

June 12, 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: Closure Request

Red Raider BKS State 001

**Incident Number NAPP2313136415** 

Lea County, New Mexico

To Whom It May Concern:

Ensolum, LLC (Ensolum), on behalf of COG Operating, LLC (COG), has prepared this *Closure Request* to document assessment and soil sampling activities performed at the Red Raider BKS State 001 (Site). The purpose of the Site assessment and soil sampling activities was to assess for the presence or absence of impacts to soil following an oil dump failure resulting in a flare fire at the Site. Based on field observations, field screening activities, and soil sample laboratory analytical results, COG is submitting this *Closure Request*, requesting closure for Incident Number NAPP2313136415.

#### SITE DESCRIPTION AND RELEASE SUMMARY

The Site is located in Unit J, Section 25, Township 24 South, Range 33 East, in Lea County, New Mexico (32.1865°, -103.5246°) and is associated with oil and gas exploration and production operations on New Mexico State Land.

On May 2, 2023, an oil dump malfunction caused approximately 0.1009 barrels (bbls) of crude oil to be sent to the flare. The crude oil ignited and extinguished itself after reaching the ground. COG reported the release immediately to the New Mexico Oil Conservation Division (NMOCD) via email on May 2, 2023, and submitted a Release Notification Form C-141 (Form C-141) on May 11, 2023. The release was assigned Incident Number NAPP2313136415.

#### SITE CHARACTERIZATION AND CLOSURE CRITERIA

The Site was characterized to assess the 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 between 51 and 100 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) C-03602, located approximately 0.2 miles northwest of the Site. The groundwater well was drilled during January 2013 to a total depth of 75 feet bgs, and no groundwater was encountered. All wells used for depth to groundwater determination are presented on Figure 1. The associated well records are included in Appendix A.

Red Raider BKS State 001 Closure Request COG Operating, LLC



The closest continuously flowing or significant watercourse to the Site is a riverine, located approximately 777 feet southwest 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 greater 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)-gasoline range organics (GRO) and TPH-diesel range organics (DRO): 1,000 mg/kg
- Total Petroleum Hydrocarbons (TPH): 2,500 mg/kg
- Chloride: 10,000 mg/kg

#### SITE ASSESSMENT ACTIVITIES AND LABORATORY ANALYTICAL RESULTS

On May 18, 2023, Ensolum personnel were at the Site to evaluate the release extent based on information provided on the Form C-141 and visual observations. The stained soil from the fire had been scraped up prior to Ensolum personnel visiting the Site. Three assessment soil samples (SS01 through SS03) were collected within the release area at an approximate depth of 0.25 feet bgs to assess for the presence or absence of impacted soil resulting from the crude oil flare fire. Four assessment soil samples (SS04 through SS07) were collected around the release area at a depth of 0.25 feet bgs to confirm the lateral extent of the release. The soil samples were field screened for volatile organic compounds (VOCs) utilizing a calibrated photoionization detector (PID) and chloride using Hach® chloride QuanTab® test strips. Photographic documentation was completed during the Site visit and a photographic log is included as Appendix B.

On May 31, 2023, Ensolum personnel returned to the Site to complete additional assessment activities to further confirm the absence of impacted soil. Three boreholes were advanced via hand auger at the locations of initial assessment samples SS01 through SS03. Soil from the boreholes was field screened for VOCs and chloride. Field screening results and observations for the boreholes were logged on lithologic soil sampling logs, which are included in Appendix C. One discrete soil sample was collected from each borehole (SS01A through SS03A) at a depth ranging from 1-foot to 3 feet bgs. The soil sample locations were mapped utilizing a handheld Global Positioning System (GPS) unit and are depicted on Figure 2.

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

Laboratory analytical results for soil samples SS01/SS01A, SS02/SS02A, SS03/SS03A, and SS04 through SS07 indicated all COC concentrations were compliant with the most stringent Table I Closure Criteria. Laboratory analytical results are summarized in Table 1 and the complete laboratory analytical reports are included as Appendix D.

Red Raider BKS State 001 Closure Request COG Operating, LLC



#### **CLOSURE REQUEST**

Site assessment and soil sampling activities were conducted at the Site to assess for the presence or absence of impacted soil resulting from the May 2, 2023, crude oil flare fire. Laboratory analytical results for the soil samples indicated all COC concentrations were compliant with most stringent Table I Closure Criteria. Based on the laboratory analytical results, no impacted soil was identified, and no further remediation is required.

Depth to groundwater has been estimated to be between 51 and 100 feet bgs and no other sensitive receptors were identified near the release extent. COG believes the remedial actions completed are protective of human health, the environment, and groundwater. As such, COG respectfully requests closure for Incident Number NAPP2313136415. The NMOCD notifications are included in Appendix E and the Form C-141 is included in Appendix F.

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

Sincerely, **Ensolum, LLC** 

Ronni Hayes Assistant Geologist

Aimee Cole

Senior Managing Scientist

cc: Jacob Laird, COG Operating, LLC New Mexico State Land Office

#### Appendices:

Figure 1 Site Receptor Map
Figure 2 Soil Sample Locations

Table 1 Soil Sample Analytical Results
Appendix A Referenced Well Records

Appendix B Photographic Log

Appendix C Lithologic/Soil Sampling Logs

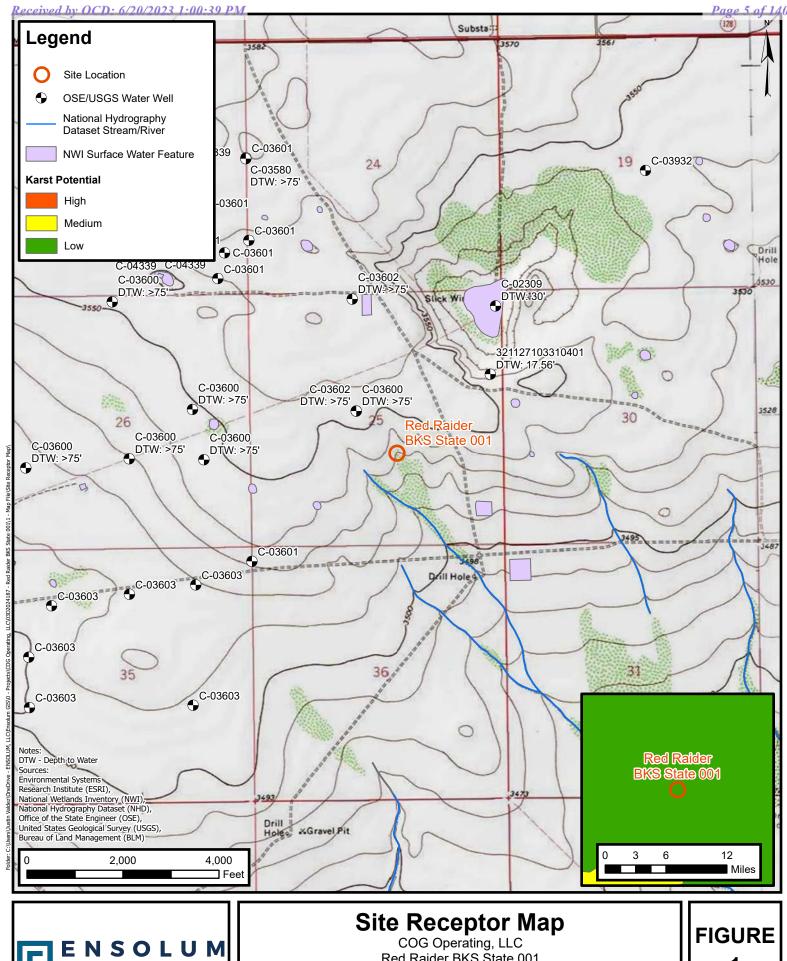
Appendix D Laboratory Analytical Reports & Chain-of-Custody Documentation

