ENSOLUM

April 26, 2023

New Mexico Oil Conservation Division
New Mexico Energy, Minerals, and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Re: Deferral Request
Tusk Federal 004H
Incident Number NAPP2303742113
Lea County, New Mexico

To Whom It May Concern:

Ensolum, LLC (Ensolum), on behalf of COG Operating, LLC (COG), has prepared this *Deferral Request* to document assessment and soil sampling activities performed at the Tusk Federal 004H (Site). The purpose of the Site assessment and soil sampling activities was to assess for the presence or absence of impacts to soil following a release of produced water within a lined containment at the Site. Based on field observations, field screening activities, and soil sample laboratory analytical results, COG is submitting this *Deferral Request*, describing Site assessment and delineation activities that have occurred and requesting deferral of final remediation for Incident Number NAPP2303742113 until the Site is reconstructed, and/or the well pad is abandoned.

SITE DESCRIPTION AND RELEASE SUMMARY

The Site is located in Unit O, Section 25, Township 19 South, Range 34 East, in Lea County, New Mexico (32.6249°, -103.5115°) and is associated with oil and gas exploration and production operations on Federal Land managed by the Bureau of Land Management (BLM).

On January 27, 2023, internal corrosion on a firetube resulted in the release of approximately 22.8 barrels (bbls) of produced water into the lined containment. A vacuum truck was dispatched to the Site to recover free-standing fluids; approximately 3 bbls of produced water were recovered. COG removed saturated pea gravel within the containment and backfilled with clean material. COG reported the release immediately via email to the New Mexico Oil Conservation Division (NMOCD) and submitted a *Release Notification Form C-141* (Form C-141) on February 6, 2023. The release was assigned Incident Number NAPP2303742113.

SITE CHARACTERIZATION AND CLOSURE CRITERIA

The Site was characterized for applicability of Table I, Closure Criteria for Soils Impacted by a Release, of Title 19, Chapter 15, Part 29 (19.15.29) of the New Mexico Administrative Code (NMAC). Results from the characterization desktop review are presented on page 3 of the Form C-141, Site Assessment/Characterization. Potential Site receptors are identified on Figure 1.

Depth to groundwater at the Site is estimated to be less than 50 feet below ground surface (bgs) based on the nearest groundwater well data. The closest permitted groundwater well with depth to groundwater

data is New Mexico Office of the State Engineer (NMOSE) well CP-00683 POD 1, located approximately 192 feet west of the Site. The groundwater well has a reported depth to groundwater of 28 feet bgs and a total depth of 120 feet bgs. Ground surface elevation at the groundwater well location is 3,744 feet above mean sea level (amsl), which is approximately 2 feet higher in elevation than the Site. All wells used for depth to groundwater determination are presented on Figure 1. The referenced well records are included in Appendix A.

The closest continuously flowing or significant watercourse to the Site is an intermittent stream, located approximately 1,507 feet east of the Site. The Site is greater than 200 feet from a lakebed, sinkhole, or playa lake and greater than 300 feet from an occupied residence, school, hospital, institution, church, or wetland. The Site is less than 1,000 feet to a freshwater well or spring and is not within a 100-year floodplain or overlying a subsurface mine. The Site is not underlain by unstable geology (low potential karst designation area). Site receptors are identified on Figure 1.

Based on the results of the Site Characterization, the following NMOCD Table I Closure Criteria (Closure Criteria) apply:

- Benzene: 10 milligrams per kilogram (mg/kg)
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX): 50 mg/kg
- Total petroleum hydrocarbons (TPH): 100 mg/kg
- Chloride: 600 mg/kg

SITE ASSESSMENT ACTIVITIES AND LABORATORY ANALYTICAL RESULTS

A 48-hour advance notice of the liner inspection was provided via email on February 9, 2023, to the NMOCD. A liner integrity inspection was attempted by Ensolum personnel on February 13, 2023 but could not be completed due to the amount of pea gravel covering the floor of the liner. Four delineation soil samples (SS01 through SS04) were collected around the lined containment at 0.2 feet bgs to confirm the lateral extent of the release. Soil from the delineation samples was field screened for volatile organic compounds (VOCs) utilizing a calibrated photoionization detector (PID) and chloride using Hach® chloride QuanTab® test strips. The delineation soil sample locations are depicted on Figure 2. Photographic documentation was conducted at the Site. A photographic log is included in Appendix A.

The soil samples were placed directly into pre-cleaned glass jars, labeled with the location, date, time, sampler name, method of analysis, and immediately placed on ice. The soil samples were transported under strict chain-of-custody procedures to Eurofins Laboratories (Eurofins) in Carlsbad, New Mexico, for analyses of the following constituents of concern (COCs): BTEX following United States Environmental Protection Agency (EPA) Method 8021B; TPH-gasoline range organics (GRO), TPH-diesel range organics (DRO), and TPH-oil range organics (ORO) following EPA Method 8015M/D; and chloride following EPA Method 300.0.

Between March 27, 2023 and March 28, 2023, Ensolum personnel were at the Site to oversee hand shoveling activities in order to expose the liner. Pea gravel was removed and transported off Site. A 48-hour advance notification of the liner inspection was provided via email on March 23, 2023 to the NMOCD. A liner integrity inspection was completed by Ensolum personnel on March 29, 2023. Upon inspection, the liner was determined to be insufficient.

One borehole (BH01) was advanced via hand auger near the location of the tear in the liner to assess the vertical extent of impacted soil. Four discrete delineation soil samples were collected from the borehole (BH01/BH01A/BH01B/BH01C) at depths ranging from 0.5 feet to 3 feet bgs. Soil from the

boreholes were handled and analyzed following the same procedures as described above. The delineation soil sample locations are depicted on Figure 2. Photographic documentation was conducted at the Site. A photographic log is included in Appendix B. Field screening results and observations from the borehole were documented on a lithologic/soil sampling log, which is included as Appendix C. The borehole was backfilled with the soil removed, COG repaired the tear in the liner, and the containment was backfilled with clean pea gravel.

On April 13, 2023, Ensolum personnel visited the Site to complete additional delineation activities. Four delineation soil samples (SS01A through SS04A) were collected around the lined containment in the respective locations of SS01 through SS04 at 3 feet bgs to confirm the lateral extent of the release. The delineation soil samples were handled and analyzed following the same procedures as described above. The delineation soil sample locations are depicted on Figure 2. Field screening results and observations from the delineation soil samples were documented on lithologic/soil sampling logs, which are included as Appendix C. Photographic documentation was conducted at the Site. A photographic log is included in Appendix B.

LABORATORY ANALYTICAL RESULTS

Laboratory analytical results for delineation soil samples SS01/SS01A through SS04/SS04A, collected around the lined containment at depths ranging from 0.2 feet bgs to 3 feet bgs, indicated all COC concentrations were compliant with the Site Closure Criteria and successfully define the lateral extent of the release.

Laboratory analytical results for delineation soil samples BH01, BH01A, and BH01B, collected within the lined containment at depths ranging from 0.5 feet bgs to 2 feet bgs, indicated chloride concentrations exceeded the Site Closure Criteria. Subsequent delineation sample BH01C, collected at 3 feet bgs, indicated all COC concentrations were compliant with the Site Closure Criteria and successfully define the vertical extent of the release. Laboratory analytical results are summarized in Table 1 and the complete laboratory analytical reports are included as Appendix D.

DEFERRAL REQUEST

COG is requesting a deferral of final remediation due to the presence of active production equipment and surface pipelines within the lined containment. The impacted soil is limited to the area immediately beneath the lined containment and active production equipment, where remediation would require a major facility deconstruction.

The impacted soil remaining in place beneath the liner is delineated vertically by delineation soil sample BH01C, collected at 3 feet bgs, and laterally by delineation soil samples SS01/SS01A through SS04/SS04A. A maximum of 1,000 yards of chloride impacted soil remains in place beneath the liner assuming a maximum 3-foot depth based on the delineation soil samples listed above, that were compliant with the Site Closure Criteria.

COG does not believe deferment will result in imminent risk to human health, the environment, or groundwater. Depth to groundwater has been determined to be less than 50 feet bgs, the release was contained laterally by the lined containment, and the impacted soil remaining in place is limited to the area immediately beneath the liner. The liner has been repaired by COG which will restrict future vertical migration of residual impacts.

Based on the presence of active production equipment within the release area and the complete lateral and vertical delineation of impacted soil remaining in place, COG requests deferral of final remediation

for Incident Number NAPP2303742113 until final reclamation of the well pad or major construction, whichever comes first.

If you have any questions or comments, please contact Ms. Kalei Jennings at (817) 683-2503 or kjennings@ensolum.com.

Sincerely,
Ensolum, LLC

Hadlie Green
Project Geologist

Daniel R. Moir, PG
Senior Managing Geologist

cc: Jacob Laird, COG Operating, LLC
Bureau of Land Management

Appendices:

Figure 1	Site Receptor Map
Figure 2	Delineation Soil Sample Locations
Table 1	Soil Sample Analytical Results
Appendix A	Referenced Well Records
Appendix B	Photographic Log
Appendix C	Lithologic/Soil Sampling Logs
Appendix D	Laboratory Analytical Reports & Chain-of-Custody Documentation
Appendix E	NMOCD Notifications
Appendix F	Final C-141

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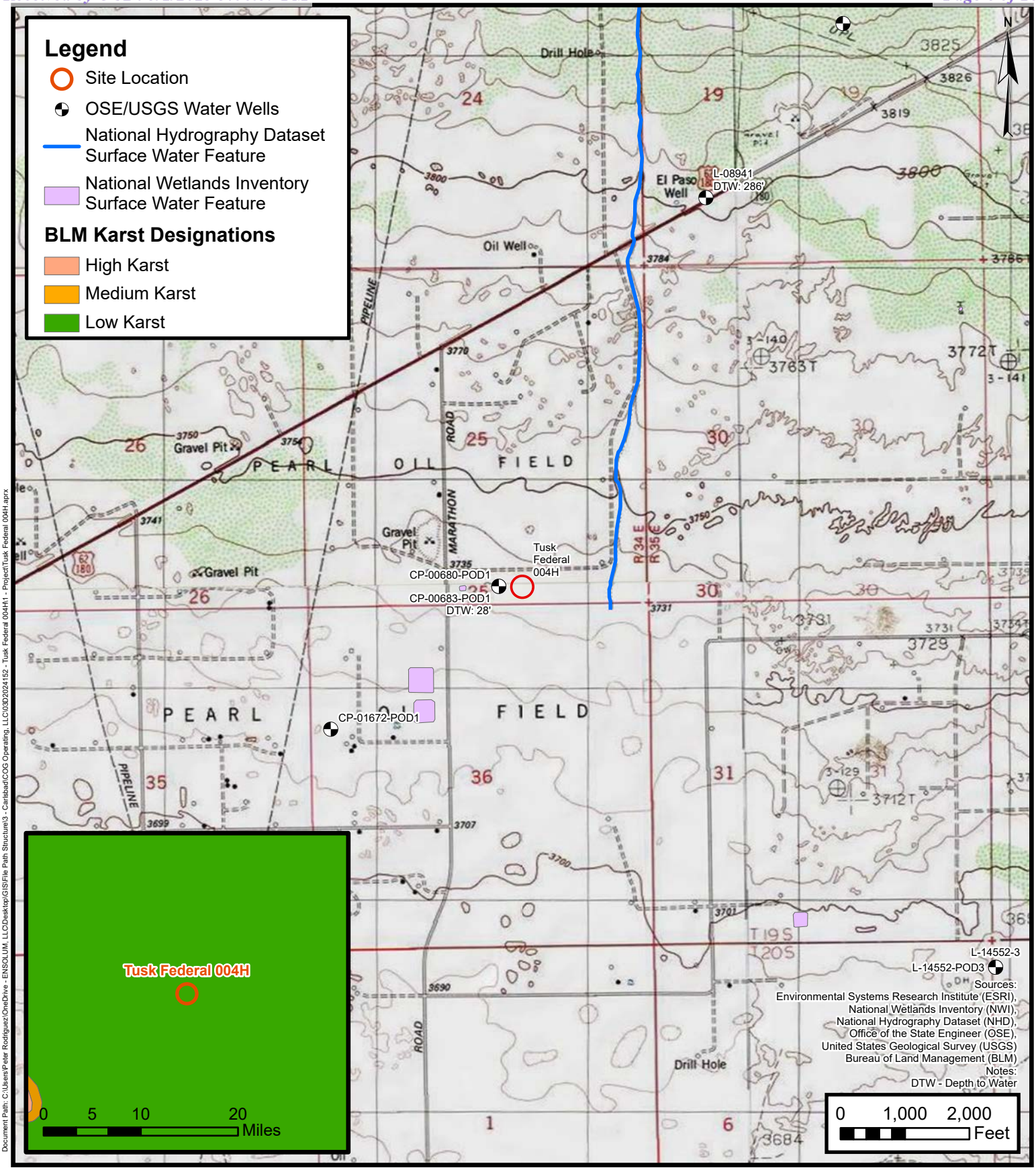
FIGURES



Document Path: C:\Users\Peter Rodriguez\OneDrive - ENSOLUM, LLC\Desktop\GIS\File Path Structure\3 - Carlsbad\COG Operating, LLC\03D20241152 - Tusk Federal 004H\1 - Project\Tusk Federal 004H.aprx

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Environmental, Engineering and Hydrogeologic Consultants

