Counties:	Eddy
Description:	XTO ENERGY, INC [5380] , PLU 29 BIG SINKS WEST CTB , nAPP2326151503		
Status:	APPROVED		
Status Date:	01/18/2024		
References (1):	nAPP2326151503		

Forms

This application type does not have attachments.

Questions

Prerequisites

Incident ID (n#)	nAPP2326151503
Incident Name	NAPP2326151503 PLU 29 BIG SINKS WEST CTB @ 0
Incident Type	Produced Water Release
Incident Status	Remediation Plan Received

Location of Release Source

Site Name	PLU 29 BIG SINKS WEST CTB
Date Release Discovered	09/07/2023
Surface Owner	Federal

Sampling Event General Information

Please answer all the questions in this group.

What is the sampling surface area in square feet	1,000
What is the estimated number of samples that will be gathered	5
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	01/22/2024
Time sampling will commence	10:30 AM
Warning: Notification can not be less than two business days prior to conducting final sampling.	
Please provide any information necessary for observers to contact samplers	Garrett Green 5752000729
Please provide any information necessary for navigation to sampling site	PLU 29 Big Sinks West CTB F-29-25S-31E

Comments

No comments found for this submission.

Conditions

Summary: *ggreen* (1/18/2024), Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.

Reasons

No reasons found for this submission.

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OCD Permitting

Home Operator Data Action Status Action Search Results Action Status Item Details

[NOTIFY] Notification Of Sampling (C-141N) Application

Submission Information

Submission ID:	304969	Districts:	Artesia
Operator:	[5380] XTO ENERGY, INC	Counties:	Eddy
Description:	XTO ENERGY, INC [5380] , PLU 29 BIG SINKS WEST CTB , nAPP2326151503		
Status:	APPROVED		
Status Date:	01/18/2024		
References (1):	nAPP2326151503		

Forms

This application type does not have attachments.

Questions

Prerequisites

Incident ID (n#)	nAPP2326151503
Incident Name	NAPP2326151503 PLU 29 BIG SINKS WEST CTB @ 0
Incident Type	Produced Water Release
Incident Status	Remediation Plan Received

Location of Release Source

Site Name	PLU 29 BIG SINKS WEST CTB
Date Release Discovered	09/07/2023
Surface Owner	Federal

Sampling Event General Information

Please answer all the questions in this group.

What is the sampling surface area in square feet	1,000
What is the estimated number of samples that will be gathered	5
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	01/23/2024
Time sampling will commence	08:00 AM
Warning: Notification can not be less than two business days prior to conducting final sampling.	
Please provide any information necessary for observers to contact samplers	Garrett Green 5752000729
Please provide any information necessary for navigation to sampling site	PLU 29 Big Sinks West CTB F-29-25S-31E

Comments

No comments found for this submission.

Conditions

Summary: *ggreen (1/18/2024)*, Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.

Reasons

No reasons found for this submission.

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Home Operator Data Action Status Action Search Results Action Status Item Details

[NOTIFY] Notification Of Sampling (C-141N) Application

Submission Information

Submission ID:	304971	Districts:	Artesia
Operator:	[5380] XTO ENERGY, INC	Counties:	Eddy
Description:	XTO ENERGY, INC [5380] , PLU 29 BIG SINKS WEST CTB , nAPP2326151503		
Status:	APPROVED		
Status Date:	01/18/2024		
References (1):	nAPP2326151503		

Forms

This application type does not have attachments.

Questions

Prerequisites

Incident ID (n#)	nAPP2326151503
Incident Name	NAPP2326151503 PLU 29 BIG SINKS WEST CTB @ 0
Incident Type	Produced Water Release
Incident Status	Remediation Plan Received

Location of Release Source

Site Name	PLU 29 BIG SINKS WEST CTB
Date Release Discovered	09/07/2023
Surface Owner	Federal

Sampling Event General Information

Please answer all the questions in this group.

What is the sampling surface area in square feet	1,000
What is the estimated number of samples that will be gathered	5
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	01/24/2024
Time sampling will commence	08:00 AM
Warning: Notification can not be less than two business days prior to conducting final sampling.	
Please provide any information necessary for observers to contact samplers	Garrett Green 5752000729
Please provide any information necessary for navigation to sampling site	PLU 29 Big Sinks West CTB F-29-25S-31E

Comments

No comments found for this submission.

Conditions

Summary: *ggreen (1/18/2024), Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.*

Reasons

No reasons found for this submission.