Appendix E NMOCD Notifications

Appendix F Final C-141



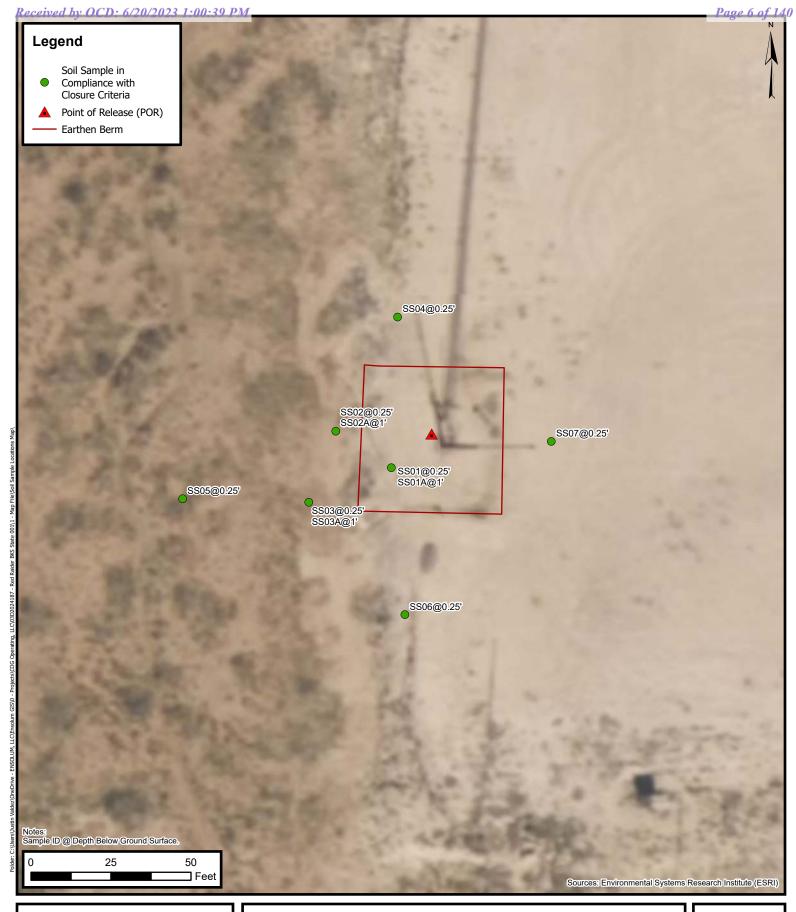
**FIGURES** 





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Red Raider BKS State 001 Incident Number: NAPP2313136415 Unit J, Sec 25, T24S, R33E Lea County, New Mexico





Soil Sample Locations
COG Operating, LLC
Red Raider BKS State 001
Incident Number: NAPP2313136415 Unit J, Sec 25, T24S, R33E Lea County, New Mexico

**FIGURE** 2



**TABLES** 

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# TABLE 1 SOIL SAMPLE ANALYTICAL RESULTS

Red Raider BKS State 001 COG Operating, LLC Lea County, New Mexico

				Lea	County, New Me	xico				
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	1,000	2,500	10,000
				Asse	essment Soil San	nples				
SS01	05/18/2023	0.25	<0.00200	<0.00399	<49.8	<49.8	<49.8	<49.8	<49.8	106
SS01A	05/31/2023	1	<0.00200	<0.00399	<49.9	<49.9	<49.9	<49.9	<49.9	336
SS02	05/18/2023	0.25	<0.00201	<0.00402	<49.8	<49.8	<49.8	<49.8	<49.8	101
SS02A	05/31/2023	1	<0.00198	<0.00396	<49.8	<49.8	<49.8	<49.8	<49.8	206
SS03	05/18/2023	0.25	<0.00202	<0.00403	<49.9	<49.9	<49.9	<49.9	<49.9	101
SS03A	05/31/2023	3	<0.00199	<0.00398	<49.9	<49.9	<49.9	<49.9	<49.9	388
SS04	05/18/2023	0.25	<0.00200	<0.00401	<49.8	<49.8	<49.8	<49.8	<49.8	71.7
SS05	05/18/2023	0.25	<0.00200	<0.00399	<49.8	<49.8	<49.8	<49.8	<49.8	51.8
SS06	05/18/2023	0.25	<0.00200	<0.00401	<49.8	<49.8	<49.8	<49.8	<49.8	64.4
SS07	05/18/2023	0.25	<0.00199	<0.00398	<49.9	<49.9	<49.9	<49.9	<49.9	41.7

#### 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



**APPENDIX A** 

Referenced Well Records



USGS Home Contact USGS Search USGS

### **National Water Information System: Web Interface**

**USGS** Water Resources

Data Category:		Geographic Area:		
Groundwater ~	•	United States	~	GO

#### Click to hideNews Bulletins

- Explore the NEW <u>USGS National Water Dashboard</u> interactive map to access realtime water <u>data</u> from over 13,500 stations nationwide.
- Full News

Groundwater levels for the Nation

Important: <u>Next Generation Monitoring Location Page</u>

#### Search Results -- 1 sites found

site\_no list =

• 321127103310401

#### Minimum number of levels = 1

Save file of selected sites to local disk for future upload

#### USGS 321127103310401 24S.33E.24.44444

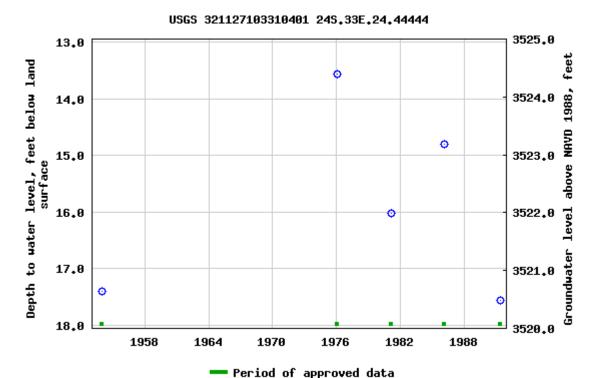
Available data for this site Groundwater: Field measurements 

GO

Lea County, New Mexico
Hydrologic Unit Code 13070007
Latitude 32°11'27", Longitude 103°31'04" NAD27
Land-surface elevation 3,538 feet above NAVD88
This well is completed in the Other aquifers (N99990THER) national aquifer.
This well is completed in the Ogallala Formation (1210GLL) local aquifer.

#### **Output formats**

Table of data	
<u>Tab-separated data</u>	
Graph of data	
Reselect period	



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

Questions about sites/data?
Feedback on this web site
Automated retrievals
Help
Data Tips
Explanation of terms
Subscribe for system changes
News

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

**Title: Groundwater for USA: Water Levels** 

URL: https://nwis.waterdata.usgs.gov/nwis/gwlevels?

Page Contact Information: <u>USGS Water Data Support Team</u>

Page Last Modified: 2023-05-17 16:59:35 EDT

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# WELL RECORD & LOG

# OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

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	21	47	76	SHALE GREEN SILTY SAND, VERY DENSE	CYON	N/A
	47	53	6	SHALE RED SILTY SAND, VERY DENSE	CYGN	N/A
	53	75	22	SHALE GREEN SILTY SAND, VERY DENSE	CYGN	N/A
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# WELL RECORD & LOG

# OFFICE OF THE STATE ENGINEER

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	DEPTH (	feet bgl)		COLOR AND TYPE OF MATERIAL ENCOUNTERED -	WATER	ESTIMATED
			THICKNESS	INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES	BEARING?	YIELD FOR WATER-
	FROM	TO	(feet)	(attach supplemental sheets to fully describe all units)	(YES / NO)	BEARING
					<u> </u>	ZONES (gpm)
	0	3	3	BROWN SILTY SAND, LOOSE	C Y @ N	N/A
	3	18	15	CALICHE WHITE SILTY SAND, VERY DENSE	C Y 6 N	N/A
	18	37	19	RED SILTY SAND, VERY DENSE	<u>- </u> -	N/A
	37	75	38	SHALE GREEN SILTY SAND, VERY DENSE	CAGN	N/A
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				l wr	TAL ESTIMATED  ELL YIELD (gpm):	
	C AIR LIF	Γ (` I	BAILER C	OTHER - SPECIFY:	ing there (Bland)	
		TEST	RESULTS - ATT	ACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUD	ING DISCHARGE N	1Ε∓Η <b>ι∂</b> Ο, ≀
ž	WELL TEST	STAR	TTIME, END TI	ME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER TH	IE TESTING PERIO	rig <b>Z</b>
RVISION	MISCELLA	NEOUS INF	ORMATION:		JA	©m €
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				IES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, T		
K E				ESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECOI O DAYS AFTER COMPLETION OF WELL DRILLING:	RD WITH THE STAT	re engineer
SIGNATURE	$\cap$	_ 1	_			ì
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6.5		7	UDE OF PRILLE	· 1	<u>-23-13</u>	
		וואאוו	JRE OF DRILLE	R / PRINT SIGNEENAME	DATE	
FOR	OSE INTER	NAL USE		WR-20 WELL RI	ECORD & LOG (Ver	sion 06/08/2012)
FILI	NUMBER	C-3	600	POD NUMBER / TRN NUMBER		
LOC	ATION	T24	S-R3	3E - Sec 26.122		PAGE 2 OF 2