Site Receptor Map

COG Operating, LLC

Tusk Federal 004H

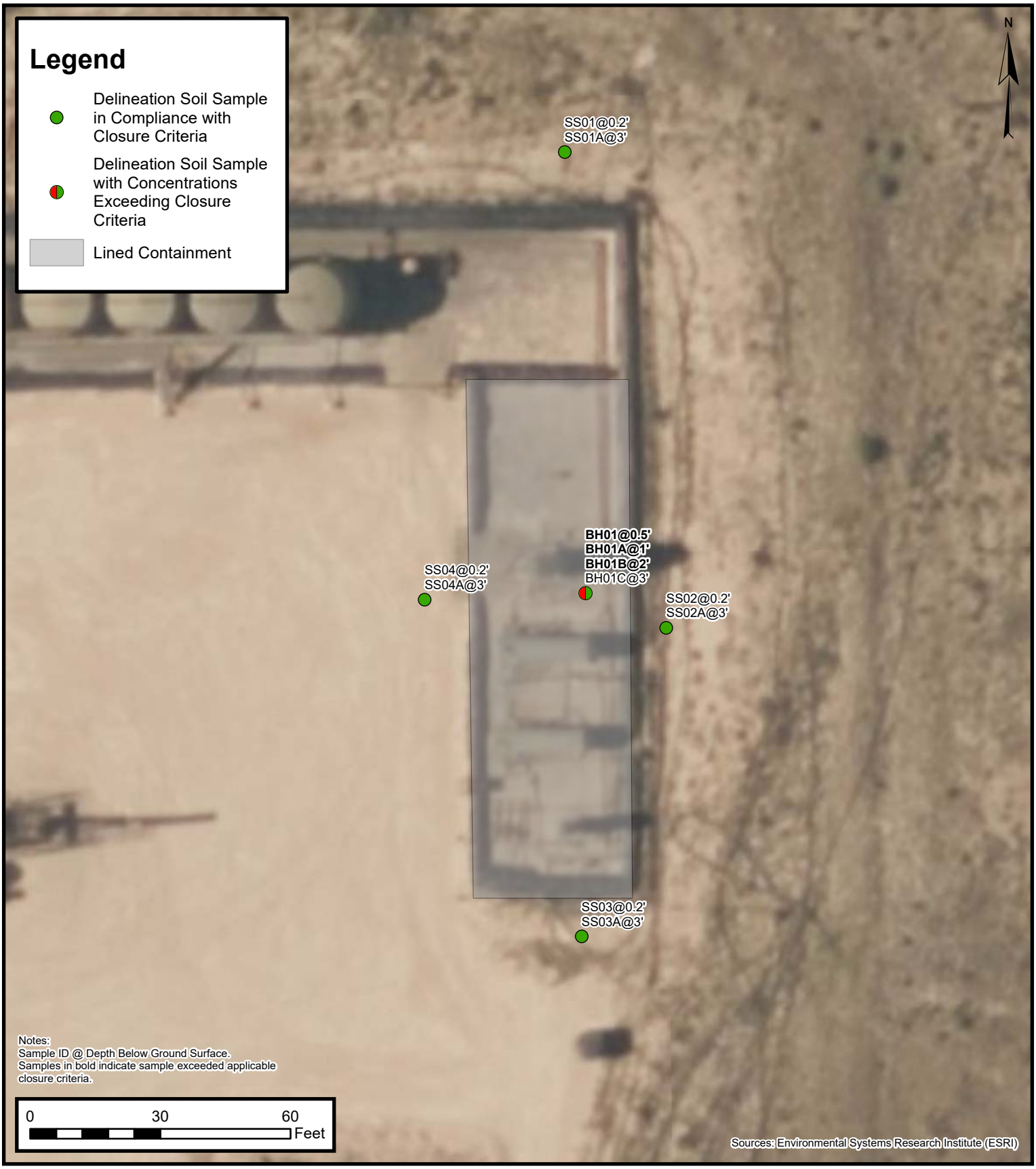
Incident Number NAPP2303742113

Unit O, Sec 25, T19S, R34E

Lea County, New Mexico

FIGURE

1



Document Path: C:\Users\Justin Valdez\GIS\Ensolum GIS\Templates\Template - Portrait 8.5 x 11.aprx

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Delineation Soil Sample Locations

COG Operating, LLC
Tusk Federal 004H
Incident Number: NAPP2303742113
Unit O, Sec 25, T19S, R34E
Lea County, New Mexico

FIGURE
2

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TABLES

I

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TABLE I
SOIL SAMPLE ANALYTICAL RESULTS
Tusk Federal 004H
COG Operating, LLC
Lea County, New Mexico

Sample Designation	Date	Depth (feet bgs)	Benzene (mg/kg)	Total BTEX (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)	GRO+DRO (mg/kg)	Total TPH (mg/kg)	Chloride (mg/kg)
NMOCD Table I Closure Criteria (NMAC 19.15.29)			**10**	**50**	**NE**	**NE**	**NE**	**NE**	**100**	**600**
Delineation Soil Samples										
SS01	02/13/2023	0.2	<0.00200	<0.00400	<49.8	<49.8	<49.8	<49.8	<49.8	<5.05
SS01A	04/13/2023	3	<0.00199	<0.00398	<49.9	<49.9	<49.9	<49.9	<49.9	145
SS02	02/13/2023	0.2	<0.00201	<0.00402	<50.0	<50.0	<50.0	<50.0	<50.0	16.1
SS02A	04/13/2023	3	<0.00199	<0.00398	<49.9	<49.9	<49.9	<49.9	<49.9	206
SS03	02/13/2023	0.2	<0.00202	<0.00403	<50.0	<50.0	<50.0	<50.0	<50.0	6.32
SS03A	04/13/2023	3	<0.00200	<0.00399	<49.8	<49.8	<49.8	<49.8	<49.8	120
SS04	02/13/2023	0.2	<0.00200	<0.00399	<49.8	<49.8	<49.8	<49.8	<49.8	201
SS04A	04/13/2023	3	<0.00200	<0.00401	<50.0	<50.0	<50.0	<50.0	<50.0	143
BH01	04/03/2023	0.5	<0.00199	<0.00398	<50.0	<50.0	<50.0	<50.0	<50.0	**8,510**
BH01A	04/03/2023	1	<0.00200	<0.00399	<50.0	<50.0	<50.0	<50.0	<50.0	**2,080**
BH01B	04/03/2023	2	<0.00201	<0.00402	<49.8	<49.8	<49.8	<49.8	<49.8	**4,370**
BH01C	04/03/2023	3	<0.00202	<0.00404	<50.0	<50.0	<50.0	<50.0	<50.0	305

Notes:

bgs: below ground surface

mg/kg: milligrams per kilogram

NMOCD: New Mexico Oil Conservation Division

NMAC: New Mexico Administrative Code

BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes

GRO: Gasoline Range Organics

DRO: Diesel Range Organics

ORO: Oil Range Organics

TPH: Total Petroleum Hydrocarbon

Concentrations in ***bold*** *exceed the NMOCD Table I Closure Criteria or reclamation standard where applicable.*

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APPENDIX A

Referenced Well Records

New Mexico Office of the State Engineer

Point of Diversion Summary

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

Well Tag	POD Number	Q64	Q16	Q4	Sec	Twn	Rng	X	Y
	CP 00683 POD1	3	3	4	25	19S	34E	639530	3610685*

Driller License: 46 **Driller Company:** ABBOTT BROTHERS COMPANY

Driller Name: MURRELL ABBOTT

Drill Start Date:	07/18/1985	**Drill Finish Date:**	07/20/1985	**Plug Date:**	
Log File Date:	08/16/1985	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	1 GPM
Casing Size:	4.00	**Depth Well:**	120 feet	**Depth Water:**	28 feet

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

Click to hideNews Bulletins

- Explore the *NEW* USGS National Water Dashboard interactive map to access real-time water data from over 13,500 stations nationwide.
- Full News

Groundwater levels for the Nation

Important: Next Generation Monitoring Location Page

Search Results -- 1 sites found

Agency code = usgs
site_no list =
- 323855103294001

Minimum number of levels = 1
Save file of selected sites to local disk for future upload

USGS 323855103294001 19S.35E.19.21110

Lea County, New Mexico
Latitude 32°38'55", Longitude 103°29'40" NAD27
Land-surface elevation 3,841 feet above NAVD88
This well is completed in the High Plains aquifer (N100HGHPLN) national aquifer.
This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.

Output formats

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

Date	Time	? Water-level date-time accuracy	? Parameter code	Water level, feet below land surface	Water level, feet above specific vertical datum	Referenced vertical datum	? Status	? Method of measurement	? Measuring agency	? Source measu
1961-03-08		D	62610		3775.15	NGVD29	P	Z		
1961-03-08		D	62611		3776.77	NAVD88	P	Z		
1961-03-08		D	72019	64.23			P	Z		
1966-02-08		D	62610		3773.29	NGVD29	1	Z		
1966-02-08		D	62611		3774.91	NAVD88	1	Z		
1966-02-08		D	72019	66.09			1	Z		
1971-01-27		D	62610		3771.60	NGVD29	1	Z		
1971-01-27		D	62611		3773.22	NAVD88	1	Z		
1971-01-27		D	72019	67.78			1	Z		

Explanation

Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Parameter code	62610	Groundwater level above NGVD 1929, feet
Parameter code	62611	Groundwater level above NAVD 1988, feet
Parameter code	72019	Depth to water level, feet below land surface

Section	Code	Description
Referenced vertical datum	NAVD88	North American Vertical Datum of 1988
Referenced vertical datum	NGVD29	National Geodetic Vertical Datum of 1929
Status	1	Static
Status	P	Pumping
Method of measurement	Z	Other.
Measuring agency		Not determined
Source of measurement		Not determined
Water-level approval status	A	Approved for publication -- Processing and review completed.

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APPENDIX B

Photographic Log

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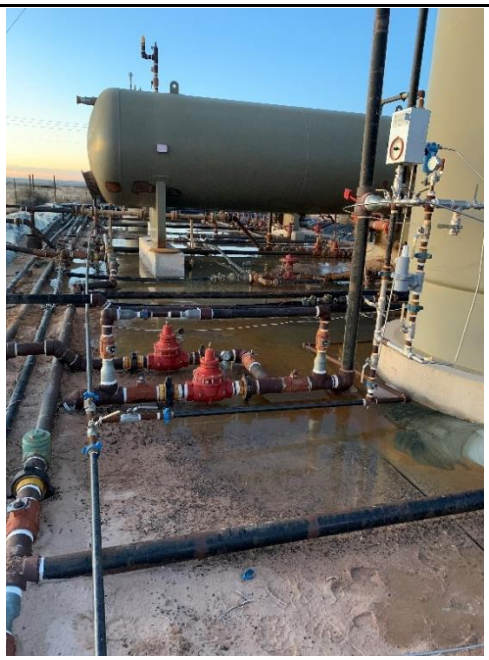
Photographic Log
COG Operating, LLC
Tusk Federal 004H
Incident Number NAPP2303742113

Photograph 1 Date: 3/27/2023
Description: Well sign
View: North



Photograph 2 Date: 1/27/2023
Description: Initial release extent
View: Northeast

Photograph 3 Date: 4/3/2023
Description: Tear in liner, identified during inspection
View: Northwest

Photograph 4 Date: 4/3/2023
Description: Delineation activities inside containment
View: Southwest

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Photographic Log
COG Operating,LLC
Tusk Federal 004H
Incident Number NAPP2303742113

Photograph 1 Date: 4/4/2023
Description: Patched liner and backfilling activities
View: Southeast

Photograph 2 Date: 4/13/2023
Description: Delineation activities
View: Northeast

Photograph 3 Date: 4/13/2023
Description: Delineation Area
View: Southeast

Photograph 4 Date: 4/13/2023
Description: Delineation Activities
View: Southwest

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APPENDIX C

Lithologic Soil Sampling Logs

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Sample Name: BH01	Date: 4/3/23
Site Name: Tusk Federal 4H	
Incident Number: NAPP2303742113	
Job Number: 03D2024152	
LITHOLOGIC / SOIL SAMPLING LOG	Logged By: Peter Van Patten / Method: Hand Auger
Coordinates:	Hole Diameter: 4" / Total Depth: 4'

Comments: Field screening conducted with HACH Chloride Test Strips and PID for chloride and vapor, respectively. Chloride test performed with 1:4 dilution factor of soil to distilled water. 40% correction factors included.

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
D	9,240	3.1	N	BH01	0.5	0	CHHE	Caliche: pinkish brown/gray, subangular, no stain, no odor
D	2,436	2.6	N	BH01A	1	1	SP-SM	Sand: brown, dark tan, fine-medium grain, poorly sorted, no stain, no odor
D	4,468	2.1	N	BH01B	2	2	SP-SM	Sand: tan, light brown/gray, fine-medium gain, poorly sorted, no stain, no odor
D	285	2.4	N	BH01C	3	3	SP-SM	SAA (same as above) poorly sorted, no stain, no odor, slightly moist
D	476	1.2	N	BH01D	4	4	SP-SM	SAA
								TD at 4' below ground surface
						6		
						7		
						8		
						9		
						10		
						11		
						12		

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	Sample Name: SS01	Date: 4/13/23
	Site Name: Tusk Federal 4H	
	Incident Number: NAPP2303742113	
	Job Number: 03D2024152	
LITHOLOGIC / SOIL SAMPLING LOG	Logged By: Ronni Hayes	Method: Hand auger
Coordinates: 32.625174, -103.511533	Hole Diameter: ~4"	Total Depth: 3ft

Comments: Field screening conducted with HACH Chloride Test Strips and PID for chloride and vapor, respectively. Chloride test performed with 1:4 dilution factor of soil to distilled water. 40% correction factor included.

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
Dry	<173	0.9	N	SS01	0.2	0 0.2 1 2	SP-SM	SAND, poorly graded, light brown, no staining, no odor, cohesive, fine
Wet	<173	0.2	N	SS01A	3	3	SP-SM	SAND, fine, medium brown, no staining, no odor, cohesive, moist
								TD at 3 ft bgs

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	Sample Name: SS02	Date: 4/13/23
	Site Name: Tusk Federal 4H	
	Incident Number: NAPP2303742113	
	Job Number: 03D2024152	
LITHOLOGIC / SOIL SAMPLING LOG	Logged By: Ronni Hayes	Method: Hand auger
Coordinates: 32.624859, -103.511460	Hole Diameter: ~4"	Total Depth: 3ft

Comments: Field screening conducted with HACH Chloride Test Strips and PID for chloride and vapor, respectively. Chloride test performed with 1:4 dilution factor of soil to distilled water. 40% correction factor included.

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
Dry	<173	1	N	SS02	0.2	0	SP-SM	SAND, poorly graded, light brown, no staining, no odor, cohesive, fine
						0.2		
						1		
						2		
Wet	207.2	0.3	N	SS02A	3	3	SP-SM	SAND, fine, medium brown, no staining, no odor, cohesive, moist
								TD at 3 ft bgs

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	Sample Name: SS03	Date: 4/13/23
	Site Name: Tusk Federal 4H	
	Incident Number: NAPP2303742113	
	Job Number: 03D2024152	
LITHOLOGIC / SOIL SAMPLING LOG	Logged By: Ronni Hayes	Method: Hand auger
Coordinates: 32.624682, -103.511537	Hole Diameter: ~4"	Total Depth: 3ft

Comments: Field screening conducted with HACH Chloride Test Strips and PID for chloride and vapor, respectively. Chloride test performed with 1:4 dilution factor of soil to distilled water. 40% correction factor included.

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
Dry	<173	0.9	N	SS03	0.2	0 0.2 1 2	GP	CALICHE, poorly graded, light brown, no staining, no odor, abundant limestone gravel
Wet	<173	0.3	N	SS03A	3	3	SP-SM	SAND, fine, medium brown, no staining, no odor, cohesive, moist TD at 3 ft bgs

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	Sample Name: SS04	Date: 4/13/23
	Site Name: Tusk Federal 4H	
	Incident Number: NAPP2303742113	
	Job Number: 03D2024152	
LITHOLOGIC / SOIL SAMPLING LOG	Logged By: Ronni Hayes	Method: Hand auger
Coordinates: 32.624903, -103.511658	Hole Diameter: ~4"	Total Depth: 3ft

Comments: Field screening conducted with HACH Chloride Test Strips and PID for chloride and vapor, respectively. Chloride test performed with 1:4 dilution factor of soil to distilled water. 40% correction factor included.