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Home Operator Data Action Status Action Search Results Action Status Item Details

[NOTIFY] Notification Of Sampling (C-141N) Application

Submission Information

Submission ID:	304974	Districts:	Artesia
Operator:	[5380] XTO ENERGY, INC	Counties:	Eddy
Description:	XTO ENERGY, INC [5380] , PLU 29 BIG SINKS WEST CTB , nAPP2326151503		
Status:	APPROVED		
Status Date:	01/18/2024		
References (1):	nAPP2326151503		

Forms

This application type does not have attachments.

Questions

Prerequisites

Incident ID (n#)	nAPP2326151503
Incident Name	NAPP2326151503 PLU 29 BIG SINKS WEST CTB @ 0
Incident Type	Produced Water Release
Incident Status	Remediation Plan Received

Location of Release Source

Site Name	PLU 29 BIG SINKS WEST CTB
Date Release Discovered	09/07/2023
Surface Owner	Federal

Sampling Event General Information

Please answer all the questions in this group.

What is the sampling surface area in square feet	1,000
What is the estimated number of samples that will be gathered	5
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	01/25/2024
Time sampling will commence	08:00 AM
Warning: Notification can not be less than two business days prior to conducting final sampling.	
Please provide any information necessary for observers to contact samplers	Garrett Green 5752000729
Please provide any information necessary for navigation to sampling site	PLU 29 Big Sinks West CTB F-29-25S-31E

Comments

No comments found for this submission.

Conditions

Summary: *ggreen (1/18/2024)*, Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.

Reasons

No reasons found for this submission.

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OCD Permitting

Home Operator Data Action Status Action Search Results Action Status Item Details

[NOTIFY] Notification Of Sampling (C-141N) Application

Submission Information

Submission ID:	308067	Districts:	Artesia
Operator:	[5380] XTO ENERGY, INC	Counties:	Eddy
Description:	XTO ENERGY, INC [5380] , PLU 29 BIG SINKS WEST CTB , nAPP2326151503		
Status:	APPROVED		
Status Date:	01/25/2024		
References (1):	nAPP2326151503		

Forms

This application type does not have attachments.

Questions

Prerequisites

Incident ID (n#)	nAPP2326151503
Incident Name	NAPP2326151503 PLU 29 BIG SINKS WEST CTB @ 0
Incident Type	Produced Water Release
Incident Status	Remediation Plan Received

Location of Release Source

Site Name	PLU 29 BIG SINKS WEST CTB
Date Release Discovered	09/07/2023
Surface Owner	Federal

Sampling Event General Information

Please answer all the questions in this group.

What is the sampling surface area in square feet	1,400
What is the estimated number of samples that will be gathered	7
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	01/30/2024
Time sampling will commence	08:00 AM
Warning: Notification can not be less than two business days prior to conducting final sampling.	
Please provide any information necessary for observers to contact samplers	Garrett Green 5752000729
Please provide any information necessary for navigation to sampling site	F-29-25S-31E PLU 29 Big Sinks West CTB

Comments

No comments found for this submission.

Conditions

Summary: *ggreen (1/25/2024)*, Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.

Reasons

No reasons found for this submission.

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QUESTIONS

Action 367507

QUESTIONS

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 367507
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Prerequisites	
Incident ID (n#)	nAPP2326151503
Incident Name	NAPP2326151503 PLU 29 BIG SINKS WEST CTB @ 0
Incident Type	Produced Water Release
Incident Status	Remediation Closure Report Received

Location of Release Source	
Please answer all the questions in this group.	
Site Name	PLU 29 BIG SINKS WEST CTB
Date Release Discovered	09/07/2023
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: Corrosion Other (Specify) Produced Water Released: 13 BBL Recovered: 0 BBL Lost: 13 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)	Interior corrosion caused a pin hole on the Bulk 701 6" CS water line and released fluids to pad.

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QUESTIONS, Page 2

Action 367507

QUESTIONS (continued)

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID:
	5380
	Action Number:
	367507
Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)	

QUESTIONS

Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	No, according to supplied volumes this does not appear to be a "gas only" report.
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	No
Reasons why this would be considered a submission for a notification of a major release	Unavailable.
With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.	

Initial Response

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

The source of the release has been stopped	True
The impacted area has been secured to protect human health and the environment	True
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	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: Garrett Green Title: SHE Coordinator Email: garrett.green@exxonmobil.com Date: 01/08/2024
--	--

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QUESTIONS, Page 3

Action 367507

QUESTIONS (continued)

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID:	5380
	Action Number:	367507
	Action Type:	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS**Site Characterization**

Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release in feet below ground surface (ft bgs)	Less than or equal 25 (ft.)
What method was used to determine the depth to ground water	NM OSE iWaters Database Search
Did this release impact groundwater or surface water	No
What is the minimum distance, between the closest lateral extents of the release and the following surface areas:	
A continuously flowing watercourse or any other significant watercourse	Between 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)	9920
TPH (GRO+DRO+MRO)	(EPA SW-846 Method 8015M)	0
GRO+DRO	(EPA SW-846 Method 8015M)	0
BTEX	(EPA SW-846 Method 8021B or 8260B)	0
Benzene	(EPA SW-846 Method 8021B or 8260B)	0

Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.