**APPENDIX B** 

Photographic Log



# Photographic Log COG Operating LLC Red Raider BKS State 001 Incident Number NAPP2313136415





Photograph 1 Date: 5/18/2023

Description: Well sign

View: West

Photograph 2 Date: 5/2/2023

Description: Initial assessment activities

View: West





Photograph 3 Date: 5/18/2023

Description: Initial assessment activities

View: North

Photograph 4 Date: 5/31/2023

Description: Delineation activities

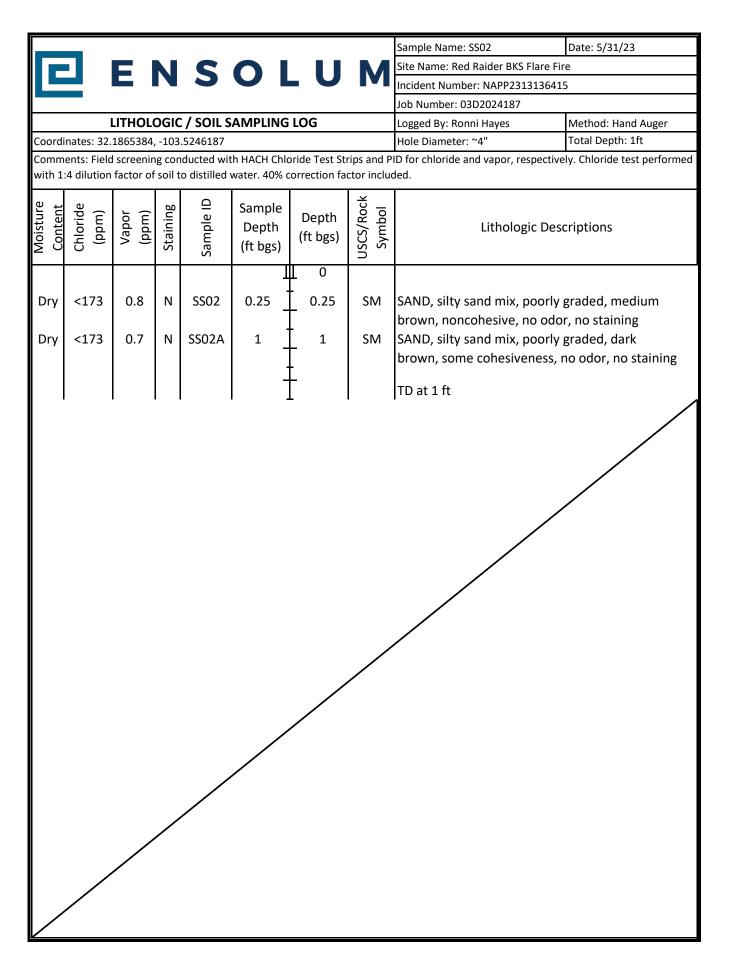
View: Northwest



APPENDIX C

Lithologic Soil Sampling Logs

					ı	1
					Sample Name: SS01	Date: 5/31/23
	EN	S	O L	U N	Site Name: Red Raider BKS Fla	
			_			36415
	ITUO: OC:O	. /	MOLINICIOS		Job Number: 03D2024187	la de la companya de
			MPLING LOG		Logged By: Ronni Hayes	Method: Hand Auger
Coordinates: 32.1			LACU Chlarida Ta	+ C+ - :	Hole Diameter: ~4"	Total Depth: 1ft
with 1:4 dilution f					PID for chloride and vapor, respectively.	ctively. Chioride test performed
Content Chloride (ppm)	Vapor (ppm) Staining	Sample ID	Denth I		Lithologic	Descriptions
Dry <173 Dry 408.8	2.4 N 0.4 N		0.25	0 0.25 SP 1 SP	SAND, gravel sand mix, p brown, noncohesive, no SAND, gravel sand mix, p brown, noncohesive, no TD at 1 ft	odor, no staining poorly graded, medium



LITHOLOGIC / SOIL SAMPLING I Coordinates: 32.1864769, -103.5246474 Comments: Field screening conducted with HACH Chlorid with 1:4 dilution factor of soil to distilled water. 40% corrections of the dilution factor of soil to distilled water. 40% corrections of the dilution factor of soil to distilled water. 40% corrections of the dilution factor of soil to distilled water. 40% corrections of the dilution factor of soil to distilled water. 40% corrections of the dilution factor of soil to distilled water. 40% corrections of the dilution factor of soil to distilled water. 40% corrections of the dilution factor of soil to distilled water. 40% corrections of the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction for the dilution factor of soil to distilled water. 40% correction factor of soil to distill factor of soil to dist	. U	JM	Sample Name: SS03 Date: 5/31/23  Site Name: Red Raider BKS Flare Fire
Coordinates: 32.1864769, -103.5246474   Comments: Field screening conducted with HACH Chlorid with 1:4 dilution factor of soil to distilled water. 40% corresponding to the conduction of the	. U	JM	Site Name: Red Raider BKS Flare Fire
Coordinates: 32.1864769, -103.5246474   Comments: Field screening conducted with HACH Chlorid with 1:4 dilution factor of soil to distilled water. 40% corresponding to the conduction of the			In aid out Numbers NA DD224242C44E
Coordinates: 32.1864769, -103.5246474   Comments: Field screening conducted with HACH Chlorid with 1:4 dilution factor of soil to distilled water. 40% corresponding to the conductive of the	_		incident (Validet: IV at 12313130 113
Coordinates: 32.1864769, -103.5246474   Comments: Field screening conducted with HACH Chlorid with 1:4 dilution factor of soil to distilled water. 40% corresponding to the conductive of the	00		Job Number: 03D2024187
Comments: Field screening conducted with HACH Chlorid with 1:4 dilution factor of soil to distilled water. 40% correspond to the conduction of soil to distilled water. 40% correspond to the corresponding of the correspo	.00		Logged By: Ronni Hayes Method: Hand Auger  Hole Diameter: ~4" Total Depth: 3ft
with 1:4 dilution factor of soil to distilled water. 40% corresponding to the problem.           with 1:4 dilution factor of soil to distilled water. 40% corresponding to the problem.           By Character (a)         Character (b)         Character (b)         Sample (b)           Dry         700         1.9         Y         SS03         0.25           Dry         3180.8         0.2         Y         1           Moist         2,604         0.2         N         1.5           Moist         1,864         0.3         N         2           Moist         1,036         0.4         N         2.5	o Tost String or	inc and DID	
Dry       700       1.9       Y       SS03       0.25         Dry       3180.8       0.2       Y       1         Moist       2,604       0.2       N       1.5         Moist       1,864       0.3       N       2         Moist       1,036       0.4       N       2.5			
Dry       3180.8       0.2       Y       1         Moist       2,604       0.2       N       1.5         Moist       1,864       0.3       N       2         Moist       1,036       0.4       N       2.5	Depth (ft bgs)	<	Lithologic Descriptions
Dry       3180.8       0.2       Y       1         Moist       2,604       0.2       N       1.5         Moist       1,864       0.3       N       2         Moist       1,036       0.4       N       2.5	0		
Moist       2,604       0.2       N       1.5         Moist       1,864       0.3       N       2         Moist       1,036       0.4       N       2.5	0.25	5 SM	SAND, silty sand mix, poorly graded, medium
Moist 1,864 0.3 N 2 Moist 1,036 0.4 N 2.5	1	SM	brown, noncohesive, odor, staing SAND, silty sand mix, poorly graded, dark brown, no cohesiveness, odor, staining
Moist 1,036 0.4 N 2.5	1.5	5 SM	
	2	SAA	_
Moist 532 0.6 N SS03A 3	‡	SAA	
	3	SP	SAND, gravelly sand mix, poorly graded, light brown, noncohesive, no odor, no staining
	‡		TD at 3 ft



APPENDIX D

Laboratory Analytical Reports & Chain of Custody Documentation

**Environment Testing** 

# **ANALYTICAL REPORT**

# PREPARED FOR

Attn: Hadlie Green Ensolum 601 N. Marienfeld St. Suite 400

Midland, Texas 79701

Generated 5/26/2023 4:59:32 PM

# **JOB DESCRIPTION**

(COP) Red Raider BKS State 001 SDG NUMBER 03D2024187

# **JOB NUMBER**

890-4686-1

Eurofins Carlsbad 1089 N Canal St. Carlsbad NM 88220

# **Eurofins Carlsbad**

## **Job Notes**

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

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

# **Authorization**

Generated 5/26/2023 4:59:32 PM

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

Eurofins Carlsbad is a laboratory within Eurofins Environment Testing South Central, LLC, a company within Eurofins Environment Testing Group of Companies

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Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 Laboratory Job ID: 890-4686-1 SDG: 03D2024187

# **Table of Contents**

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QC Association Summary	13
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Sample Summary	18
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Eurofins Carlsbad 5/26/2023

#### **Definitions/Glossary**

Job ID: 890-4686-1 Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

**Qualifiers** 

**GC VOA** 

Qualifier **Qualifier Description** 

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, high biased. U Indicates the analyte was analyzed for but not detected.