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
Dry	173	0.9	N	SS04	0.2	0 0.2 1 2	GP	CALICHE, poorly graded, light brown, no staining, no odor, abundant limestone gravel
Wet	173.6	0.5	N	SS04A	3	3	SP-SM	SAND, fine, medium brown, no staining, no odor, cohesive, moist TD at 3 ft bgs

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APPENDIX D

Laboratory Analytical Reports & Chain of Custody Documentation

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kalei Jennings
Ensolum
601 N. Marienfeld St.
Suite 400
Midland, Texas 79701

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JOB DESCRIPTION

Tusk Federal 4H
SDG NUMBER Lea

JOB NUMBER

890-4100-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220

See page two for job notes and contact information.

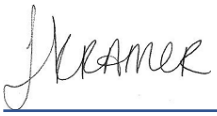
my EOL

Eurofins Carlsbad

Job Notes

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: Ensolum
Project/Site: Tusk Federal 4H

Laboratory Job ID: 890-4100-1
SDG: Lea

Table of Contents

Definitions/Glossary

Client: Ensolum Job ID: 890-4100-1
Project/Site: Tusk Federal 4H SDG: Lea

Qualifiers

GC VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
S1-	Surrogate recovery exceeds control limits, low biased.
S1+	Surrogate recovery exceeds control 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
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: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4100-1
SDG: Lea

Job ID: 890-4100-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-4100-1

Receipt
The samples were received on 2/13/2023 3:26 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 5.4°C

Receipt Exceptions
The following samples were received and analyzed from an unpreserved bulk soil jar: SS01 (890-4100-1), SS02 (890-4100-2), SS03 (890-4100-3) and SS04 (890-4100-4).

GC VOA
Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-46470 and analytical batch 880-46481 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: (880-24810-A-1-C MSD). Evidence of matrix interferences is not obvious.

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

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

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

Client Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4100-1
SDG: Lea

Client Sample ID: SS01

Lab Sample ID: 890-4100-1
Matrix: Solid
Date Collected: 02/13/23 11:00
Date Received: 02/13/23 15:26
Sample Depth: 0.2

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		02/15/23 16:13	02/16/23 16:15	1
Toluene	<0.00200	U	0.00200		mg/Kg		02/15/23 16:13	02/16/23 16:15	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		02/15/23 16:13	02/16/23 16:15	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		02/15/23 16:13	02/16/23 16:15	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		02/15/23 16:13	02/16/23 16:15	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		02/15/23 16:13	02/16/23 16:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*118*		*70 - 130*	*02/15/23 16:13*	*02/16/23 16:15*	*1*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*	*02/15/23 16:13*	*02/16/23 16:15*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00400	U	0.00400		mg/Kg			02/20/23 14:36	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			02/20/23 15:10	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		02/16/23 09:41	02/17/23 11:27	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8		mg/Kg		02/16/23 09:41	02/17/23 11:27	1
OII Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		02/16/23 09:41	02/17/23 11:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*92*		*70 - 130*	*02/16/23 09:41*	*02/17/23 11:27*	*1*
o-Terphenyl	*100*		*70 - 130*	*02/16/23 09:41*	*02/17/23 11:27*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.05	U	5.05		mg/Kg			02/17/23 02:26	1

Client Sample ID: SS02

Lab Sample ID: 890-4100-2
Matrix: Solid
Date Collected: 02/13/23 11:10
Date Received: 02/13/23 15:26
Sample Depth: 0.2

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		02/15/23 16:13	02/16/23 16:42	1
Toluene	<0.00201	U	0.00201		mg/Kg		02/15/23 16:13	02/16/23 16:42	1
Ethylbenzene	<0.00201	U	0.00201		mg/Kg		02/15/23 16:13	02/16/23 16:42	1
m-Xylene & p-Xylene	<0.00402	U	0.00402		mg/Kg		02/15/23 16:13	02/16/23 16:42	1
o-Xylene	<0.00201	U	0.00201		mg/Kg		02/15/23 16:13	02/16/23 16:42	1
Xylenes, Total	<0.00402	U	0.00402		mg/Kg		02/15/23 16:13	02/16/23 16:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*	*02/15/23 16:13*	*02/16/23 16:42*	*1*

Client Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4100-1
SDG: Lea

Client Sample ID: SS02

Lab Sample ID: 890-4100-2
Matrix: Solid
Date Collected: 02/13/23 11:10
Date Received: 02/13/23 15:26
Sample Depth: 0.2

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Difluorobenzene (Surr)	*81*		*70 - 130*	*02/15/23 16:13*	*02/16/23 16:42*	*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			02/20/23 14:36	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			02/20/23 15:10	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		02/16/23 09:41	02/17/23 12:33	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		02/16/23 09:41	02/17/23 12:33	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		02/16/23 09:41	02/17/23 12:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*86*		*70 - 130*	*02/16/23 09:41*	*02/17/23 12:33*	*1*
o-Terphenyl	*98*		*70 - 130*	*02/16/23 09:41*	*02/17/23 12:33*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**16.1**		4.97	mg/Kg			02/17/23 02:32	1

Client Sample ID: SS03

Lab Sample ID: 890-4100-3
Matrix: Solid
Date Collected: 02/13/23 11:20
Date Received: 02/13/23 15:26
Sample Depth: 0.2

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		02/15/23 16:13	02/16/23 20:42	1
Toluene	<0.00202	U	0.00202	mg/Kg		02/15/23 16:13	02/16/23 20:42	1
Ethylbenzene	<0.00202	U	0.00202	mg/Kg		02/15/23 16:13	02/16/23 20:42	1
m-Xylene & p-Xylene	<0.00403	U	0.00403	mg/Kg		02/15/23 16:13	02/16/23 20:42	1
o-Xylene	<0.00202	U	0.00202	mg/Kg		02/15/23 16:13	02/16/23 20:42	1
Xylenes, Total	<0.00403	U	0.00403	mg/Kg		02/15/23 16:13	02/16/23 20:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*115*		*70 - 130*	*02/15/23 16:13*	*02/16/23 20:42*	*1*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*	*02/15/23 16:13*	*02/16/23 20:42*	*1*

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00403	U	0.00403	mg/Kg			02/20/23 14:36	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			02/20/23 15:10	1

Client Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4100-1
SDG: Lea

Client Sample ID: SS03

Lab Sample ID: 890-4100-3
Matrix: Solid
Date Collected: 02/13/23 11:20
Date Received: 02/13/23 15:26
Sample Depth: 0.2

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		02/16/23 09:41	02/17/23 12:55	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		02/16/23 09:41	02/17/23 12:55	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		02/16/23 09:41	02/17/23 12:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*86*		*70 - 130*	*02/16/23 09:41*	*02/17/23 12:55*	*1*
o-Terphenyl	*98*		*70 - 130*	*02/16/23 09:41*	*02/17/23 12:55*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**6.32**		4.95		mg/Kg			02/17/23 02:39	1

Client Sample ID: SS04

Lab Sample ID: 890-4100-4
Matrix: Solid
Date Collected: 02/13/23 11:30
Date Received: 02/13/23 15:26
Sample Depth: 0.2

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		02/15/23 16:13	02/16/23 21:08	1
Toluene	<0.00200	U	0.00200		mg/Kg		02/15/23 16:13	02/16/23 21:08	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		02/15/23 16:13	02/16/23 21:08	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		02/15/23 16:13	02/16/23 21:08	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		02/15/23 16:13	02/16/23 21:08	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		02/15/23 16:13	02/16/23 21:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*114*		*70 - 130*	*02/15/23 16:13*	*02/16/23 21:08*	*1*
1,4-Difluorobenzene (Surr)	*93*		*70 - 130*	*02/15/23 16:13*	*02/16/23 21:08*	*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			02/20/23 14:36	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			02/20/23 15:10	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		02/16/23 09:41	02/17/23 13:17	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8		mg/Kg		02/16/23 09:41	02/17/23 13:17	1
OII Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		02/16/23 09:41	02/17/23 13:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*85*		*70 - 130*	*02/16/23 09:41*	*02/17/23 13:17*	*1*
o-Terphenyl	*96*		*70 - 130*	*02/16/23 09:41*	*02/17/23 13:17*	*1*

Client Sample Results

Client: Ensolum
Job ID: 890-4100-1
Project/Site: Tusk Federal 4H
SDG: Lea

Client Sample ID: SS04
Lab Sample ID: 890-4100-4
Date Collected: 02/13/23 11:30
Matrix: Solid
Date Received: 02/13/23 15:26
Sample Depth: 0.2

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	201		5.00		mg/Kg			02/17/23 02:45	1

Surrogate Summary

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4100-1
SDG: Lea

Method: 8021B - Volatile Organic Compounds (GC)

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

		Percent Surrogate Recovery (Acceptance Limits)	
		BFB1	DFBZ1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
880-24810-A-1-B MS	Matrix Spike	129	103
880-24810-A-1-C MSD	Matrix Spike Duplicate	93	152 S1+
890-4100-1	SS01	118	95
890-4100-2	SS02	104	81
890-4100-3	SS03	115	95
890-4100-4	SS04	114	93
LCS 880-46470/1-A	Lab Control Sample	97	85
LCSD 880-46470/2-A	Lab Control Sample Dup	92	107
MB 880-46470/5-A	Method Blank	68 S1-	83

Surrogate Legend

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

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

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

		Percent Surrogate Recovery (Acceptance Limits)	
		1CO1	OTPH1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
890-4100-1	SS01	92	100
890-4100-1 MS	SS01	113	110
890-4100-1 MSD	SS01	109	107
890-4100-2	SS02	86	98
890-4100-3	SS03	86	98
890-4100-4	SS04	85	96
LCS 880-46507/2-A	Lab Control Sample	98	114
LCSD 880-46507/3-A	Lab Control Sample Dup	114	125
MB 880-46507/1-A	Method Blank	91	112

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4100-1
SDG: Lea

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-46470/5-A
Matrix: Solid
Analysis Batch: 46481

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 46470

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		02/15/23 16:13	02/16/23 12:17	1
Toluene	<0.00200	U	0.00200		mg/Kg		02/15/23 16:13	02/16/23 12:17	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		02/15/23 16:13	02/16/23 12:17	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		02/15/23 16:13	02/16/23 12:17	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		02/15/23 16:13	02/16/23 12:17	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		02/15/23 16:13	02/16/23 12:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*68*	*S1-*	*70 - 130*	*02/15/23 16:13*	*02/16/23 12:17*	*1*
1,4-Difluorobenzene (Surr)	*83*		*70 - 130*	*02/15/23 16:13*	*02/16/23 12:17*	*1*

Lab Sample ID: LCS 880-46470/1-A
Matrix: Solid
Analysis Batch: 46481

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 46470

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.08130		mg/Kg		81	70 - 130		
Toluene			0.100	0.07954		mg/Kg		80	70 - 130		
Ethylbenzene			0.100	0.07824		mg/Kg		78	70 - 130		
m-Xylene & p-Xylene			0.200	0.1548		mg/Kg		77	70 - 130		
o-Xylene			0.100	0.07376		mg/Kg		74	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*
1,4-Difluorobenzene (Surr)	*85*		*70 - 130*

Lab Sample ID: LCSD 880-46470/2-A
Matrix: Solid
Analysis Batch: 46481

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 46470

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.09572		mg/Kg		96	70 - 130	16	35
Toluene			0.100	0.08215		mg/Kg		82	70 - 130	3	35
Ethylbenzene			0.100	0.07849		mg/Kg		78	70 - 130	0	35
m-Xylene & p-Xylene			0.200	0.1546		mg/Kg		77	70 - 130	0	35
o-Xylene			0.100	0.07621		mg/Kg		76	70 - 130	3	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*
1,4-Difluorobenzene (Surr)	*107*		*70 - 130*

Lab Sample ID: 880-24810-A-1-B MS
Matrix: Solid
Analysis Batch: 46481

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 46470

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00200	U F1 F2	0.101	0.05657	F1	mg/Kg		56	70 - 130		
Toluene	<0.00200	U F1 F2	0.101	0.05670	F1	mg/Kg		56	70 - 130		

QC Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4100-1
SDG: Lea

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

Lab Sample ID: 880-24810-A-1-B MS
Matrix: Solid
Analysis Batch: 46481

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 46470

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	0.0728	F1 F2	0.101	0.1091	F1	mg/Kg		36	70 - 130
m-Xylene & p-Xylene	0.236	F1	0.202	0.3310	F1	mg/Kg		47	70 - 130
o-Xylene	<0.00200	U F1	0.101	0.1529	F1	mg/Kg		150	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*129*		*70 - 130*
1,4-Difluorobenzene (Surr)	*103*		*70 - 130*

Lab Sample ID: 880-24810-A-1-C MSD
Matrix: Solid
Analysis Batch: 46481

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 46470

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00200	U F1 F2	0.0996	0.08514	F2	mg/Kg		85	70 - 130	40	35
Toluene	<0.00200	U F1 F2	0.0996	0.2770	F1 F2	mg/Kg		278	70 - 130	132	35
m-Xylene & p-Xylene	0.236	F1	0.199	0.4101		mg/Kg		88	70 - 130	21	35
o-Xylene	<0.00200	U F1	0.0996	0.1710	F1	mg/Kg		170	70 - 130	11	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*
1,4-Difluorobenzene (Surr)	*152*	*S1+*	*70 - 130*

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

Lab Sample ID: MB 880-46507/1-A
Matrix: Solid
Analysis Batch: 46558

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 46507

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		02/16/23 09:40	02/17/23 08:54	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		02/16/23 09:40	02/17/23 08:54	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		02/16/23 09:40	02/17/23 08:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*91*		*70 - 130*	*02/16/23 09:40*	*02/17/23 08:54*	*1*
o-Terphenyl	*112*		*70 - 130*	*02/16/23 09:40*	*02/17/23 08:54*	*1*

Lab Sample ID: LCS 880-46507/2-A
Matrix: Solid
Analysis Batch: 46558

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 46507

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	1000	860.8		mg/Kg		86	70 - 130
Diesel Range Organics (Over C10-C28)	1000	994.1		mg/Kg		99	70 - 130

Eurofins Carlsbad

QC Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4100-1
SDG: Lea

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

Lab Sample ID: LCS 880-46507/2-A
Matrix: Solid
Analysis Batch: 46558

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 46507

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1-Chlorooctane	98		70 - 130
o-Terphenyl	114		70 - 130

Lab Sample ID: LCSD 880-46507/3-A
Matrix: Solid
Analysis Batch: 46558

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 46507

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	988.4		mg/Kg		99	70 - 130	14	20
Diesel Range Organics (Over C10-C28)			1000	1078		mg/Kg		108	70 - 130	8	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1-Chlorooctane	114		70 - 130
o-Terphenyl	125		70 - 130