On what estimated date will the remediation commence	01/04/2024
On what date will (or did) the final sampling or liner inspection occur	01/04/2024
On what date will (or was) the remediation complete(d)	01/10/2024
What is the estimated surface area (in square feet) that will be reclaimed	3700
What is the estimated volume (in cubic yards) that will be reclaimed	175
What is the estimated surface area (in square feet) that will be remediated	3700
What is the estimated volume (in cubic yards) that will be remediated	175

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, Page 4

Action 367507

QUESTIONS (continued)

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 367507
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Remediation Plan (continued)	
<i>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.</i>	
This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:	
<i>(Select all answers below that apply.)</i>	
(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	No
OR is the off-site disposal site, to be used, an NMED facility	No
(Ex Situ) Excavation and on-site remediation (i.e. On-Site Land Farms)	No
(In Situ) Soil Vapor Extraction	No
(In Situ) Chemical processing (i.e. Soil Shredding, Potassium Permanganate, etc.)	No
(In Situ) Biological processing (i.e. Microbes / Fertilizer, etc.)	No
(In Situ) Physical processing (i.e. Soil Washing, Gypsum, Disking, etc.)	No
Ground Water Abatement pursuant to 19.15.30 NMAC	No
OTHER (Non-listed remedial process)	No
<i>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>	
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: 07/25/2024
<i>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.</i>	

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QUESTIONS, Page 5

Action 367507

QUESTIONS (continued)

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID:	5380
	Action Number:	367507
	Action Type:	
	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)	

QUESTIONS

Deferral Requests Only	
Only answer the questions in this group if seeking a deferral upon approval this submission. Each of the following items must be confirmed as part of any request for deferral of remediation.	
Requesting a deferral of the remediation closure due date with the approval of this submission	No

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QUESTIONS, Page 6

Action 367507

QUESTIONS (continued)

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID:	5380
	Action Number:	367507
	Action Type:	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Sampling Event Information	
Last sampling notification (C-141N) recorded	308067
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	01/30/2024
What was the (estimated) number of samples that were to be gathered	7
What was the sampling surface area in square feet	1400

Remediation Closure Request

Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.

Requesting a remediation closure approval with this submission	Yes
Have the lateral and vertical extents of contamination been fully delineated	Yes
Was this release entirely contained within a lined containment area	No
All areas reasonably needed for production or subsequent drilling operations have been stabilized, returned to the sites existing grade, and have a soil cover that prevents ponding of water, minimizing dust and erosion	Yes
What was the total surface area (in square feet) remediated	4770
What was the total volume (cubic yards) remediated	1000
All areas not reasonably needed for production or subsequent drilling operations have been reclaimed to contain a minimum of four feet of non-waste contain earthen material with concentrations less than 600 mg/kg chlorides, 100 mg/kg TPH, 50 mg/kg BTEX, and 10 mg/kg Benzene	Yes
What was the total surface area (in square feet) reclaimed	4770
What was the total volume (in cubic yards) reclaimed	1000
Summarize any additional remediation activities not included by answers (above)	The release area was fully delineated, remediated, and backfilled with local soils. Confirmatory samples were analyzed by the laboratory and found to be below allowable concentrations as per the NMAC Closure Criteria for Soils Impacted by a Release locations "51-100 feet depth to groundwater". Based on these findings, XTO requests that this release be closed.

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (in .pdf format) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

I hereby agree and sign off to the above statement	Name: Alan Romero Title: Regulatory Analyst Email: alan.romero1@exxonmobil.com Date: 07/25/2024
--	--

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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, Page 7

Action 367507

QUESTIONS (continued)

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID:	5380
	Action Number:	367507
	Action Type:	
	[C-141] Remediation Closure Request C-141 (C-141-v-Closure)	

QUESTIONS

Reclamation Report	
Only answer the questions in this group if all reclamation steps have been completed.	
Requesting a reclamation approval with this submission	No

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

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

CONDITIONS

Action 367507

CONDITIONS

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 367507
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

CONDITIONS

Created By	Condition	Condition Date
scwells	None	7/30/2024