**HPLC/IC** 

Qualifier **Qualifier Description** 

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

Percent Recovery %R 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" Minimum Detectable Activity (Radiochemistry) MDA MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit Minimum Level (Dioxin) ML 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)

Reporting Limit or Requested Limit (Radiochemistry) RL

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin) Toxicity Equivalent Quotient (Dioxin) TEQ

**TNTC** Too Numerous To Count

#### **Case Narrative**

Client: Ensolum

Job ID: 890-4686-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

Job ID: 890-4686-1

**Laboratory: Eurofins Carlsbad** 

Narrative

Job Narrative 890-4686-1

#### Receipt

The sample was received on 5/18/2023 3:15 PM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.2°C

#### **Receipt Exceptions**

The following samples analyzed were received and analyzed from an unpreserved bulk soil jar: SS06 (890-4686-1).

#### **GC VOA**

Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-53895 and analytical batch 880-54127 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.

#### GC Semi VOA

Method 8015MOD NM: The surrogate recovery for the blank associated with preparation batch 880-53847 and analytical batch 880-53828 was outside the upper control limits.

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

#### HPLC/IC

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

Matrix: Solid

Lab Sample ID: 890-4686-1

# **Client Sample Results**

Client: Ensolum
Project/Site: (COP) Red Raider BKS State 001
SDG: 03D2024187

Client Sample ID: SS06

Date Collected: 05/18/23 11:10 Date Received: 05/18/23 15:15

Sample Depth: 0.25'

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:03	05/26/23 01:37	1
Toluene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:03	05/26/23 01:37	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:03	05/26/23 01:37	1
m-Xylene & p-Xylene	<0.00401	U	0.00401	mg/Kg		05/22/23 14:03	05/26/23 01:37	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:03	05/26/23 01:37	1
Xylenes, Total	<0.00401	U	0.00401	mg/Kg		05/22/23 14:03	05/26/23 01:37	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		70 - 130			05/22/23 14:03	05/26/23 01:37	
1,4-Difluorobenzene (Surr)	101		70 - 130			05/22/23 14:03	05/26/23 01:37	1
- Method: TAL SOP Total BTEX - 1	otal BTEX Cald	culation						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00401	U	0.00401	mg/Kg			05/26/23 17:42	1
Method: SW846 8015 NM - Diese	l Range Organ	ics (DRO) (	GC)					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.8	U	49.8	mg/Kg			05/23/23 10:13	1
- Method: SW846 8015B NM - Dies	sel Range Orga	nics (DRO)	(GC)					
Analyte		Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics	<49.8	U	49.8	mg/Kg		05/22/23 09:25	05/22/23 12:35	1
(GRO)-C6-C10								
Diesel Range Organics (Over	<49.8	U	49.8	mg/Kg		05/22/23 09:25	05/22/23 12:35	1
C10-C28)	-40.0		49.8			05/00/00 00:05	05/00/00 40:05	
Oll Range Organics (Over C28-C36) Total TPH	<49.8			mg/Kg		05/22/23 09:25	05/22/23 12:35	
Iotal IPH	<49.8	U	49.8	mg/Kg		05/22/23 09:25	05/22/23 12:35	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	103		70 - 130			05/22/23 09:25	05/22/23 12:35	1
o-Terphenyl	126		70 - 130			05/22/23 09:25	05/22/23 12:35	1
Method: EPA 300.0 - Anions, Ion	Chromatograp	hy - Solubl	e					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac

# **Surrogate Summary**

Client: Ensolum
Project/Site: (COP) Red Raider BKS State 001
SDG: 03D2024187

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid Prep Type: Total/NA

				Percent Surrogate Rec
		BFB1	DFBZ1	r crocin ourrogate Ne
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	
880-28390-A-5 MB	Method Blank	78	96	
890-4672-A-1-C MS	Matrix Spike	86	110	
890-4672-A-1-D MSD	Matrix Spike Duplicate	91	101	
890-4686-1	SS06	96	101	
LCS 880-53895/1-A	Lab Control Sample	96	88	
LCSD 880-53895/2-A	Lab Control Sample Dup	93	107	
MB 880-53895/5-A	Method Blank	99	111	
Surrogate Legend				
BFB = 4-Bromofluorober	nzene (Surr)			
DFBZ = 1,4-Difluorobenz	zene (Surr)			

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

Matrix: Solid Prep Type: Total/NA

_				Percent Surrogate
		1CO1	OTPH1	
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	
890-4682-A-1-D MS	Matrix Spike	121	127	
890-4682-A-1-E MSD	Matrix Spike Duplicate	105	115	
890-4686-1	SS06	103	126	
LCS 880-53847/2-A	Lab Control Sample	96	106	
LCSD 880-53847/3-A	Lab Control Sample Dup	111	124	
MB 880-53847/1-A	Method Blank	179 S1+	218 S1+	
Surrogate Legend				
1CO = 1-Chlorooctane				

**Eurofins Carlsbad** 

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OTPH = o-Terphenyl

Client: Ensolum Project/Site: (COP) Red Raider BKS State 001

Job ID: 890-4686-1

SDG: 03D2024187

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-53895/5-A

Lab Sample ID: LCS 880-53895/1-A

**Matrix: Solid** 

**Matrix: Solid** 

Analysis Batch: 54127

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 53895

	MB	MB					
Analyte	Result	Qualifier	RL	Unit D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg	05/22/23 14:03	05/25/23 22:45	1
Toluene	<0.00200	U	0.00200	mg/Kg	05/22/23 14:03	05/25/23 22:45	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg	05/22/23 14:03	05/25/23 22:45	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg	05/22/23 14:03	05/25/23 22:45	1
o-Xylene	<0.00200	U	0.00200	mg/Kg	05/22/23 14:03	05/25/23 22:45	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg	05/22/23 14:03	05/25/23 22:45	1

MB MB

Surrogate	%Recovery	Qualifier	Limits		Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		70 - 130	-	05/22/23 14:03	05/25/23 22:45	1
1,4-Difluorobenzene (Surr)	111		70 - 130		05/22/23 14:03	05/25/23 22:45	1

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Prep Batch: 53895

Analysis Batch: 54127 LCS LCS Spike Analyte Added Result Qualifier Unit %Rec Limits Benzene 0.100 0.1201 mg/Kg 120 70 - 130 Toluene 0.100 0.1067 mg/Kg 107 70 - 130 0.100 0.09581 Ethylbenzene mg/Kg 96 70 - 130 0.200 0.1991 100 70 - 130 m-Xylene & p-Xylene mg/Kg 0.100 0.09341 70 - 130 o-Xylene mg/Kg 93

LCS LCS

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene (Surr)	96	70 - 130
1,4-Difluorobenzene (Surr)	88	70 - 130

**Client Sample ID: Lab Control Sample Dup** 

**Matrix: Solid** 

Analysis Batch: 54127

Lab Sample ID: LCSD 880-53895/2-A

Prep Type: Total/NA Prep Batch: 53895

	Spike	LCSD	LCSD				%Rec		RPD	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Benzene	0.100	0.1220		mg/Kg		122	70 - 130	2	35	
Toluene	0.100	0.1114		mg/Kg		111	70 - 130	4	35	
Ethylbenzene	0.100	0.09653		mg/Kg		97	70 - 130	1	35	
m-Xylene & p-Xylene	0.200	0.2049		mg/Kg		102	70 - 130	3	35	
o-Xylene	0.100	0.09616		mg/Kg		96	70 - 130	3	35	

LCSD LCSD

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene (Surr)	93	70 - 130
1,4-Difluorobenzene (Surr)	107	70 - 130

Lab Sample ID: 890-4672-A-1-C MS

**Matrix: Solid** 

Analysis Batch: 54127

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

Prep Batch: 53895

	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	<0.00201	U	0.100	0.09516		mg/Kg		95	70 - 130	
Toluene	<0.00201	U	0.100	0.07831		mg/Kg		78	70 - 130	

**Eurofins Carlsbad** 

Released to Imaging: 9/19/2023 7:49:43 AM

Client: Ensolum

Job ID: 890-4686-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

0.06740 F1

mg/Kg

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

Lab Sample ID: 890-4672-A-1-C MS **Matrix: Solid** 

Analysis Batch: 54127									Prep	Batch: 53895
	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Ethylbenzene	<0.00201	U F1	0.100	0.06268	F1	mg/Kg		62	70 - 130	
m-Xylene & p-Xylene	<0.00402	U	0.201	0.1420		mg/Kg		71	70 - 130	

0.100

MS MS

<0.00201 UF1

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene (Surr)	86	70 - 130
1 4-Difluorobenzene (Surr)	110	70 130