Lab Sample ID: 890-4100-1 MS
Matrix: Solid
Analysis Batch: 46558

Client Sample ID: SS01
Prep Type: Total/NA
Prep Batch: 46507

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	1000	1059		mg/Kg		101	70 - 130
Diesel Range Organics (Over C10-C28)	<49.8	U	1000	1114		mg/Kg		110	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
1-Chlorooctane	113		70 - 130
o-Terphenyl	110		70 - 130

Lab Sample ID: 890-4100-1 MSD
Matrix: Solid
Analysis Batch: 46558

Client Sample ID: SS01
Prep Type: Total/NA
Prep Batch: 46507

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	1000	1047		mg/Kg		100	70 - 130	1	20
Diesel Range Organics (Over C10-C28)	<49.8	U	1000	1079		mg/Kg		106	70 - 130	3	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1-Chlorooctane	109		70 - 130
o-Terphenyl	107		70 - 130

QC Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4100-1
SDG: Lea

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-46462/1-A
Matrix: Solid
Analysis Batch: 46553

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			02/16/23 23:40	1

Lab Sample ID: LCS 880-46462/2-A
Matrix: Solid
Analysis Batch: 46553

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	240.4		mg/Kg		96	90 - 110		

Lab Sample ID: LCSD 880-46462/3-A
Matrix: Solid
Analysis Batch: 46553

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	238.9		mg/Kg		96	90 - 110	1	20

Lab Sample ID: 890-4099-A-10-B MS
Matrix: Solid
Analysis Batch: 46553

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	384		249	616.5		mg/Kg		93	90 - 110		

Lab Sample ID: 890-4099-A-10-C MSD
Matrix: Solid
Analysis Batch: 46553

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	384		249	616.6		mg/Kg		93	90 - 110	0	20

QC Association Summary

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4100-1
SDG: Lea

GC VOA

Prep Batch: 46470

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4100-1	SS01	Total/NA	Solid	5035	
890-4100-2	SS02	Total/NA	Solid	5035	
890-4100-3	SS03	Total/NA	Solid	5035	
890-4100-4	SS04	Total/NA	Solid	5035	
MB 880-46470/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-46470/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-46470/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-24810-A-1-B MS	Matrix Spike	Total/NA	Solid	5035	
880-24810-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 46481

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4100-1	SS01	Total/NA	Solid	8021B	46470
890-4100-2	SS02	Total/NA	Solid	8021B	46470
890-4100-3	SS03	Total/NA	Solid	8021B	46470
890-4100-4	SS04	Total/NA	Solid	8021B	46470
MB 880-46470/5-A	Method Blank	Total/NA	Solid	8021B	46470
LCS 880-46470/1-A	Lab Control Sample	Total/NA	Solid	8021B	46470
LCSD 880-46470/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	46470
880-24810-A-1-B MS	Matrix Spike	Total/NA	Solid	8021B	46470
880-24810-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	46470

Analysis Batch: 46756

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4100-1	SS01	Total/NA	Solid	Total BTEX	
890-4100-2	SS02	Total/NA	Solid	Total BTEX	
890-4100-3	SS03	Total/NA	Solid	Total BTEX	
890-4100-4	SS04	Total/NA	Solid	Total BTEX	

GC Semi VOA

Prep Batch: 46507

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4100-1	SS01	Total/NA	Solid	8015NM Prep	
890-4100-2	SS02	Total/NA	Solid	8015NM Prep	
890-4100-3	SS03	Total/NA	Solid	8015NM Prep	
890-4100-4	SS04	Total/NA	Solid	8015NM Prep	
MB 880-46507/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-46507/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-46507/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-4100-1 MS	SS01	Total/NA	Solid	8015NM Prep	
890-4100-1 MSD	SS01	Total/NA	Solid	8015NM Prep	

Analysis Batch: 46558

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4100-1	SS01	Total/NA	Solid	8015B NM	46507
890-4100-2	SS02	Total/NA	Solid	8015B NM	46507
890-4100-3	SS03	Total/NA	Solid	8015B NM	46507
890-4100-4	SS04	Total/NA	Solid	8015B NM	46507
MB 880-46507/1-A	Method Blank	Total/NA	Solid	8015B NM	46507
LCS 880-46507/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	46507

QC Association Summary

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4100-1
SDG: Lea

GC Semi VOA (Continued)

Analysis Batch: 46558 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 880-46507/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	46507
890-4100-1 MS	SS01	Total/NA	Solid	8015B NM	46507
890-4100-1 MSD	SS01	Total/NA	Solid	8015B NM	46507

Analysis Batch: 46783

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4100-1	SS01	Total/NA	Solid	8015 NM	
890-4100-2	SS02	Total/NA	Solid	8015 NM	
890-4100-3	SS03	Total/NA	Solid	8015 NM	
890-4100-4	SS04	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 46462

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4100-1	SS01	Soluble	Solid	DI Leach	
890-4100-2	SS02	Soluble	Solid	DI Leach	
890-4100-3	SS03	Soluble	Solid	DI Leach	
890-4100-4	SS04	Soluble	Solid	DI Leach	
MB 880-46462/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-46462/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-46462/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-4099-A-10-B MS	Matrix Spike	Soluble	Solid	DI Leach	
890-4099-A-10-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 46553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4100-1	SS01	Soluble	Solid	300.0	46462
890-4100-2	SS02	Soluble	Solid	300.0	46462
890-4100-3	SS03	Soluble	Solid	300.0	46462
890-4100-4	SS04	Soluble	Solid	300.0	46462
MB 880-46462/1-A	Method Blank	Soluble	Solid	300.0	46462
LCS 880-46462/2-A	Lab Control Sample	Soluble	Solid	300.0	46462
LCSD 880-46462/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	46462
890-4099-A-10-B MS	Matrix Spike	Soluble	Solid	300.0	46462
890-4099-A-10-C MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	46462

Lab Chronicle

Client: Ensolum
Job ID: 890-4100-1
Project/Site: Tusk Federal 4H
SDG: Lea

Client Sample ID: SS01
Lab Sample ID: 890-4100-1
Date Collected: 02/13/23 11:00
Matrix: Solid
Date Received: 02/13/23 15:26

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.00 g	5 mL	46470	02/15/23 16:13	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	46481	02/16/23 16:15	AJ	EET MID
Total/NA	Analysis	Total BTEX		1			46756	02/20/23 14:36	AJ	EET MID
Total/NA	Analysis	8015 NM		1			46783	02/20/23 15:10	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	46507	02/16/23 09:41	SM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	46558	02/17/23 11:27	AJ	EET MID
Soluble	Leach	DI Leach			4.95 g	50 mL	46462	02/15/23 15:39	KS	EET MID
Soluble	Analysis	300.0		1			46553	02/17/23 02:26	CH	EET MID

Client Sample ID: SS02
Lab Sample ID: 890-4100-2
Date Collected: 02/13/23 11:10
Matrix: Solid
Date Received: 02/13/23 15:26

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	46470	02/15/23 16:13	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	46481	02/16/23 16:42	AJ	EET MID
Total/NA	Analysis	Total BTEX		1			46756	02/20/23 14:36	AJ	EET MID
Total/NA	Analysis	8015 NM		1			46783	02/20/23 15:10	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	46507	02/16/23 09:41	SM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	46558	02/17/23 12:33	AJ	EET MID
Soluble	Leach	DI Leach			5.03 g	50 mL	46462	02/15/23 15:39	KS	EET MID
Soluble	Analysis	300.0		1			46553	02/17/23 02:32	CH	EET MID

Client Sample ID: SS03
Lab Sample ID: 890-4100-3
Date Collected: 02/13/23 11:20
Matrix: Solid
Date Received: 02/13/23 15:26

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.96 g	5 mL	46470	02/15/23 16:13	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	46481	02/16/23 20:42	AJ	EET MID
Total/NA	Analysis	Total BTEX		1			46756	02/20/23 14:36	AJ	EET MID
Total/NA	Analysis	8015 NM		1			46783	02/20/23 15:10	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	46507	02/16/23 09:41	SM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	46558	02/17/23 12:55	AJ	EET MID
Soluble	Leach	DI Leach			5.05 g	50 mL	46462	02/15/23 15:39	KS	EET MID
Soluble	Analysis	300.0		1			46553	02/17/23 02:39	CH	EET MID

Client Sample ID: SS04
Lab Sample ID: 890-4100-4
Date Collected: 02/13/23 11:30
Matrix: Solid
Date Received: 02/13/23 15:26

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	46470	02/15/23 16:13	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	46481	02/16/23 21:08	AJ	EET MID
Total/NA	Analysis	Total BTEX		1			46756	02/20/23 14:36	AJ	EET MID

Lab Chronicle

Client: Ensolum
Job ID: 890-4100-1
Project/Site: Tusk Federal 4H
SDG: Lea

Client Sample ID: SS04
Lab Sample ID: 890-4100-4

Date Collected: 02/13/23 11:30
Matrix: Solid

Date Received: 02/13/23 15:26

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			46783	02/20/23 15:10	AJ	EET MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	46507	02/16/23 09:41	SM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	46558	02/17/23 13:17	AJ	EET MID
Soluble	Leach	DI Leach			5 g	50 mL	46462	02/15/23 15:39	KS	EET MID
Soluble	Analysis	300.0		1			46553	02/17/23 02:45	CH	EET MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Job ID: 890-4100-1
Project/Site: Tusk Federal 4H
SDG: Lea

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	T104704400-22-25	06-30-23

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: Ensolum Job ID: 890-4100-1
Project/Site: Tusk Federal 4H SDG: Lea

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: Ensolum
Job ID: 890-4100-1
Project/Site: Tusk Federal 4H
SDG: Lea

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-4100-1	SS01	Solid	02/13/23 11:00	02/13/23 15:26	0.2
890-4100-2	SS02	Solid	02/13/23 11:10	02/13/23 15:26	0.2
890-4100-3	SS03	Solid	02/13/23 11:20	02/13/23 15:26	0.2
890-4100-4	SS04	Solid	02/13/23 11:30	02/13/23 15:26	0.2

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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

Work Order No: _____

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Project Manager:	Kalei Jennings	Bill to: (if different)	Kalei Jennings
Company Name:	Ensolum, LLC	Company Name:	Ensolum, LLC
Address:	601 N Marienfeld St Suite 400	Address:	601 N Marienfeld St Suite 400
City, State ZIP:	Midland, TX 79701	City, State ZIP:	Midland, TX 79701
Phone:	817-683-2503	Email:	kjennings@ensolum.com, hgreen@ensolum.com

Work Order Comments

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

Project Name:	Tusk Federal 4H	Turn Around	☑ Routine ☐ Rush
Project Number:	03D2024152	Due Date:	
Project Location:	Lea	TAT starts the day received by the lab, if received by 4:30pm	
Sampler's Name:	Peter Van Patten		
PO #:			

SAMPLE RECEIPT			
Temp Blank:	(Yes) No	Wet Ice:	(Yes) No
Samples Received Intact:	(Yes) No	Thermometer ID:	IR#007
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	-0.2
Sample Custody Seals:	Yes No (N/A)	Temperature Reading:	5.6
Total Containers:		Corrected Temperature:	5.4

Preservative Codes

None: NO; DI Water: H_2O; Cool: Cool; MeOH: Me; HCL: HC; HNO_3: HN; H_2SO_4: H_2; NaOH: Na; H_3PO_4: HP; $NaHSO_4$: NABIS; $Na_2S_2O_3$: $NaSO_3$; Zn Acetate+NaOH: Zn; NaOH+Ascorbic Acid: SAPC

890-4100 Chain of Custody

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	Parameters: CHLORIDES (EPA: 300.0)	TPH (8015)	BTEX (8021)	Sample Comments
SS01	Soil	2/13/2023	1100	0.2'	Comp	1		x	x	x	
SS02	Soil	2/13/2023	1110	0.2'	Comp	1		x	x	x	
SS03	Soil	2/13/2023	1120	0.2'	Comp	1		x	x	x	
SS04	Soil	2/13/2023	1130	0.2'	Comp	1		x	x	x	

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 Tl Sn U V Zn

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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1		2.13.23 1586	4		
3			6		
5					

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-4100-1
SDG Number: Lea

Login Number: 4100
List Number: 1
Creator: Clifton, Cloe

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: Ensolum

Job Number: 890-4100-1
SDG Number: Lea

Login Number: 4100
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 02/15/23 12:16 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

ANALYTICAL REPORT

PREPARED FOR

Attn: Hadlie Green
Ensolum
601 N. Marienfeld St.
Suite 400
Midland, Texas 79701

Generated 4/12/2023 9:07:59 AM

JOB DESCRIPTION

Tusk Federal 4H
SDG NUMBER 03D2024152

JOB NUMBER

890-4459-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220

See page two for job notes and contact information.

my EOL

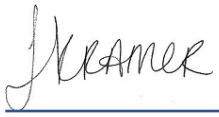
Eurofins Carlsbad

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: Ensolum
Project/Site: Tusk Federal 4H

Laboratory Job ID: 890-4459-1
SDG: 03D2024152

Table of Contents

Definitions/Glossary

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4459-1
SDG: 03D2024152

Qualifiers

GC VOA

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

GC Semi VOA

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

HPLC/IC

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

Glossary

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

Case Narrative

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4459-1
SDG: 03D2024152

Job ID: 890-4459-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-4459-1

Receipt
The samples were received on 4/3/2023 4:27 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 5.0°C

Receipt Exceptions
The following samples were received and analyzed from an unpreserved bulk soil jar: BH01 (890-4459-1), BH01A (890-4459-2), BH01B (890-4459-3) and BH01C (890-4459-4).