Lab Sample ID: 890-4672-A-1-D MSD

o-Xylene

**Analysis Batch: 54127** 

**Client Sample ID: Matrix Spike Duplicate Matrix: Solid** Prep Type: Total/NA

Prep Batch: 53895

Client Sample ID: Matrix Spike

70 - 130

Prep Type: Total/NA

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	<0.00201	U	0.0996	0.09316		mg/Kg		94	70 - 130	2	35
Toluene	<0.00201	U	0.0996	0.08153		mg/Kg		82	70 - 130	4	35
Ethylbenzene	<0.00201	U F1	0.0996	0.07255		mg/Kg		73	70 - 130	15	35
m-Xylene & p-Xylene	<0.00402	U	0.199	0.1552		mg/Kg		78	70 - 130	9	35
o-Xylene	<0.00201	U F1	0.0996	0.07335		mg/Kg		73	70 - 130	8	35

MSD MSD

Surrogate	%Recovery 0	Qualifier	Limits
4-Bromofluorobenzene (Surr)	91		70 - 130
1,4-Difluorobenzene (Surr)	101		70 - 130

Lab Sample ID: 880-28390-A-5 MB

**Matrix: Solid** 

Analysis Batch: 54127

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg			05/25/23 12:59	1
Toluene	<0.00200	U	0.00200	mg/Kg			05/25/23 12:59	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg			05/25/23 12:59	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg			05/25/23 12:59	1
o-Xylene	<0.00200	U	0.00200	mg/Kg			05/25/23 12:59	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg			05/25/23 12:59	1

MB MB

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	78		70 - 130		05/25/23 12:59	1
1,4-Difluorobenzene (Surr)	96		70 - 130		05/25/23 12:59	1

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

Lab Sample ID: MB 880-53847/1-A

**Matrix: Solid** 

Analysis Batch: 53828

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

Prep Batch: 53847

	MB	MB						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics	<50.0	U	50.0	mg/Kg		05/22/23 08:00	05/22/23 08:26	1

(GRO)-C6-C10

Client: Ensolum Project/Site: (COP) Red Raider BKS State 001

Job ID: 890-4686-1 SDG: 03D2024187

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

Lab Sample ID: MB 880-53847/1-A **Matrix: Solid** 

Analysis Batch: 53828

Client Sample ID: Method Blank

Prep Type: Total/NA Prep Batch: 53847

	MB	MB						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (Over	<50.0	U	50.0	mg/Kg		05/22/23 08:00	05/22/23 08:26	1
C10-C28)								
Oll Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		05/22/23 08:00	05/22/23 08:26	1
Total TPH	<50.0	U	50.0	mg/Kg		05/22/23 08:00	05/22/23 08:26	1

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	179	S1+	70 - 130	05/22/23 08:00	05/22/23 08:26	1
o-Terphenyl	218	S1+	70 - 130	05/22/23 08:00	05/22/23 08:26	1

Lab Sample ID: LCS 880-53847/2-A **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

**Matrix: Solid** 

**Analysis Batch: 53828** 

Prep Batch: 53847 LCS LCS Spike %Rec

Analyte Added Result Qualifier Limits Unit %Rec Gasoline Range Organics 1000 899.0 mg/Kg 90 70 - 130 (GRO)-C6-C10 Diesel Range Organics (Over 1000 884.1 mg/Kg 88 70 - 130 C10-C28)

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	96		70 - 130
o-Terphenyl	106		70 - 130

Lab Sample ID: LCSD 880-53847/3-A Client Sample ID: Lab Control Sample Dup

**Matrix: Solid** 

Analysis Batch: 53828

Prep Type: Total/NA Prep Batch: 53847

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline Range Organics	1000	999.0		mg/Kg	<del></del>	100	70 - 130	11	20
(GRO)-C6-C10									
Diesel Range Organics (Over	1000	1018		mg/Kg		102	70 - 130	14	20
C10-C28)									

LCSD LCSD

Surrogate	%Recovery Qualifier	Limits
1-Chlorooctane	111	70 - 130
o-Terphenyl	124	70 - 130

Lab Sample ID: 890-4682-A-1-D MS Client Sample ID: Matrix Spike

**Matrix: Solid** 

**Analysis Batch: 53828** 

Prep Type: Total/NA

Prep Batch: 53847

	Sample	Sample	<b>Spike</b>	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Gasoline Range Organics	<50.0	U	998	1131		mg/Kg		108	70 - 130	
(GRO)-C6-C10										
Diesel Range Organics (Over	104		998	1181		mg/Kg		108	70 - 130	
C10-C28)										

Me Me

	W/S	MIS	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	121		70 - 130

Job ID: 890-4686-1

Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

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

Lab Sample ID: 890-4682-A-1-D MS Client Sample ID: Matrix Spike

**Matrix: Solid** Prep Type: Total/NA Analysis Batch: 53828 Prep Batch: 53847

MS MS Surrogate %Recovery Qualifier Limits o-Terphenyl 127 70 - 130

Lab Sample ID: 890-4682-A-1-E MSD Client Sample ID: Matrix Spike Duplicate

**Matrix: Solid** Prep Type: Total/NA **Analysis Batch: 53828** Prep Batch: 53847

MSD MSD Sample Sample Spike %Rec RPD Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits RPD Limit Gasoline Range Organics <50.0 U 999 940.5 mg/Kg 89 70 - 130 18 20 (GRO)-C6-C10 Diesel Range Organics (Over 104 999 1032 mg/Kg 93 70 - 130 13 20

C10-C28) MSD MSD %Recovery Qualifier Limits Surrogate 1-Chlorooctane 70 - 130 105 115 70 - 130 o-Terphenyl

#### Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-53878/1-A Client Sample ID: Method Blank **Matrix: Solid Prep Type: Soluble** 

Analysis Batch: 53996

мв мв

Analyte Result Qualifier RL Unit Prepared Analyzed Dil Fac Chloride <5.00 U 5.00 05/23/23 13:34 mg/Kg

Lab Sample ID: LCS 880-53878/2-A **Client Sample ID: Lab Control Sample Matrix: Solid Prep Type: Soluble** 

**Analysis Batch: 53996** 

LCS LCS Spike %Rec Added Analyte Result Qualifier Unit %Rec Limits Chloride 250 251.1 100 90 - 110 mg/Kg

Lab Sample ID: LCSD 880-53878/3-A Client Sample ID: Lab Control Sample Dup **Prep Type: Soluble** 

**Matrix: Solid** 

Analysis Batch: 53996

Spike LCSD LCSD %Rec RPD Analyte Added Result Qualifier Unit %Rec RPD Limit Limits Chloride 250 248.9 100 20 90 - 110 mg/Kg

Lab Sample ID: 880-28616-A-1-C MS Client Sample ID: Matrix Spike Matrix: Solid **Prep Type: Soluble** 

Analysis Batch: 53996

Sample Sample Spike MS MS %Rec Analyte Result Qualifier Added Result Qualifier %Rec Limits Unit Chloride 249 200 435.3 mg/Kg 95 90 \_ 110

# **QC Sample Results**

Client: Ensolum Job ID: 890-4686-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 880-28616-A-1-D MSD **Client Sample ID: Matrix Spike Duplicate Prep Type: Soluble** 

**Matrix: Solid** 

Analysis Batch: 53996

Alialysis balcii. 55556											
	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride	200		249	434.5		mg/Kg		95	90 - 110	0	20

# **QC Association Summary**

Client: Ensolum
Project/Site: (COP) Red Raider BKS State 001
SD0

Job ID: 890-4686-1 SDG: 03D2024187

#### **GC VOA**

#### Prep Batch: 53895

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4686-1	SS06	Total/NA	Solid	5035	
MB 880-53895/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-53895/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-53895/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-4672-A-1-C MS	Matrix Spike	Total/NA	Solid	5035	
890-4672-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

#### Analysis Batch: 54127

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4686-1	SS06	Total/NA	Solid	8021B	53895
880-28390-A-5 MB	Method Blank	Total/NA	Solid	8021B	
MB 880-53895/5-A	Method Blank	Total/NA	Solid	8021B	53895
LCS 880-53895/1-A	Lab Control Sample	Total/NA	Solid	8021B	53895
LCSD 880-53895/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	53895
890-4672-A-1-C MS	Matrix Spike	Total/NA	Solid	8021B	53895
890-4672-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	53895

#### Analysis Batch: 54294

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4686-1	SS06	Total/NA	Solid	Total BTEX	

#### **GC Semi VOA**

#### Analysis Batch: 53828

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4686-1	SS06	Total/NA	Solid	8015B NM	53847
MB 880-53847/1-A	Method Blank	Total/NA	Solid	8015B NM	53847
LCS 880-53847/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	53847
LCSD 880-53847/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	53847
890-4682-A-1-D MS	Matrix Spike	Total/NA	Solid	8015B NM	53847
890-4682-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	53847

#### Prep Batch: 53847

<b>Lab Sample ID</b> 890-4686-1	Client Sample ID SS06	Prep Type Total/NA	Matrix Solid	Method 8015NM Prep	Prep Batch
MB 880-53847/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-53847/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-53847/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-4682-A-1-D MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-4682-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