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

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

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

Client Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4459-1
SDG: 03D2024152

Client Sample ID: BH01

Date Collected: 04/03/23 08:55
Date Received: 04/03/23 16:27
Sample Depth: 0.5'

Lab Sample ID: 890-4459-1
Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		04/10/23 10:41	04/12/23 05:42	1
Toluene	<0.00199	U	0.00199		mg/Kg		04/10/23 10:41	04/12/23 05:42	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		04/10/23 10:41	04/12/23 05:42	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		04/10/23 10:41	04/12/23 05:42	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		04/10/23 10:41	04/12/23 05:42	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		04/10/23 10:41	04/12/23 05:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*123*		*70 - 130*	*04/10/23 10:41*	*04/12/23 05:42*	*1*
1,4-Difluorobenzene (Surr)	*106*		*70 - 130*	*04/10/23 10:41*	*04/12/23 05:42*	*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			04/12/23 09:37	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			04/09/23 22:35	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	<50.0	U	50.0		mg/Kg		04/05/23 16:03	04/07/23 16:16	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		04/05/23 16:03	04/07/23 16:16	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		04/05/23 16:03	04/07/23 16:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*97*		*70 - 130*	*04/05/23 16:03*	*04/07/23 16:16*	*1*
o-Terphenyl	*103*		*70 - 130*	*04/05/23 16:03*	*04/07/23 16:16*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**8510**		50.0		mg/Kg			04/09/23 16:05	10

Client Sample ID: BH01A

Date Collected: 04/03/23 09:00
Date Received: 04/03/23 16:27
Sample Depth: 1.0'

Lab Sample ID: 890-4459-2
Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		04/10/23 10:41	04/12/23 06:02	1
Toluene	<0.00200	U	0.00200		mg/Kg		04/10/23 10:41	04/12/23 06:02	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		04/10/23 10:41	04/12/23 06:02	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		04/10/23 10:41	04/12/23 06:02	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		04/10/23 10:41	04/12/23 06:02	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		04/10/23 10:41	04/12/23 06:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*124*		*70 - 130*	*04/10/23 10:41*	*04/12/23 06:02*	*1*

Client Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4459-1
SDG: 03D2024152

Client Sample ID: BH01A

Lab Sample ID: 890-4459-2
Matrix: Solid
Date Collected: 04/03/23 09:00
Date Received: 04/03/23 16:27
Sample Depth: 1.0'

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	*97*		*70 - 130*	*04/10/23 10:41*	*04/12/23 06:02*	*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			04/12/23 09:37	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			04/09/23 22:35	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	<50.0	U	50.0	mg/Kg		04/05/23 16:03	04/07/23 16:39	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		04/05/23 16:03	04/07/23 16:39	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		04/05/23 16:03	04/07/23 16:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	*100*		*70 - 130*	*04/05/23 16:03*	*04/07/23 16:39*	*1*
o-Terphenyl	*106*		*70 - 130*	*04/05/23 16:03*	*04/07/23 16:39*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**2080**		24.8	mg/Kg			04/09/23 16:09	5

Client Sample ID: BH01B

Lab Sample ID: 890-4459-3
Matrix: Solid
Date Collected: 04/03/23 09:05
Date Received: 04/03/23 16:27
Sample Depth: 2.0'

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		04/10/23 10:41	04/12/23 06:23	1
Toluene	<0.00201	U	0.00201	mg/Kg		04/10/23 10:41	04/12/23 06:23	1
Ethylbenzene	<0.00201	U	0.00201	mg/Kg		04/10/23 10:41	04/12/23 06:23	1
m-Xylene & p-Xylene	<0.00402	U	0.00402	mg/Kg		04/10/23 10:41	04/12/23 06:23	1
o-Xylene	<0.00201	U	0.00201	mg/Kg		04/10/23 10:41	04/12/23 06:23	1
Xylenes, Total	<0.00402	U	0.00402	mg/Kg		04/10/23 10:41	04/12/23 06:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*124*		*70 - 130*	*04/10/23 10:41*	*04/12/23 06:23*	*1*
1,4-Difluorobenzene (Surr)	*103*		*70 - 130*	*04/10/23 10:41*	*04/12/23 06:23*	*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			04/12/23 09:37	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			04/09/23 22:35	1

Client Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4459-1
SDG: 03D2024152

Client Sample ID: BH01B

Lab Sample ID: 890-4459-3
Matrix: Solid
Date Collected: 04/03/23 09:05
Date Received: 04/03/23 16:27
Sample Depth: 2.0'

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	<49.8	U	49.8		mg/Kg		04/05/23 16:03	04/07/23 17:01	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8		mg/Kg		04/05/23 16:03	04/07/23 17:01	1
Oil Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		04/05/23 16:03	04/07/23 17:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*93*		*70 - 130*	*04/05/23 16:03*	*04/07/23 17:01*	*1*
o-Terphenyl	*100*		*70 - 130*	*04/05/23 16:03*	*04/07/23 17:01*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**4370**		24.8		mg/Kg			04/09/23 16:14	5

Client Sample ID: BH01C

Lab Sample ID: 890-4459-4
Matrix: Solid
Date Collected: 04/03/23 09:10
Date Received: 04/03/23 16:27
Sample Depth: 3.0'

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		04/10/23 10:41	04/12/23 06:44	1
Toluene	<0.00202	U	0.00202		mg/Kg		04/10/23 10:41	04/12/23 06:44	1
Ethylbenzene	<0.00202	U	0.00202		mg/Kg		04/10/23 10:41	04/12/23 06:44	1
m-Xylene & p-Xylene	<0.00404	U	0.00404		mg/Kg		04/10/23 10:41	04/12/23 06:44	1
o-Xylene	<0.00202	U	0.00202		mg/Kg		04/10/23 10:41	04/12/23 06:44	1
Xylenes, Total	<0.00404	U	0.00404		mg/Kg		04/10/23 10:41	04/12/23 06:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*121*		*70 - 130*	*04/10/23 10:41*	*04/12/23 06:44*	*1*
1,4-Difluorobenzene (Surr)	*108*		*70 - 130*	*04/10/23 10:41*	*04/12/23 06:44*	*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			04/12/23 09:37	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			04/09/23 22:35	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	<50.0	U	50.0		mg/Kg		04/05/23 16:03	04/07/23 17:23	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		04/05/23 16:03	04/07/23 17:23	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		04/05/23 16:03	04/07/23 17:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*103*		*70 - 130*	*04/05/23 16:03*	*04/07/23 17:23*	*1*
o-Terphenyl	*111*		*70 - 130*	*04/05/23 16:03*	*04/07/23 17:23*	*1*

Client Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4459-1
SDG: 03D2024152

Client Sample ID: BH01C
Date Collected: 04/03/23 09:10
Date Received: 04/03/23 16:27
Sample Depth: 3.0'

Lab Sample ID: 890-4459-4
Matrix: Solid

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	305		5.03		mg/Kg			04/09/23 16:18	1

Surrogate Summary

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4459-1
SDG: 03D2024152

Method: 8021B - Volatile Organic Compounds (GC)

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

		Percent Surrogate Recovery (Acceptance Limits)											
		BFB1	DFBZ1										
Lab Sample ID	Client Sample ID	(70-130)	(70-130)										
880-26816-A-102-C MS	Matrix Spike	120	105										
880-26816-A-102-D MSD	Matrix Spike Duplicate	120	98										
890-4459-1	BH01	123	106										
890-4459-2	BH01A	124	97										
890-4459-3	BH01B	124	103										
890-4459-4	BH01C	121	108										
LCS 880-50817/1-A	Lab Control Sample	110	101										
LCSD 880-50817/2-A	Lab Control Sample Dup	102	100										
MB 880-50817/5-A	Method Blank	101	88										
MB 880-50846/5-A	Method Blank	97	90										

Surrogate Legend

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

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

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

		Percent Surrogate Recovery (Acceptance Limits)											
		1CO1	OTPH1										
Lab Sample ID	Client Sample ID	(70-130)	(70-130)										
880-26670-A-61-B MS	Matrix Spike	118	108										
880-26670-A-61-C MSD	Matrix Spike Duplicate	115	105										
890-4459-1	BH01	97	103										
890-4459-2	BH01A	100	106										
890-4459-3	BH01B	93	100										
890-4459-4	BH01C	103	111										
LCS 880-50425/2-A	Lab Control Sample	104	109										
LCSD 880-50425/3-A	Lab Control Sample Dup	89	94										
MB 880-50425/1-A	Method Blank	101	113										

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4459-1
SDG: 03D2024152

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-50817/5-A
Matrix: Solid
Analysis Batch: 50870

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 50817

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		04/10/23 10:41	04/11/23 22:47	1
Toluene	<0.00200	U	0.00200		mg/Kg		04/10/23 10:41	04/11/23 22:47	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		04/10/23 10:41	04/11/23 22:47	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		04/10/23 10:41	04/11/23 22:47	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		04/10/23 10:41	04/11/23 22:47	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		04/10/23 10:41	04/11/23 22:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*	*04/10/23 10:41*	*04/11/23 22:47*	*1*
1,4-Difluorobenzene (Surr)	*88*		*70 - 130*	*04/10/23 10:41*	*04/11/23 22:47*	*1*

Lab Sample ID: LCS 880-50817/1-A
Matrix: Solid
Analysis Batch: 50870

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 50817

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.08898		mg/Kg		89	70 - 130		
Toluene			0.100	0.09560		mg/Kg		96	70 - 130		
Ethylbenzene			0.100	0.1024		mg/Kg		102	70 - 130		
m-Xylene & p-Xylene			0.200	0.2117		mg/Kg		106	70 - 130		
o-Xylene			0.100	0.09494		mg/Kg		95	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*110*		*70 - 130*
1,4-Difluorobenzene (Surr)	*101*		*70 - 130*

Lab Sample ID: LCSD 880-50817/2-A
Matrix: Solid
Analysis Batch: 50870

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 50817

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.08929		mg/Kg		89	70 - 130	0	35
Toluene			0.100	0.09200		mg/Kg		92	70 - 130	4	35
Ethylbenzene			0.100	0.09739		mg/Kg		97	70 - 130	5	35
m-Xylene & p-Xylene			0.200	0.2002		mg/Kg		100	70 - 130	6	35
o-Xylene			0.100	0.08944		mg/Kg		89	70 - 130	6	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*
1,4-Difluorobenzene (Surr)	*100*		*70 - 130*

Lab Sample ID: 880-26816-A-102-C MS
Matrix: Solid
Analysis Batch: 50870

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 50817

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00200	U	0.0998	0.09691		mg/Kg		97	70 - 130		
Toluene	<0.00200	U	0.0998	0.1015		mg/Kg		102	70 - 130		

QC Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4459-1
SDG: 03D2024152

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

Lab Sample ID: 880-26816-A-102-C MS
Matrix: Solid
Analysis Batch: 50870

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 50817

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00200	U	0.0998	0.1057		mg/Kg		106	70 - 130
m-Xylene & p-Xylene	<0.00400	U	0.200	0.2172		mg/Kg		109	70 - 130
o-Xylene	<0.00200	U	0.0998	0.09721		mg/Kg		97	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*120*		*70 - 130*
1,4-Difluorobenzene (Surr)	*105*		*70 - 130*

Lab Sample ID: 880-26816-A-102-D MSD
Matrix: Solid
Analysis Batch: 50870

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 50817

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00200	U	0.0990	0.08313		mg/Kg		84	70 - 130	15	35
Toluene	<0.00200	U	0.0990	0.08873		mg/Kg		90	70 - 130	13	35
Ethylbenzene	<0.00200	U	0.0990	0.09269		mg/Kg		94	70 - 130	13	35
m-Xylene & p-Xylene	<0.00400	U	0.198	0.1884		mg/Kg		95	70 - 130	14	35
o-Xylene	<0.00200	U	0.0990	0.08476		mg/Kg		86	70 - 130	14	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*120*		*70 - 130*
1,4-Difluorobenzene (Surr)	*98*		*70 - 130*

Lab Sample ID: MB 880-50846/5-A
Matrix: Solid
Analysis Batch: 50870

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 50846

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		04/10/23 16:18	04/11/23 11:26	1
Toluene	<0.00200	U	0.00200	mg/Kg		04/10/23 16:18	04/11/23 11:26	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		04/10/23 16:18	04/11/23 11:26	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		04/10/23 16:18	04/11/23 11:26	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		04/10/23 16:18	04/11/23 11:26	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		04/10/23 16:18	04/11/23 11:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*	*04/10/23 16:18*	*04/11/23 11:26*	*1*
1,4-Difluorobenzene (Surr)	*90*		*70 - 130*	*04/10/23 16:18*	*04/11/23 11:26*	*1*

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

Lab Sample ID: MB 880-50425/1-A
Matrix: Solid
Analysis Batch: 50572

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 50425

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		04/05/23 16:03	04/07/23 08:12	1

QC Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4459-1
SDG: 03D2024152

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

Lab Sample ID: MB 880-50425/1-A
Matrix: Solid
Analysis Batch: 50572

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 50425

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		04/05/23 16:03	04/07/23 08:12	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		04/05/23 16:03	04/07/23 08:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*101*		*70 - 130*	*04/05/23 16:03*	*04/07/23 08:12*	*1*
o-Terphenyl	*113*		*70 - 130*	*04/05/23 16:03*	*04/07/23 08:12*	*1*

Lab Sample ID: LCS 880-50425/2-A
Matrix: Solid
Analysis Batch: 50572

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 50425

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	1132		mg/Kg		113	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	844.1		mg/Kg		84	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*104*		*70 - 130*
o-Terphenyl	*109*		*70 - 130*

Lab Sample ID: LCSD 880-50425/3-A
Matrix: Solid
Analysis Batch: 50572

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 50425

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	970.1		mg/Kg		97	70 - 130	15	20
Diesel Range Organics (Over C10-C28)			1000	765.4		mg/Kg		77	70 - 130	10	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1-Chlorooctane	*89*		*70 - 130*
o-Terphenyl	*94*		*70 - 130*

Lab Sample ID: 880-26670-A-61-B MS
Matrix: Solid
Analysis Batch: 50572

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 50425

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	998	1027		mg/Kg		99	70 - 130		
Diesel Range Organics (Over C10-C28)	<49.9	U	998	1176		mg/Kg		116	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*118*		*70 - 130*
o-Terphenyl	*108*		*70 - 130*

QC Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4459-1
SDG: 03D2024152

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

Lab Sample ID: 880-26670-A-61-C MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 50572 — **Prep Batch: 50425**

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	<49.9	U	997	1015		mg/Kg		98	70 - 130	1	20
Diesel Range Organics (Over C10-C28)	<49.9	U	997	1136		mg/Kg		112	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*115*		*70 - 130*
o-Terphenyl	*105*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-50506/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 50741

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			04/09/23 15:01	1

Lab Sample ID: LCS 880-50506/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 50741

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	240.8		mg/Kg		96	90 - 110		

Lab Sample ID: LCSD 880-50506/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 50741

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	237.0		mg/Kg		95	90 - 110	2	20

Lab Sample ID: 890-4459-4 MS — **Client Sample ID: BH01C**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 50741

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	305		252	538.1		mg/Kg		93	90 - 110		

Lab Sample ID: 890-4459-4 MSD — **Client Sample ID: BH01C**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 50741

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	305		252	536.0		mg/Kg		92	90 - 110	0	20

QC Association Summary

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4459-1
SDG: 03D2024152

GC VOA

Prep Batch: 50817

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4459-1	BH01	Total/NA	Solid	5035	
890-4459-2	BH01A	Total/NA	Solid	5035	
890-4459-3	BH01B	Total/NA	Solid	5035	
890-4459-4	BH01C	Total/NA	Solid	5035	
MB 880-50817/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-50817/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-50817/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-26816-A-102-C MS	Matrix Spike	Total/NA	Solid	5035	
880-26816-A-102-D MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Prep Batch: 50846