#### Analysis Batch: 53971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4686-1	SS06	Total/NA	Solid	8015 NM	

#### HPLC/IC

#### Leach Batch: 53878

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4686-1 MB 880-53878/1-A	SS06 Method Blank	Soluble Soluble	Solid Solid	DI Leach DI Leach	
LCS 880-53878/2-A	Lab Control Sample	Soluble	Solid	DI Leach	

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Page 13 of 21

# **QC Association Summary**

Client: Ensolum
Project/Site: (COP) Red Raider BKS State 001
SDG: 03D2024187

HPLC/IC (Continued)

Leach Batch: 53878 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 880-53878/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
880-28616-A-1-C MS	Matrix Spike	Soluble	Solid	DI Leach	
880-28616-A-1-D MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 53996

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4686-1	SS06	Soluble	Solid	300.0	53878
MB 880-53878/1-A	Method Blank	Soluble	Solid	300.0	53878
LCS 880-53878/2-A	Lab Control Sample	Soluble	Solid	300.0	53878
LCSD 880-53878/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	53878
880-28616-A-1-C MS	Matrix Spike	Soluble	Solid	300.0	53878
880-28616-A-1-D MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	53878

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## **Lab Chronicle**

Client: Ensolum Job ID: 890-4686-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

**Client Sample ID: SS06** 

Lab Sample ID: 890-4686-1 Date Collected: 05/18/23 11:10

Matrix: Solid

Date Received: 05/18/23 15:15

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.99 g	5 mL	53895	05/22/23 14:03	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	54127	05/26/23 01:37	AJ	EET MID
Total/NA	Analysis	Total BTEX		1			54294	05/26/23 17:42	SM	EET MID
Total/NA	Analysis	8015 NM		1			53971	05/23/23 10:13	SM	EET MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	53847	05/22/23 09:25	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	53828	05/22/23 12:35	SM	EET MID
Soluble	Leach	DI Leach			4.99 g	50 mL	53878	05/22/23 12:16	SMC	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	53996	05/23/23 14:39	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: (COP) Red Raider BKS State 001
SDG: 03D2024187

### **Laboratory: Eurofins Midland**

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

Authority	Pr	ogram	Identification Number	<b>Expiration Date</b>		
exas		ELAP	T104704400-22-25	06-30-23		
The following analytes the agency does not of	•	ut the laboratory is not certif	ied by the governing authority. This list ma	ay include analytes for which		
Analysis Method	Prep Method	Matrix	Analyte			
Analysis Method 8015 NM	Prep Method	Matrix Solid	Analyte Total TPH			
	Prep Method 8015NM Prep					

Eurofins Carlsbad

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4.0

## **Method Summary**

Client: Ensolum

Project/Site: (COP) Red Raider BKS State 001

Job ID: 890-4686-1 SDG: 03D2024187

Method **Method Description** Protocol Laboratory 8021B Volatile Organic Compounds (GC) SW846 EET MID **Total BTEX Calculation** TAL SOP Total BTEX 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 **EET MID** Closed System Purge and Trap SW846 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

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## Sample Summary

Client: Ensolum

Project/Site: (COP) Red Raider BKS State 001

Job ID: 890-4686-1

SDG: 03D2024187

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-4686-1	SS06	Solid	05/18/23 11:10	05/18/23 15:15	0.25'

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Received by OCD: 6/20/2023 1:00:39 PM

## **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 C	rder N	o:	
			 -

www.xenco.com

Project Manager:	Hadlie Green				Bill to: (if different) Kalei Jennings				Work Order Comments													
Company Name:	Ensolum, LLC	;			Compan	y Name	:	Ensol	um, LL	.c					P	Program: UST/PST PRP Brownfields RRC Superfund						
Address:	601 N Marien	feld St S	uite 400		Address	:		601 N	Marie	nfeld S	St Suite	400				State of Project:						
City, State ZIP:	Midland, TX 7	9701			City, Sta	te ZIP:		Midland, TX 79701			Reporting: Level II  Level III PST/UST TRRP Level IV											
Phone:	432-557-8895	5		Email:	hgreen	@enso	lum.c	om, dr	nikano	orov@	ensolu	ım.con	n		D	eliverabl	es: EDI		A	DaPT	☐ Othe	er:
Project Name:	(COP) Red R	aider BK	S State 001	Turr	Around							A	NALYSI	IS RE	EQU.	ST					Presen	ative Codes
Project Number:		D202418		✓ Routine	Rus	h	Pres.								T		T			1	None: NO	DI Water: H
Project Location:		35, -103.		Due Date:			Code														Cool: Cool	MeOH: Me
Sampler's Name:		y Nikano		TAT starts th	e day rece	ived by									1					1	HCL: HC	HNO <sub>3</sub> : HN
PO#:			_	the lab, if re-	ceived by 4	:30pm	<sub>2</sub>					١.						1	H <sub>2</sub> SO <sub>4</sub> ; H <sub>2</sub>	NaOH: Na		
SAMPLE RECE	IPT Temp	Blank:	Yes No	Wet Ice:	( Yes	No	ameters	6										H <sub>3</sub> PO <sub>4</sub> : HP				
Samples Received I	ntact: (Yes	No	Thermometer	ID: W	1000		aran	(EPA: 300.0)					1111				M M I			- 1	NaHSO <sub>4</sub> : NAI	
Cooler Custody Sea	is: Yes N	1	Correction Fa		-0-		ď.	PA:								IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		- 1	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> : NaSO <sub>3</sub>			
Sample Custody Se	als: Yes N	O WA	Temperature		5.4	_				_		8	90-4686	Chai	in of			Zn Acetate+N				
Total Containers:			Corrected Te	mperature:	5.	م		ORIDES	015)	(802		- 1	1	1	,	1	1			4	NaOH+Ascor	oic Acid: SAPC
Sample Ide	ntification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	СНГО	TPH (8015)	BTEX (8021											Sample	Comments
SSC	06	S	5/18/2023	11:10	0.25'	Grab	1	х	х	x				-	+		-					
			/									1										
		1	1/																			
		11	)/ 0												-		-					
														+	+		-					
	/										-	-+		+	-		+					
	/											-		+	+							
				004 4655		44	A1 C:		D- 0	- 5	24.0	<u> </u>	- C. F	_ D	. 14	Adm 14	o Nii 1	. 60	Λα C:/	O Nic	Cr TI Co	11 V Zn
Total 200.7 / 6																					Sr TI Sn 245.1 / 7470	
Circle Method(s) a	ing Metal(s) to	be analy	zed	TCLP / S	PLP 601	U: BRC	KA	OD A	s ba	ве С	u Cr	00 0	u PD WI	II IVI	ואו ט	Se Ag	11 0		rig. It	03172	-73.177470	11711

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	lacus	5.18:2315	315		
3			4		
5			6		D-1- 00 05 2020 P-11 202

## **Login Sample Receipt Checklist**

Client: Ensolum Job Number: 890-4686-1 SDG Number: 03D2024187

Login Number: 4686 List Source: Eurofins Carlsbad

List Number: 1 Creator: Clifton, Cloe

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: 890-4686-1 SDG Number: 03D2024187

Login Number: 4686 **List Source: Eurofins Midland** List Number: 2

List Creation: 05/22/23 08:42 AM

Creator: Rodriguez, Leticia

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

<6mm (1/4").

**Environment Testing** 

# **ANALYTICAL REPORT**

# PREPARED FOR

Attn: Hadlie Green Ensolum

601 N. Marienfeld St.

Suite 400

Midland, Texas 79701

Generated 5/26/2023 5:00:01 PM

# **JOB DESCRIPTION**

(COP) Red Raider BKS State 001 SDG NUMBER 03D2024187

# **JOB NUMBER**

890-4687-1

Eurofins Carlsbad 1089 N Canal St. Carlsbad NM 88220



# **Eurofins Carlsbad**

## **Job Notes**

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

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

## **Authorization**

Generated 5/26/2023 5:00:01 PM

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

Eurofins Carlsbad is a laboratory within Eurofins Environment Testing South Central, LLC, a company within Eurofins Environment Testing Group of Companies

Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 Laboratory Job ID: 890-4687-1 SDG: 03D2024187

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## **Definitions/Glossary**

Job ID: 890-4687-1 Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

**Qualifiers** 

**GC VOA** 

Qualifier **Qualifier Description** 

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, high biased. U Indicates the analyte was analyzed for but not detected.

**HPLC/IC** 

Qualifier **Qualifier Description** 

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" Minimum Detectable Activity (Radiochemistry) MDA MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit Minimum Level (Dioxin) ML 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)

Reporting Limit or Requested Limit (Radiochemistry) RL

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin) Toxicity Equivalent Quotient (Dioxin) **TEQ** 

**TNTC** Too Numerous To Count

#### **Case Narrative**

Client: Ensolum

Job ID: 890-4687-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

Job ID: 890-4687-1

**Laboratory: Eurofins Carlsbad** 

Narrative

Job Narrative 890-4687-1

#### Receipt

The sample was received on 5/18/2023 3:15 PM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.2°C

#### **GC VOA**

Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-53895 and analytical batch 880-54127 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.

#### GC Semi VOA

Method 8015MOD\_NM: The surrogate recovery for the blank associated with preparation batch 880-53847 and analytical batch 880-53828 was outside the upper control limits.

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

#### HPLC/IC

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

Matrix: Solid

Lab Sample ID: 890-4687-1

## **Client Sample Results**

Client: Ensolum Job ID: 890-4687-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

**Client Sample ID: SS05** 

Date Collected: 05/18/23 11:00 Date Received: 05/18/23 15:15

Sample Depth: 0.25'

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:03	05/26/23 06:51	1
Toluene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:03	05/26/23 06:51	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:03	05/26/23 06:51	1
m-Xylene & p-Xylene	<0.00399	U	0.00399	mg/Kg		05/22/23 14:03	05/26/23 06:51	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:03	05/26/23 06:51	1
Xylenes, Total	<0.00399	U	0.00399	mg/Kg		05/22/23 14:03	05/26/23 06:51	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		70 - 130			05/22/23 14:03	05/26/23 06:51	1
1,4-Difluorobenzene (Surr)	96		70 - 130			05/22/23 14:03	05/26/23 06:51	1
Method: TAL SOP Total BTEX - 1	otal BTEX Cald	culation						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00399	U	0.00399	mg/Kg			05/26/23 17:42	1
Method: SW846 8015 NM - Diese	l Range Organ	ics (DRO) (	GC)					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH -	<49.8	U	49.8	mg/Kg			05/23/23 10:13	1
Method: SW846 8015B NM - Dies	sel Range Orga	nics (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		05/22/23 09:25	05/22/23 12:57	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8	mg/Kg		05/22/23 09:25	05/22/23 12:57	1
Oll Range Organics (Over C28-C36)	<49.8	U	49.8	mg/Kg		05/22/23 09:25	05/22/23 12:57	1
Total TPH	<49.8		49.8	mg/Kg		05/22/23 09:25	05/22/23 12:57	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	103		70 - 130			05/22/23 09:25	05/22/23 12:57	1
o-Terphenyl	116		70 - 130			05/22/23 09:25	05/22/23 12:57	1
Method: EPA 300.0 - Anions, Ion	Chromatograp	hy - Solubl	e					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac

## **Surrogate Summary**

Client: Ensolum Job ID: 890-4687-1
Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

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)	
880-28390-A-5 MB	Method Blank	78	96	
890-4672-A-1-C MS	Matrix Spike	86	110	
890-4672-A-1-D MSD	Matrix Spike Duplicate	91	101	
890-4687-1	SS05	98	96	
LCS 880-53895/1-A	Lab Control Sample	96	88	
LCSD 880-53895/2-A	Lab Control Sample Dup	93	107	
MB 880-53895/5-A	Method Blank	99	111	
Surrogate Legend				

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)	
890-4682-A-1-D MS	Matrix Spike	121	127	
890-4682-A-1-E MSD	Matrix Spike Duplicate	105	115	
890-4687-1	SS05	103	116	
LCS 880-53847/2-A	Lab Control Sample	96	106	
LCSD 880-53847/3-A	Lab Control Sample Dup	111	124	
MB 880-53847/1-A	Method Blank	179 S1+	218 S1+	
Surrogate Legend				

1CO = 1-Chlorooctane

OTPH = o-Terphenyl

## **QC Sample Results**

Client: Ensolum Job ID: 890-4687-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-53895/5-A

Lab Sample ID: LCS 880-53895/1-A

**Matrix: Solid** Analysis Batch: 54127 Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 53895

	МВ	MB						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:03	05/25/23 22:45	1
Toluene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:03	05/25/23 22:45	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:03	05/25/23 22:45	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		05/22/23 14:03	05/25/23 22:45	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:03	05/25/23 22:45	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		05/22/23 14:03	05/25/23 22:45	1

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		70 - 130	05/22/23 14:03	05/25/23 22:45	1
1,4-Difluorobenzene (Surr)	111		70 - 130	05/22/23 14:03	05/25/23 22:45	1

**Client Sample ID: Lab Control Sample** 

**Matrix: Solid** Prep Type: Total/NA Analysis Batch: 54127 Prep Batch: 53895 LCS LCS Spike Added Result Qualifier Unit %Rec Limits

Analyte Benzene 0.100 0.1201 mg/Kg 120 70 - 130 Toluene 0.100 0.1067 mg/Kg 107 70 - 130 0.100 0.09581 Ethylbenzene mg/Kg 96 70 - 130 0.200 70 - 130 m-Xylene & p-Xylene 0.1991 mg/Kg 100 0.100 0.09341 70 - 130 o-Xylene mg/Kg 93

LCS LCS

Surrogate	%Recovery Qualifie	er Limits
4-Bromofluorobenzene (Surr)	96	70 - 130
1,4-Difluorobenzene (Surr)	88	70 - 130

Client Sample ID: Lab Control Sample Dup

**Matrix: Solid** 

Analysis Batch: 54127

Lab Sample ID: LCSD 880-53895/2-A

Prep Type: Total/NA Prep Batch: 53895

	Spike	LCOD	LCSD				70KeC		KPD	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Benzene	0.100	0.1220		mg/Kg		122	70 - 130	2	35	
Toluene	0.100	0.1114		mg/Kg		111	70 - 130	4	35	
Ethylbenzene	0.100	0.09653		mg/Kg		97	70 - 130	1	35	
m-Xylene & p-Xylene	0.200	0.2049		mg/Kg		102	70 - 130	3	35	
o-Xylene	0.100	0.09616		mg/Kg		96	70 - 130	3	35	

LCSD LCSD

Surrogate	%Recovery Qualifie	r Limits
4-Bromofluorobenzene (Surr)	93	70 - 130
1,4-Difluorobenzene (Surr)	107	70 - 130

Lab Sample ID: 890-4672-A-1-C MS

**Matrix: Solid** 

Analysis Batch: 54127

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

Prep Batch: 53895

-	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	<0.00201	U	0.100	0.09516		mg/Kg		95	70 - 130	 
Toluene	<0.00201	U	0.100	0.07831		mg/Kg		78	70 - 130	

## QC Sample Results

Job ID: 890-4687-1 Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

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

Lab Sample ID: 890-4672-A-1-C MS

Lab Sample ID: 890-4672-A-1-D MSD

**Matrix: Solid** 

**Matrix: Solid** 

Analysis Batch: 54127

Analysis Batch: 54127

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 53895

Sample Sample Spike MS MS %Rec Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits Ethylbenzene <0.00201 U F1 0.100 0.06268 F1 62 70 - 130 mg/Kg m-Xylene & p-Xylene <0.00402 U 0.201 0.1420 mg/Kg 71 70 - 130 0.100 o-Xylene <0.00201 UF1 0.06740 F1 67 70 - 130 mg/Kg

MS MS

Surrogate	%Recovery	Qualifier	Limits		
4-Bromofluorobenzene (Surr)	86		70 - 130		
1,4-Difluorobenzene (Surr)	110		70 - 130		

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 53895

RPD

Sample Sample Spike MSD MSD Result Qualifier %Rec RPD Limit Analyte Added Result Qualifier Unit Limits Benzene <0.00201 U 0.0996 0.09316 mg/Kg 94 70 - 130 2 35 82 Toluene <0.00201 U 0.0996 0.08153 mg/Kg 70 - 130 4 35 Ethylbenzene <0.00201 UF1 0.0996 0.07255 73 70 - 130 35 mg/Kg 15 0.199 78 70 - 130 35 m-Xylene & p-Xylene <0.00402 U 0.1552 mg/Kg 9 0.0996 <0.00201 UF1 0.07335 73 70 - 130 o-Xylene mg/Kg 8

MSD MSD

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	91		70 - 130
1,4-Difluorobenzene (Surr)	101		70 - 130

Lab Sample ID: 880-28390-A-5 MB

**Matrix: Solid** 

Analysis Batch: 54127

Client Sample ID: Method Blank

Prep Type: Total/NA

MB MB

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg			05/25/23 12:59	1
Toluene	<0.00200	U	0.00200	mg/Kg			05/25/23 12:59	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg			05/25/23 12:59	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg			05/25/23 12:59	1
o-Xylene	<0.00200	U	0.00200	mg/Kg			05/25/23 12:59	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg			05/25/23 12:59	1

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	78		70 - 130		05/25/23 12:59	1
1,4-Difluorobenzene (Surr)	96		70 - 130		05/25/23 12:59	1