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-50846/5-A	Method Blank	Total/NA	Solid	5035	

Analysis Batch: 50870

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4459-1	BH01	Total/NA	Solid	8021B	50817
890-4459-2	BH01A	Total/NA	Solid	8021B	50817
890-4459-3	BH01B	Total/NA	Solid	8021B	50817
890-4459-4	BH01C	Total/NA	Solid	8021B	50817
MB 880-50817/5-A	Method Blank	Total/NA	Solid	8021B	50817
MB 880-50846/5-A	Method Blank	Total/NA	Solid	8021B	50846
LCS 880-50817/1-A	Lab Control Sample	Total/NA	Solid	8021B	50817
LCSD 880-50817/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	50817
880-26816-A-102-C MS	Matrix Spike	Total/NA	Solid	8021B	50817
880-26816-A-102-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	50817

Analysis Batch: 50967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4459-1	BH01	Total/NA	Solid	Total BTEX	
890-4459-2	BH01A	Total/NA	Solid	Total BTEX	
890-4459-3	BH01B	Total/NA	Solid	Total BTEX	
890-4459-4	BH01C	Total/NA	Solid	Total BTEX	

GC Semi VOA

Prep Batch: 50425

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4459-1	BH01	Total/NA	Solid	8015NM Prep	
890-4459-2	BH01A	Total/NA	Solid	8015NM Prep	
890-4459-3	BH01B	Total/NA	Solid	8015NM Prep	
890-4459-4	BH01C	Total/NA	Solid	8015NM Prep	
MB 880-50425/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-50425/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-50425/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
880-26670-A-61-B MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
880-26670-A-61-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 50572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4459-1	BH01	Total/NA	Solid	8015B NM	50425

QC Association Summary

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4459-1
SDG: 03D2024152

GC Semi VOA (Continued)

Analysis Batch: 50572 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4459-2	BH01A	Total/NA	Solid	8015B NM	50425
890-4459-3	BH01B	Total/NA	Solid	8015B NM	50425
890-4459-4	BH01C	Total/NA	Solid	8015B NM	50425
MB 880-50425/1-A	Method Blank	Total/NA	Solid	8015B NM	50425
LCS 880-50425/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	50425
LCSD 880-50425/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	50425
880-26670-A-61-B MS	Matrix Spike	Total/NA	Solid	8015B NM	50425
880-26670-A-61-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	50425

Analysis Batch: 50764

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4459-1	BH01	Total/NA	Solid	8015 NM	
890-4459-2	BH01A	Total/NA	Solid	8015 NM	
890-4459-3	BH01B	Total/NA	Solid	8015 NM	
890-4459-4	BH01C	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 50506

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4459-1	BH01	Soluble	Solid	DI Leach	
890-4459-2	BH01A	Soluble	Solid	DI Leach	
890-4459-3	BH01B	Soluble	Solid	DI Leach	
890-4459-4	BH01C	Soluble	Solid	DI Leach	
MB 880-50506/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-50506/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-50506/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-4459-4 MS	BH01C	Soluble	Solid	DI Leach	
890-4459-4 MSD	BH01C	Soluble	Solid	DI Leach	

Analysis Batch: 50741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4459-1	BH01	Soluble	Solid	300.0	50506
890-4459-2	BH01A	Soluble	Solid	300.0	50506
890-4459-3	BH01B	Soluble	Solid	300.0	50506
890-4459-4	BH01C	Soluble	Solid	300.0	50506
MB 880-50506/1-A	Method Blank	Soluble	Solid	300.0	50506
LCS 880-50506/2-A	Lab Control Sample	Soluble	Solid	300.0	50506
LCSD 880-50506/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	50506
890-4459-4 MS	BH01C	Soluble	Solid	300.0	50506
890-4459-4 MSD	BH01C	Soluble	Solid	300.0	50506

Lab Chronicle

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4459-1
SDG: 03D2024152

Client Sample ID: BH01

Date Collected: 04/03/23 08:55
Date Received: 04/03/23 16:27

Lab Sample ID: 890-4459-1
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	50817	04/10/23 10:41	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	50870	04/12/23 05:42	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			50967	04/12/23 09:37	SM	EET MID
Total/NA	Analysis	8015 NM		1			50764	04/09/23 22:35	SM	EET MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	50425	04/05/23 16:03	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	50572	04/07/23 16:16	SM	EET MID
Soluble	Leach	DI Leach			5 g	50 mL	50506	04/06/23 10:48	KS	EET MID
Soluble	Analysis	300.0		10	50 mL	50 mL	50741	04/09/23 16:05	SMC	EET MID

Client Sample ID: BH01A

Date Collected: 04/03/23 09:00
Date Received: 04/03/23 16:27

Lab Sample ID: 890-4459-2
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	50817	04/10/23 10:41	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	50870	04/12/23 06:02	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			50967	04/12/23 09:37	SM	EET MID
Total/NA	Analysis	8015 NM		1			50764	04/09/23 22:35	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	50425	04/05/23 16:03	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	50572	04/07/23 16:39	SM	EET MID
Soluble	Leach	DI Leach			5.05 g	50 mL	50506	04/06/23 10:48	KS	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	50741	04/09/23 16:09	SMC	EET MID

Client Sample ID: BH01B

Date Collected: 04/03/23 09:05
Date Received: 04/03/23 16:27

Lab Sample ID: 890-4459-3
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			4.97 g	5 mL	50817	04/10/23 10:41	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	50870	04/12/23 06:23	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			50967	04/12/23 09:37	SM	EET MID
Total/NA	Analysis	8015 NM		1			50764	04/09/23 22:35	SM	EET MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	50425	04/05/23 16:03	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	50572	04/07/23 17:01	SM	EET MID
Soluble	Leach	DI Leach			5.04 g	50 mL	50506	04/06/23 10:48	KS	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	50741	04/09/23 16:14	SMC	EET MID

Client Sample ID: BH01C

Date Collected: 04/03/23 09:10
Date Received: 04/03/23 16:27

Lab Sample ID: 890-4459-4
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			4.95 g	5 mL	50817	04/10/23 10:41	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	50870	04/12/23 06:44	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			50967	04/12/23 09:37	SM	EET MID

Lab Chronicle

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4459-1
SDG: 03D2024152

Client Sample ID: BH01C

Date Collected: 04/03/23 09:10
Date Received: 04/03/23 16:27

Lab Sample ID: 890-4459-4

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			50764	04/09/23 22:35	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	50425	04/05/23 16:03	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	50572	04/07/23 17:23	SM	EET MID
Soluble	Leach	DI Leach			4.97 g	50 mL	50506	04/06/23 10:48	KS	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	50741	04/09/23 16:18	SMC	EET MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4459-1
SDG: 03D2024152

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	T104704400-22-25	06-30-23

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: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4459-1
SDG: 03D2024152

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: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4459-1
SDG: 03D2024152

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-4459-1	BH01	Solid	04/03/23 08:55	04/03/23 16:27	0.5'
890-4459-2	BH01A	Solid	04/03/23 09:00	04/03/23 16:27	1.0'
890-4459-3	BH01B	Solid	04/03/23 09:05	04/03/23 16:27	2.0'
890-4459-4	BH01C	Solid	04/03/23 09:10	04/03/23 16:27	3.0'

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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

Work Order No: _____

www.xenco.com Page 1 of 1

Project Manager:	Hadlie Green	Bill to: (if different)	Hadlie Green
Company Name:	Ensolum, LLC	Company Name:	Ensolum, LLC
Address:	601 N Marienfeld St Suite 400	Address:	601 N Marienfeld St Suite 400
City, State ZIP:	Midland, TX 79701	City, State ZIP:	Midland, TX 79701
Phone:	432-557-8895	Email:	hgreen@ensolum.com

Work Order Comments

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

Project Name:	Tusk Federal 4H	Turn Around	☑ Routine ☐ Rush
Project Number:	03D2024152	Due Date:	
Project Location:	32.62504,-103.51156	TAT starts the day received by the lab, if received by 4:30pm	
Sampler's Name:	Peter Van Patten		
PO #:			

SAMPLE RECEIPT			
Temp Blank:	Yes No	Wet Ice:	Yes No
Samples Received Intact:	Yes No	Thermometer ID:	TAM002
Cooler Custody Seals:	Yes No N/A	Correction Factor:	-0.2
Sample Custody Seals:	Yes No N/A	Temperature Reading:	5.2
Total Containers:		Corrected Temperature:	5.0

ANALYSIS REQUEST

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	CHLORIDES (EPA: 300.0)	TPH (8015)	BTEX (8021)
BH01	Soil	4/3/2023	855	0.5'	Comp	1		x	x	x
BH01A	Soil	4/3/2023	900	1.0'	Comp	1		x	x	x
BH01B	Soil	4/3/2023	905	2.0'	Comp	1		x	x	x
BH01C	Soil	4/3/2023	910	3.0'	Comp	1		x	x	x

890-4459 Chain of Custody

Preservative Codes

None: NO DI Water: H_2O
Cool: Cool MeOH: Me
HCL: HC HNO_3: HN
H_2S0_4: H_2 NaOH: Na
H_3PO_4: HP
$NaHSO_4$: NABIS
$Na_2S_2O_3$: $NaSO_3$
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 SiO_2 Na Sr Tl Sn U V Zn

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

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	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1 Peter Van Patten	Amanda Short	4/3/23 1627	2		
3			4		
5			6		

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-4459-1
SDG Number: 03D2024152

Login Number: 4459
List Number: 1
Creator: Stutzman, Amanda

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: Ensolum

Job Number: 890-4459-1
SDG Number: 03D2024152

Login Number: 4459
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 04/05/23 11:34 AM

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Hadlie Green
Ensolum
601 N. Marienfeld St.
Suite 400
Midland, Texas 79701

Generated 4/18/2023 2:49:08 PM

JOB DESCRIPTION

Tusk Federal 4H
SDG NUMBER 03D2024152

JOB NUMBER

890-4512-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220

See page two for job notes and contact information.

my EOL

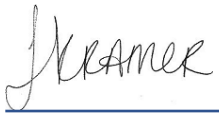
Eurofins Carlsbad

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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4/18/2023 2:49:08 PM

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

Client: Ensolum
Project/Site: Tusk Federal 4H

Laboratory Job ID: 890-4512-1
SDG: 03D2024152

Table of Contents

Definitions/Glossary

Client: Ensolum Job ID: 890-4512-1
Project/Site: Tusk Federal 4H SDG: 03D2024152

Qualifiers

GC VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery 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, 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: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4512-1
SDG: 03D2024152

Job ID: 890-4512-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-4512-1

Receipt
The samples were received on 4/13/2023 12:20 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 4.8°C

Receipt Exceptions
The following samples were received and analyzed from an unpreserved bulk soil jar: SS01A (890-4512-1), SS02A (890-4512-2), SS03A (890-4512-3) and SS04A (890-4512-4).

GC VOA
Method 8021B: 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 880-51208 and analytical batch 880-51139. 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.

GC Semi VOA
Method 8015MOD_NM: Surrogate recovery for the following sample was outside control limits: SS03A (890-4512-3). 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 for preparation batch 880-51313 and analytical batch 880-51409 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.

Client Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4512-1
SDG: 03D2024152

Client Sample ID: SS01A

Date Collected: 04/13/23 10:30
Date Received: 04/13/23 12:20
Sample Depth: 3'

Lab Sample ID: 890-4512-1

Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		04/14/23 13:48	04/16/23 04:43	1
Toluene	<0.00199	U	0.00199		mg/Kg		04/14/23 13:48	04/16/23 04:43	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		04/14/23 13:48	04/16/23 04:43	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		04/14/23 13:48	04/16/23 04:43	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		04/14/23 13:48	04/16/23 04:43	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		04/14/23 13:48	04/16/23 04:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*112*		*70 - 130*	*04/14/23 13:48*	*04/16/23 04:43*	*1*
1,4-Difluorobenzene (Surr)	*78*		*70 - 130*	*04/14/23 13:48*	*04/16/23 04:43*	*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			04/16/23 11:01	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			04/17/23 09:43	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	<49.9	U	49.9		mg/Kg		04/14/23 14:48	04/16/23 02:57	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		04/14/23 14:48	04/16/23 02:57	1
OII Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		04/14/23 14:48	04/16/23 02:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*71*		*70 - 130*	*04/14/23 14:48*	*04/16/23 02:57*	*1*
o-Terphenyl	*76*		*70 - 130*	*04/14/23 14:48*	*04/16/23 02:57*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**145**		4.97		mg/Kg			04/17/23 23:01	1

Client Sample ID: SS02A

Date Collected: 04/13/23 10:00
Date Received: 04/13/23 12:20
Sample Depth: 3'

Lab Sample ID: 890-4512-2

Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		04/14/23 13:48	04/16/23 05:03	1
Toluene	<0.00199	U	0.00199		mg/Kg		04/14/23 13:48	04/16/23 05:03	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		04/14/23 13:48	04/16/23 05:03	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		04/14/23 13:48	04/16/23 05:03	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		04/14/23 13:48	04/16/23 05:03	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		04/14/23 13:48	04/16/23 05:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*110*		*70 - 130*	*04/14/23 13:48*	*04/16/23 05:03*	*1*

Client Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4512-1
SDG: 03D2024152

Client Sample ID: SS02A

Lab Sample ID: 890-4512-2
Matrix: Solid
Date Collected: 04/13/23 10:00
Date Received: 04/13/23 12:20
Sample Depth: 3'

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Difluorobenzene (Surr)	*86*		*70 - 130*	*04/14/23 13:48*	*04/16/23 05:03*	*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			04/16/23 11:01	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			04/17/23 09:43	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	<49.9	U	49.9	mg/Kg		04/14/23 14:48	04/16/23 03:17	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9	mg/Kg		04/14/23 14:48	04/16/23 03:17	1
OII Range Organics (Over C28-C36)	<49.9	U	49.9	mg/Kg		04/14/23 14:48	04/16/23 03:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*70*		*70 - 130*	*04/14/23 14:48*	*04/16/23 03:17*	*1*
o-Terphenyl	*77*		*70 - 130*	*04/14/23 14:48*	*04/16/23 03:17*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**206**		4.98	mg/Kg			04/17/23 23:06	1

Client Sample ID: SS03A

Lab Sample ID: 890-4512-3
Matrix: Solid
Date Collected: 04/13/23 09:45
Date Received: 04/13/23 12:20
Sample Depth: 3'

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		04/14/23 13:48	04/16/23 05:24	1
Toluene	<0.00200	U	0.00200	mg/Kg		04/14/23 13:48	04/16/23 05:24	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		04/14/23 13:48	04/16/23 05:24	1
m-Xylene & p-Xylene	<0.00399	U	0.00399	mg/Kg		04/14/23 13:48	04/16/23 05:24	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		04/14/23 13:48	04/16/23 05:24	1
Xylenes, Total	<0.00399	U	0.00399	mg/Kg		04/14/23 13:48	04/16/23 05:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*70 - 130*	*04/14/23 13:48*	*04/16/23 05:24*	*1*
1,4-Difluorobenzene (Surr)	*98*		*70 - 130*	*04/14/23 13:48*	*04/16/23 05:24*	*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			04/16/23 11:01	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			04/17/23 09:43	1

Client Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4512-1
SDG: 03D2024152

Client Sample ID: SS03A

Lab Sample ID: 890-4512-3
Matrix: Solid
Date Collected: 04/13/23 09:45
Date Received: 04/13/23 12:20
Sample Depth: 3'

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		04/14/23 14:48	04/16/23 03:37	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8		mg/Kg		04/14/23 14:48	04/16/23 03:37	1
OII Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		04/14/23 14:48	04/16/23 03:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*68*	*S1-*	*70 - 130*	*04/14/23 14:48*	*04/16/23 03:37*	*1*
o-Terphenyl	*73*		*70 - 130*	*04/14/23 14:48*	*04/16/23 03:37*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**120**		4.98		mg/Kg			04/17/23 23:20	1

Client Sample ID: SS04A

Lab Sample ID: 890-4512-4
Matrix: Solid
Date Collected: 04/13/23 09:35
Date Received: 04/13/23 12:20
Sample Depth: 3'

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		04/14/23 13:48	04/16/23 05:44	1
Toluene	<0.00200	U	0.00200		mg/Kg		04/14/23 13:48	04/16/23 05:44	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		04/14/23 13:48	04/16/23 05:44	1
m-Xylene & p-Xylene	<0.00401	U	0.00401		mg/Kg		04/14/23 13:48	04/16/23 05:44	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		04/14/23 13:48	04/16/23 05:44	1
Xylenes, Total	<0.00401	U	0.00401		mg/Kg		04/14/23 13:48	04/16/23 05:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*119*		*70 - 130*	*04/14/23 13:48*	*04/16/23 05:44*	*1*
1,4-Difluorobenzene (Surr)	*83*		*70 - 130*	*04/14/23 13:48*	*04/16/23 05:44*	*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			04/16/23 11:01	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			04/17/23 09:43	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	<50.0	U	50.0		mg/Kg		04/14/23 14:48	04/16/23 03:58	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		04/14/23 14:48	04/16/23 03:58	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		04/14/23 14:48	04/16/23 03:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*70*		*70 - 130*	*04/14/23 14:48*	*04/16/23 03:58*	*1*
o-Terphenyl	*75*		*70 - 130*	*04/14/23 14:48*	*04/16/23 03:58*	*1*

Client Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4512-1
SDG: 03D2024152

Client Sample ID: SS04A

Date Collected: 04/13/23 09:35
Date Received: 04/13/23 12:20
Sample Depth: 3'

Lab Sample ID: 890-4512-4

Matrix: Solid

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	143		4.96		mg/Kg			04/17/23 23:24	1

Surrogate Summary

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4512-1
SDG: 03D2024152

Method: 8021B - Volatile Organic Compounds (GC)

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

		Percent Surrogate Recovery (Acceptance Limits)											
		BFB1	DFBZ1										
Lab Sample ID	Client Sample ID	(70-130)	(70-130)										
890-4497-A-1-E MS	Matrix Spike	100	81										
890-4497-A-1-F MSD	Matrix Spike Duplicate	130	101										
890-4512-1	SS01A	112	78										
890-4512-2	SS02A	110	86										
890-4512-3	SS03A	107	98										
890-4512-4	SS04A	119	83										
LCS 880-51208/1-A	Lab Control Sample	97	115										
LCSD 880-51208/2-A	Lab Control Sample Dup	100	120										
MB 880-51075/5-A	Method Blank	72	80										
MB 880-51208/5-A	Method Blank	71	97										

Surrogate Legend

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

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

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

		Percent Surrogate Recovery (Acceptance Limits)											
		1CO1	OTPH1										
Lab Sample ID	Client Sample ID	(70-130)	(70-130)										
890-4507-A-10-C MS	Matrix Spike	77	74										
890-4507-A-10-D MSD	Matrix Spike Duplicate	81	77										
890-4512-1	SS01A	71	76										
890-4512-2	SS02A	70	77										
890-4512-3	SS03A	68 S1-	73										
890-4512-4	SS04A	70	75										
LCS 880-51210/2-A	Lab Control Sample	75	76										
LCSD 880-51210/3-A	Lab Control Sample Dup	76	76										
MB 880-51210/1-A	Method Blank	110	119										

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4512-1
SDG: 03D2024152

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-51075/5-A
Matrix: Solid
Analysis Batch: 51139

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 51075

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		04/13/23 12:38	04/15/23 08:12	1
Toluene	<0.00200	U	0.00200		mg/Kg		04/13/23 12:38	04/15/23 08:12	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		04/13/23 12:38	04/15/23 08:12	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		04/13/23 12:38	04/15/23 08:12	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		04/13/23 12:38	04/15/23 08:12	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		04/13/23 12:38	04/15/23 08:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*72*		*70 - 130*	*04/13/23 12:38*	*04/15/23 08:12*	*1*
1,4-Difluorobenzene (Surr)	*80*		*70 - 130*	*04/13/23 12:38*	*04/15/23 08:12*	*1*

Lab Sample ID: MB 880-51208/5-A
Matrix: Solid
Analysis Batch: 51139

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 51208

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		04/14/23 13:48	04/15/23 21:52	1
Toluene	<0.00200	U	0.00200		mg/Kg		04/14/23 13:48	04/15/23 21:52	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		04/14/23 13:48	04/15/23 21:52	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		04/14/23 13:48	04/15/23 21:52	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		04/14/23 13:48	04/15/23 21:52	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		04/14/23 13:48	04/15/23 21:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*71*		*70 - 130*	*04/14/23 13:48*	*04/15/23 21:52*	*1*
1,4-Difluorobenzene (Surr)	*97*		*70 - 130*	*04/14/23 13:48*	*04/15/23 21:52*	*1*

Lab Sample ID: LCS 880-51208/1-A
Matrix: Solid
Analysis Batch: 51139

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 51208

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.1077		mg/Kg		108	70 - 130		
Toluene			0.100	0.09124		mg/Kg		91	70 - 130		
Ethylbenzene			0.100	0.08418		mg/Kg		84	70 - 130		
m-Xylene & p-Xylene			0.200	0.1691		mg/Kg		85	70 - 130		
o-Xylene			0.100	0.08710		mg/Kg		87	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*
1,4-Difluorobenzene (Surr)	*115*		*70 - 130*

Lab Sample ID: LCSD 880-51208/2-A
Matrix: Solid
Analysis Batch: 51139

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 51208

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.1039		mg/Kg		104	70 - 130	4	35

QC Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4512-1
SDG: 03D2024152

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

Lab Sample ID: LCSD 880-51208/2-A
Matrix: Solid
Analysis Batch: 51139

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 51208

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Toluene			0.100	0.08695		mg/Kg		87	70 - 130	5	35
Ethylbenzene			0.100	0.07867		mg/Kg		79	70 - 130	7	35
m-Xylene & p-Xylene			0.200	0.1607		mg/Kg		80	70 - 130	5	35
o-Xylene			0.100	0.08271		mg/Kg		83	70 - 130	5	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*
1,4-Difluorobenzene (Surr)	*120*		*70 - 130*

Lab Sample ID: 890-4497-A-1-E MS
Matrix: Solid
Analysis Batch: 51139

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 51208

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	<0.00199	U F1	0.0998	<0.00200	U F1	mg/Kg		0.7	70 - 130
Toluene	<0.00199	U F1	0.0998	<0.00200	U F1	mg/Kg		0.7	70 - 130
Ethylbenzene	<0.00199	U F1	0.0998	<0.00200	U F1	mg/Kg		0.6	70 - 130
m-Xylene & p-Xylene	<0.00398	U F1	0.200	<0.00399	U F1	mg/Kg		0.6	70 - 130
o-Xylene	<0.00199	U F1	0.0998	<0.00200	U F1	mg/Kg		0.8	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*
1,4-Difluorobenzene (Surr)	*81*		*70 - 130*

Lab Sample ID: 890-4497-A-1-F MSD
Matrix: Solid
Analysis Batch: 51139

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 51208

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00199	U F1	0.0990	<0.00198	U F1	mg/Kg		0	70 - 130	NC	35
Toluene	<0.00199	U F1	0.0990	<0.00198	U F1	mg/Kg		0	70 - 130	NC	35
Ethylbenzene	<0.00199	U F1	0.0990	<0.00198	U F1	mg/Kg		0	70 - 130	NC	35
m-Xylene & p-Xylene	<0.00398	U F1	0.198	<0.00396	U F1	mg/Kg		0	70 - 130	NC	35
o-Xylene	<0.00199	U F1	0.0990	<0.00198	U F1	mg/Kg		0	70 - 130	NC	35

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

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

Lab Sample ID: MB 880-51210/1-A
Matrix: Solid
Analysis Batch: 51243

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 51210

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		04/14/23 14:48	04/15/23 20:46	1

QC Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4512-1
SDG: 03D2024152

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

Lab Sample ID: MB 880-51210/1-A
Matrix: Solid
Analysis Batch: 51243

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 51210

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		04/14/23 14:48	04/15/23 20:46	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		04/14/23 14:48	04/15/23 20:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*110*		*70 - 130*	*04/14/23 14:48*	*04/15/23 20:46*	*1*
o-Terphenyl	*119*		*70 - 130*	*04/14/23 14:48*	*04/15/23 20:46*	*1*

Lab Sample ID: LCS 880-51210/2-A
Matrix: Solid
Analysis Batch: 51243

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 51210

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	1038		mg/Kg		104	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	887.6		mg/Kg		89	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*75*		*70 - 130*
o-Terphenyl	*76*		*70 - 130*

Lab Sample ID: LCSD 880-51210/3-A
Matrix: Solid
Analysis Batch: 51243

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 51210

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	1030		mg/Kg		103	70 - 130	1	20
Diesel Range Organics (Over C10-C28)			1000	872.1		mg/Kg		87	70 - 130	2	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1-Chlorooctane	*76*		*70 - 130*
o-Terphenyl	*76*		*70 - 130*

Lab Sample ID: 890-4507-A-10-C MS
Matrix: Solid
Analysis Batch: 51243

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 51210

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	998	1138		mg/Kg		114	70 - 130		
Diesel Range Organics (Over C10-C28)	<49.9	U	998	968.0		mg/Kg		94	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*77*		*70 - 130*
o-Terphenyl	*74*		*70 - 130*

QC Sample Results

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4512-1
SDG: 03D2024152

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

Lab Sample ID: 890-4507-A-10-D MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 51243 — **Prep Batch: 51210**

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	<49.9	U	999	1118		mg/Kg		112	70 - 130	2	20
Diesel Range Organics (Over C10-C28)	<49.9	U	999	1018		mg/Kg		99	70 - 130	5	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*81*		*70 - 130*
o-Terphenyl	*77*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-51313/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 51409

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			04/17/23 21:30	1

Lab Sample ID: LCS 880-51313/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 51409

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	245.2		mg/Kg		98	90 - 110		

Lab Sample ID: LCSD 880-51313/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 51409

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	264.8		mg/Kg		106	90 - 110	8	20

Lab Sample ID: 880-27148-A-1-C MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 51409

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	783	F1	251	961.0	F1	mg/Kg		71	90 - 110		

Lab Sample ID: 880-27148-A-1-D MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 51409

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	783	F1	251	961.6	F1	mg/Kg		71	90 - 110	0	20

QC Association Summary

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4512-1
SDG: 03D2024152

GC VOA

Prep Batch: 51075

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-51075/5-A	Method Blank	Total/NA	Solid	5035	

Analysis Batch: 51139

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4512-1	SS01A	Total/NA	Solid	8021B	51208
890-4512-2	SS02A	Total/NA	Solid	8021B	51208
890-4512-3	SS03A	Total/NA	Solid	8021B	51208
890-4512-4	SS04A	Total/NA	Solid	8021B	51208
MB 880-51075/5-A	Method Blank	Total/NA	Solid	8021B	51075
MB 880-51208/5-A	Method Blank	Total/NA	Solid	8021B	51208
LCS 880-51208/1-A	Lab Control Sample	Total/NA	Solid	8021B	51208
LCSD 880-51208/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	51208
890-4497-A-1-E MS	Matrix Spike	Total/NA	Solid	8021B	51208
890-4497-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	51208

Prep Batch: 51208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4512-1	SS01A	Total/NA	Solid	5035	
890-4512-2	SS02A	Total/NA	Solid	5035	
890-4512-3	SS03A	Total/NA	Solid	5035	
890-4512-4	SS04A	Total/NA	Solid	5035	
MB 880-51208/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-51208/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-51208/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-4497-A-1-E MS	Matrix Spike	Total/NA	Solid	5035	
890-4497-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 51257

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4512-1	SS01A	Total/NA	Solid	Total BTEX	
890-4512-2	SS02A	Total/NA	Solid	Total BTEX	
890-4512-3	SS03A	Total/NA	Solid	Total BTEX	
890-4512-4	SS04A	Total/NA	Solid	Total BTEX	

GC Semi VOA

Prep Batch: 51210

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4512-1	SS01A	Total/NA	Solid	8015NM Prep	
890-4512-2	SS02A	Total/NA	Solid	8015NM Prep	
890-4512-3	SS03A	Total/NA	Solid	8015NM Prep	
890-4512-4	SS04A	Total/NA	Solid	8015NM Prep	
MB 880-51210/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-51210/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-51210/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-4507-A-10-C MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-4507-A-10-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 51243

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4512-1	SS01A	Total/NA	Solid	8015B NM	51210

QC Association Summary

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4512-1
SDG: 03D2024152

GC Semi VOA (Continued)

Analysis Batch: 51243 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4512-2	SS02A	Total/NA	Solid	8015B NM	51210
890-4512-3	SS03A	Total/NA	Solid	8015B NM	51210
890-4512-4	SS04A	Total/NA	Solid	8015B NM	51210
MB 880-51210/1-A	Method Blank	Total/NA	Solid	8015B NM	51210
LCS 880-51210/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	51210
LCSD 880-51210/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	51210
890-4507-A-10-C MS	Matrix Spike	Total/NA	Solid	8015B NM	51210
890-4507-A-10-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	51210

Analysis Batch: 51305

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4512-1	SS01A	Total/NA	Solid	8015 NM	
890-4512-2	SS02A	Total/NA	Solid	8015 NM	
890-4512-3	SS03A	Total/NA	Solid	8015 NM	
890-4512-4	SS04A	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 51313

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4512-1	SS01A	Soluble	Solid	DI Leach	
890-4512-2	SS02A	Soluble	Solid	DI Leach	
890-4512-3	SS03A	Soluble	Solid	DI Leach	
890-4512-4	SS04A	Soluble	Solid	DI Leach	
MB 880-51313/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-51313/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-51313/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
880-27148-A-1-C MS	Matrix Spike	Soluble	Solid	DI Leach	
880-27148-A-1-D MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 51409

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4512-1	SS01A	Soluble	Solid	300.0	51313
890-4512-2	SS02A	Soluble	Solid	300.0	51313
890-4512-3	SS03A	Soluble	Solid	300.0	51313
890-4512-4	SS04A	Soluble	Solid	300.0	51313
MB 880-51313/1-A	Method Blank	Soluble	Solid	300.0	51313
LCS 880-51313/2-A	Lab Control Sample	Soluble	Solid	300.0	51313
LCSD 880-51313/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	51313
880-27148-A-1-C MS	Matrix Spike	Soluble	Solid	300.0	51313
880-27148-A-1-D MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	51313

Lab Chronicle

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4512-1
SDG: 03D2024152

Client Sample ID: SS01A
Date Collected: 04/13/23 10:30
Date Received: 04/13/23 12:20

Lab Sample ID: 890-4512-1
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			5.02 g	5 mL	51208	04/14/23 13:48	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	51139	04/16/23 04:43	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			51257	04/16/23 11:01	AJ	EET MID
Total/NA	Analysis	8015 NM		1			51305	04/17/23 09:43	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	51210	04/14/23 14:48	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	51243	04/16/23 02:57	SM	EET MID
Soluble	Leach	DI Leach			5.03 g	50 mL	51313	04/17/23 12:15	KS	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	51409	04/17/23 23:01	SMC	EET MID

Client Sample ID: SS02A
Date Collected: 04/13/23 10:00
Date Received: 04/13/23 12:20

Lab Sample ID: 890-4512-2
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			5.03 g	5 mL	51208	04/14/23 13:48	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	51139	04/16/23 05:03	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			51257	04/16/23 11:01	AJ	EET MID
Total/NA	Analysis	8015 NM		1			51305	04/17/23 09:43	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	51210	04/14/23 14:48	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	51243	04/16/23 03:17	SM	EET MID
Soluble	Leach	DI Leach			5.02 g	50 mL	51313	04/17/23 12:15	KS	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	51409	04/17/23 23:06	SMC	EET MID

Client Sample ID: SS03A
Date Collected: 04/13/23 09:45
Date Received: 04/13/23 12:20

Lab Sample ID: 890-4512-3
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	51208	04/14/23 13:48	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	51139	04/16/23 05:24	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			51257	04/16/23 11:01	AJ	EET MID
Total/NA	Analysis	8015 NM		1			51305	04/17/23 09:43	SM	EET MID
Total/NA	Prep	8015NM Prep			10.031 g	10 mL	51210	04/14/23 14:48	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	51243	04/16/23 03:37	SM	EET MID
Soluble	Leach	DI Leach			5.02 g	50 mL	51313	04/17/23 12:15	KS	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	51409	04/17/23 23:20	SMC	EET MID

Client Sample ID: SS04A
Date Collected: 04/13/23 09:35
Date Received: 04/13/23 12:20

Lab Sample ID: 890-4512-4
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			4.99 g	5 mL	51208	04/14/23 13:48	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	51139	04/16/23 05:44	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			51257	04/16/23 11:01	AJ	EET MID

Lab Chronicle

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4512-1
SDG: 03D2024152

Client Sample ID: SS04A

Date Collected: 04/13/23 09:35
Date Received: 04/13/23 12:20

Lab Sample ID: 890-4512-4

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			51305	04/17/23 09:43	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	51210	04/14/23 14:48	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	51243	04/16/23 03:58	SM	EET MID
Soluble	Leach	DI Leach			5.04 g	50 mL	51313	04/17/23 12:15	KS	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	51409	04/17/23 23:24	SMC	EET MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4512-1
SDG: 03D2024152

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	T104704400-22-25	06-30-23

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: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4512-1
SDG: 03D2024152

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: Ensolum
Project/Site: Tusk Federal 4H

Job ID: 890-4512-1
SDG: 03D2024152

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-4512-1	SS01A	Solid	04/13/23 10:30	04/13/23 12:20	3'
890-4512-2	SS02A	Solid	04/13/23 10:00	04/13/23 12:20	3'
890-4512-3	SS03A	Solid	04/13/23 09:45	04/13/23 12:20	3'
890-4512-4	SS04A	Solid	04/13/23 09:35	04/13/23 12:20	3'

eurofins 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: ______

www.xenco.com Page 1 of 1

Project Manager:	Hadlie Green	Bill to: (if different)	Kale Jennings
Company Name:	Ensolum LLC	Company Name:	Ensolum, LLC
Address:	3122 National Parks Hwy	Address:	
City, State ZIP:	Carlsbad, NM 88220	City, State ZIP:	
Phone:	432-557-8895	Email:	hgreen@ensolum.com

Work Order Comments

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

Project Name:	Tusk Federal 4H	Turn Around	
Project Number:	03D2024152	☒ Routine	☐ Rush
Project Location:	32.62504, -103.51156	Due Date:	5 days
Sampler's Name:	Rumi Hayes	TAT starts the day received by the lab, if received by 4:30pm	
PO #:			

SAMPLE RECEIPT	Temp Blank:	(Yes) No	Wet Ice:	(Yes) No
Samples Received Intact:	(Yes) No		Thermometer ID:	TAM-007
Cooler Custody Seals:	Yes No (N/A)		Correction Factor:	-0.2
Sample Custody Seals:	Yes No (N/A)		Temperature Reading:	5.0
Total Containers:			Corrected Temperature:	4.8

ANALYSIS REQUEST — Parameters / Pres. Code

890-4512 Chain of Custody

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Cl-	BTEX	TPH	Sample Comments
SS01A	S	4/13/23	1030	3'	G	1	x	x	x	
SS02A	↓	↓	1000	↓	↓	↓	↓	↓	↓	
SS03A	↓	↓	0945	↓	↓	↓	↓	↓	↓	
SS04A	↓	↓	0935	↓	↓	↓	↓	↓	↓	

RH 4/13/23

Preservative Codes

None: NO — DI Water: H_2O
Cool: Cool — MeOH: Me
HCL: HC — HNO_3: HN
H_2SO_4: H_2 — NaOH: Na
H_3PO_4: HP
$NaHSO_4$: NABIS
$Na_2S_2O_3$: $NaSO_3$
Zn Acetate+NaOH: Zn
NaOH+Ascorbic Acid: SAPC

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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1 [signature]	Amanda Stief [signature]	4/13/23 1218	2		
3			4		
5			6		

Revised Date 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-4512-1
SDG Number: 03D2024152

Login Number: 4512
List Number: 1
Creator: Stutzman, Amanda

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: Ensolum

Job Number: 890-4512-1
SDG Number: 03D2024152

Login Number: 4512
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 04/14/23 10:11 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	

ENSOLUM

APPENDIX E

NMOCD Notifications

From: Enviro, OCD, EMNRD
To: Kalei Jennings; Enviro, OCD, EMNRD
Cc: Josh Adams; Hadlie Green; Bratcher, Michael, EMNRD; Nobui, Jennifer, EMNRD
Subject: RE: [EXTERNAL] COP - Containment Inspection - Tusk Federal 004H / NAPP2303742113
Date: Thursday, February 9, 2023 10:39:14 AM
Attachments: image006.png
image007.png
image008.png
image009.png

[**EXTERNAL EMAIL**]

Kalei,

Thank you for the notification. Please include a copy of this and all notifications in the remedial and/or closure reports to ensure the notifications are documented in the project file.

JH

Jocelyn Harimon ● Environmental Specialist
Environmental Bureau
EMNRD - Oil Conservation Division
1220 South St. Francis Drive | Santa Fe, NM 87505
(505)469-2821 | Jocelyn.Harimon@emnrd.nm.gov
http:// **www.emnrd.nm.gov**

From: Kalei Jennings <kjennings@ensolum.com>
Sent: Thursday, February 9, 2023 10:00 AM
To: Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>
Cc: Josh Adams <jadams@ensolum.com>; Hadlie Green <hgreen@ensolum.com>
Subject: [EXTERNAL] COP - Containment Inspection - Tusk Federal 004H / NAPP2303742113

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern,

Below is a 48-hour email notification for liner inspection at ConocoPhillips (COP) Tusk Federal 004H (Incident Number NAPP2303742113). This is a 48-hour notification that Ensolum is scheduled to inspect this lined containment on behalf of COP on Monday February 13, 2023, at 9:30 MST. Please call with any questions or concerns.

GPS: 32.62504, -103.51156

Thank you,

Kalei Jennings
Senior Scientist
817-683-2503
Ensolum, LLC

From: Enviro, OCD, EMNRD
To: Hadlie Green
Cc: Bratcher, Michael, EMNRD; Nobui, Jennifer, EMNRD
Subject: RE: [EXTERNAL] COG - Containment Inspection - Tusk Federal 004H (Incident Number NAPP2303742113)
Date: Thursday, March 23, 2023 12:32:54 PM
Attachments: image005.jpg
image006.png
image007.png
image008.png
image009.png

[**EXTERNAL EMAIL**]

Hadlie,

Thank you for the notification. Please include a copy of this and all notifications in the remedial and/or closure reports to ensure the notifications are documented in the project file.

JH

Jocelyn Harimon ● Environmental Specialist
Environmental Bureau
EMNRD - Oil Conservation Division
1220 South St. Francis Drive | Santa Fe, NM 87505
(505)469-2821 | Jocelyn.Harimon@emnrd.nm.gov
http:// **www.emnrd.nm.gov**

From: Hadlie Green <hgreen@ensolum.com>
Sent: Thursday, March 23, 2023 10:27 AM
To: Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>
Cc: Kalei Jennings <kjennings@ensolum.com>
Subject: [EXTERNAL] COG - Containment Inspection - Tusk Federal 004H (Incident Number NAPP2303742113)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern,

Below is an email notification for liner inspection at COG Operating, LLC (COG) Tusk Federal 004H (Incident Number NAPP2303742113) / Spill Date 1-27-2023. This is a notification that Ensolum is scheduled to inspect this lined containment on behalf of COG on Wednesday, March 29, 2023. Please call with any questions or concerns.

GPS: 32.6249, -103.5115

Thank you,

Hadlie Green
Project Manager
432-557-8895
hgreen@ensolum.com
Ensolum, LLC

ENSOLUM

APPENDIX F

Final C-141

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources Department

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

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	NAPP2303742113
District RP	
Facility ID	fAPP2203452675
Application ID	

Release Notification

Responsible Party

Responsible Party	COG Operating, LLC	OGRID	229137
Contact Name	Charles Beauvais	Contact Telephone	(575) 988-2043
Contact email	Charles.R.Beauvais@ConocoPhillips.com	Incident # *(assigned by OCD)*	NAPP2303742113
Contact mailing address	600 West Illinois Avenue, Midland, Texas 79701		

Location of Release Source

Latitude 32.6249 Longitude -103.5115

(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Tusk Federal 004H	Site Type	Tank Battery
Date Release Discovered	January 27, 2023	API# *(if applicable)*	30-025-41358

Unit Letter	Section	Township	Range	County
O	25	19S	34E	Lea

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

Nature and Volume of Release

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

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☒ Produced Water	Volume Released (bbls) 22.8	Volume Recovered (bbls) 3
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☒ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

The release was caused by a hole in a firetube due to corrosion.
The release occurred within a dirt filled lined facility. A vacuum truck was dispatched to remove all freestanding fluids. Evaluation will be made of the spill area for any possible impact from the release.

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2303742113
District RP	
Facility ID	fAPP2203452675
Application ID	

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

Initial Response

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

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

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

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

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

Printed Name: Brittany N. Esparza Title: Environmental Technician

Signature: Brittany Esparza Date: 2/6/2023

email: Brittany.Esparza@ConocoPhillips.com Telephone: (432) 221-0398

OCD Only

Received by: Jocelyn Harimon Date: 02/06/2023

NAPP2303742113

Spill Calculation - On-Pad Surface Pool Spill

Convert Irregular shape into a series of rectangles	Length (ft.)	Width (ft.)	Average Depth (in.)	Estimated *Pool* Area (sq. ft.)	Estimated volume of each pool area (bbl.)	Penetration allowance (ft.)	Total Estimated Volume of Spill (bbl.)
Rectangle A	23.00	70.00	1.00	1610.00	23.88	0.00	23.98
Rectangle B				0.00	0.00	0.00	0.00
Rectangle C				0.00	0.00	0.00	0.00
Rectangle D				0.00	0.00	0.00	0.00
Rectangle E				0.00	0.00	0.00	0.00
Rectangle F				0.00	0.00	0.00	0.00
Rectangle G				0.00	0.00	0.00	0.00
Rectangle H				0.00	0.00	0.00	0.00
Rectangle I				0.00	0.00	0.00	0.00
Rectangle J				0.00	0.00	0.00	0.00
						Total Volume Release, Soil not impacted:	22.78

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

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

CONDITIONS

Operator: COG OPERATING LLC 600 W Illinois Ave Midland, TX 79701	OGRID: 229137
	Action Number: 183010
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jharimon	None	2/6/2023

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2303742113
District RP	
Facility ID	fAPP2203452675
Application ID	

Site Assessment/Characterization

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

What is the shallowest depth to groundwater beneath the area affected by the release?	<50 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☒ Yes ☐ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

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

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

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

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

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State of New Mexico
Oil Conservation Division

Incident ID	NAPP2303742113
District RP	
Facility ID	fAPP2203452675
Application ID	

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

Printed Name: __Jacob Laird_____ Title: _Environmental Engineer_____

Signature:_____Jacob Laird_____ Date: _____4/21/2023_____

email: __Jacob.Laird@ConocoPhillips.com_____ Telephone: ___575-703-5482_____

OCD Only

Received by: _____Jocelyn Harimon_____ Date: _____05/01/2023_____

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State of New Mexico
Oil Conservation Division

Incident ID	NAPP2303742113
District RP	
Facility ID	fAPP2203452675
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Remediation Plan

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

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

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

☒ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☒ Extents of contamination must be fully delineated.

☒ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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

Printed Name: __Jacob Laird_____ Title: __Environmental Engineer_____

Signature: Jacob Laird Date: _____4/21/2023_____

email: __Jacob.Laird@conocophillips.com_____ Telephone: __575-703-5482_____

OCD Only

Received by: Jocelyn Harimon Date: 05/01/2023

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: Nelson Velez Date: 07/24/2023

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 212317

CONDITIONS

Operator: COG OPERATING LLC 600 W Illinois Ave Midland, TX 79701	OGRID: 229137
	Action Number: 212317
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Deferral request approved. Remediation Due date left open until plug and abandonment of the facility is completed.	7/24/2023