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

Lab Sample ID: MB 880-53847/1-A

**Matrix: Solid** 

Analysis Batch: 53828

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 53847

MB MB Analyte Result Qualifier RL Unit Prepared Analyzed <50.0 U 50.0 mg/Kg 05/22/23 08:00 05/22/23 08:26 Gasoline Range Organics

(GRO)-C6-C10

Client: Ensolum Project/Site: (COP) Red Raider BKS State 001

Job ID: 890-4687-1

SDG: 03D2024187

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

Lab Sample ID: MB 880-53847/1-A

**Matrix: Solid** 

Analysis Batch: 53828

Client Sample ID: Method Blank

Prep Type: Total/NA Prep Batch: 53847

	MB	MB						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (Over	<50.0	U	50.0	mg/Kg		05/22/23 08:00	05/22/23 08:26	1
C10-C28)								
OII Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		05/22/23 08:00	05/22/23 08:26	1
Total TPH	<50.0	U	50.0	mg/Kg		05/22/23 08:00	05/22/23 08:26	1
i e e e e e e e e e e e e e e e e e e e								

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	179	S1+	70 - 130	05/22/23 08:00	05/22/23 08:26	1
o-Terphenyl	218	S1+	70 - 130	05/22/23 08:00	05/22/23 08:26	1

Lab Sample ID: LCS 880-53847/2-A **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

**Matrix: Solid** 

**Analysis Batch: 53828** 

		Prep Batch: 53847
Spike	LCS LCS	%Rec
	D 11 0 11 11 11 11	D 0/D 1: 1/

Analyte Added Result Qualifier Limits Gasoline Range Organics 1000 899.0 mg/Kg 90 70 - 130 (GRO)-C6-C10 Diesel Range Organics (Over 1000 884.1 mg/Kg 88 70 - 130 C10-C28)

	LOS	203	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	96		70 - 130
o-Terphenyl	106		70 - 130

100 100

Lab Sample ID: LCSD 880-53847/3-A

**Matrix: Solid** 

Analysis Batch: 53828

Client Sample ID: Lab Control Sample Du	ıp
---	----

Prep Type: Total/NA Prep Batch: 53847

Spike LCSD LCSD %Rec RPD Analyte Added Result Qualifier Unit %Rec Limits Limit Gasoline Range Organics 1000 999.0 100 70 - 130 20 11 mg/Kg (GRO)-C6-C10 Diesel Range Organics (Over 1000 1018 mg/Kg 102 70 - 130 14 20

C10-C28)

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	111		70 - 130
o-Terphenyl	124		70 - 130

Lab Sample ID: 890-4682-A-1-D MS

**Matrix: Solid** 

**Analysis Batch: 53828** 

Prep Type: Total/NA Prep Batch: 53847

	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Gasoline Range Organics	<50.0	U	998	1131	-	mg/Kg		108	70 - 130	 
(GRO)-C6-C10										
Diesel Range Organics (Over	104		998	1181		mg/Kg		108	70 - 130	
C10 C20\										

C10-C28)

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	121		70 - 130

Prep Type: Total/NA

13

20

Job ID: 890-4687-1

mg/Kg

93

70 - 130

Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

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

Lab Sample ID: 890-4682-A-1-D MS Client Sample ID: Matrix Spike

**Matrix: Solid** Prep Type: Total/NA Analysis Batch: 53828 Prep Batch: 53847

MS MS Surrogate %Recovery Qualifier Limits o-Terphenyl 127 70 - 130

Client Sample ID: Matrix Spike Duplicate

Lab Sample ID: 890-4682-A-1-E MSD

**Analysis Batch: 53828** Prep Batch: 53847 MSD MSD Sample Sample Spike %Rec RPD Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits RPD Limit Gasoline Range Organics <50.0 U 999 940.5 mg/Kg 89 70 - 130 18 20 (GRO)-C6-C10

1032

999

C10-C28) MSD MSD %Recovery Qualifier Limits Surrogate

1-Chlorooctane 70 - 130 105 115 70 - 130 o-Terphenyl

104

#### Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-53878/1-A Client Sample ID: Method Blank **Matrix: Solid Prep Type: Soluble** 

Analysis Batch: 53996

Diesel Range Organics (Over

**Matrix: Solid** 

MB MB

Analyte Result Qualifier RL Unit Prepared Analyzed Dil Fac Chloride <5.00 U 5.00 05/23/23 13:34 mg/Kg

Lab Sample ID: LCS 880-53878/2-A **Client Sample ID: Lab Control Sample Matrix: Solid Prep Type: Soluble** 

**Analysis Batch: 53996** 

LCS LCS Spike %Rec Added Analyte Result Qualifier Unit %Rec Limits Chloride 250 251.1 100 90 - 110 mg/Kg

Lab Sample ID: LCSD 880-53878/3-A Client Sample ID: Lab Control Sample Dup **Matrix: Solid Prep Type: Soluble** 

Analysis Batch: 53996

Spike LCSD LCSD %Rec RPD Analyte Added Result Qualifier Unit %Rec RPD Limit Limits Chloride 250 248.9 100 20 90 - 110 mg/Kg

Lab Sample ID: 880-28616-A-1-C MS Client Sample ID: Matrix Spike Matrix: Solid **Prep Type: Soluble** 

Analysis Batch: 53996

Sample Sample Spike MS MS %Rec Analyte Result Qualifier Added Result Qualifier %Rec Limits Unit Chloride 249 200 435.3 mg/Kg 95 90 \_ 110

## **QC Sample Results**

Client: Ensolum

Project/Site: (COP) Red Raider BKS State 001

SDG: 03D2024187

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 880-28616-A-1-D MSD

Client Sample ID: Matrix Spike Duplicate
Matrix: Solid

Prep Type: Soluble

Analysis Batch: 53996

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride	200		249	434.5		mg/Kg		95	90 - 110	0	20

0) 140

**Eurofins Carlsbad** 

5/26/2023

## **QC Association Summary**

Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 Job ID: 890-4687-1 SDG: 03D2024187

### **GC VOA**

### Prep Batch: 53895

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4687-1	SS05	Total/NA	Solid	5035	
MB 880-53895/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-53895/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-53895/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-4672-A-1-C MS	Matrix Spike	Total/NA	Solid	5035	
890-4672-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

## Analysis Batch: 54127

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4687-1	SS05	Total/NA	Solid	8021B	53895
880-28390-A-5 MB	Method Blank	Total/NA	Solid	8021B	
MB 880-53895/5-A	Method Blank	Total/NA	Solid	8021B	53895
LCS 880-53895/1-A	Lab Control Sample	Total/NA	Solid	8021B	53895
LCSD 880-53895/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	53895
890-4672-A-1-C MS	Matrix Spike	Total/NA	Solid	8021B	53895
890-4672-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	53895

### Analysis Batch: 54297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4687-1	SS05	Total/NA	Solid	Total BTEX	

#### **GC Semi VOA**

### Analysis Batch: 53828

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4687-1	SS05	Total/NA	Solid	8015B NM	53847
MB 880-53847/1-A	Method Blank	Total/NA	Solid	8015B NM	53847
LCS 880-53847/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	53847
LCSD 880-53847/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	53847
890-4682-A-1-D MS	Matrix Spike	Total/NA	Solid	8015B NM	53847
890-4682-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	53847

#### Prep Batch: 53847

<b>Lab Sample ID</b> 890-4687-1	Client Sample ID SS05	Prep Type Total/NA	Matrix Solid	Method 8015NM Prep	Prep Batch
MB 880-53847/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-53847/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-53847/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-4682-A-1-D MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-4682-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

### Analysis Batch: 53972

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4687-1	SS05	Total/NA	Solid	8015 NM	

### HPLC/IC

#### Leach Batch: 53878

<b>Lab Sample ID</b> 890-4687-1	Client Sample ID SS05	Prep Type Soluble	Matrix Solid	Method DI Leach	Prep Batch
MB 880-53878/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-53878/2-A	Lab Control Sample	Soluble	Solid	DI Leach	

## **QC Association Summary**

Client: Ensolum Job ID: 890-4687-1 Project/Site: (COP) Red Raider BKS State 001

SDG: 03D2024187

## **HPLC/IC (Continued)**

## Leach Batch: 53878 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 880-53878/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
880-28616-A-1-C MS	Matrix Spike	Soluble	Solid	DI Leach	
880-28616-A-1-D MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

### Analysis Batch: 53996

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch	
890-4687-1	SS05	Soluble	Solid	300.0	53878	
MB 880-53878/1-A	Method Blank	Soluble	Solid	300.0	53878	
LCS 880-53878/2-A	Lab Control Sample	Soluble	Solid	300.0	53878	
LCSD 880-53878/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	53878	
880-28616-A-1-C MS	Matrix Spike	Soluble	Solid	300.0	53878	
880-28616-A-1-D MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	53878	

## **Lab Chronicle**

Client: Ensolum Job ID: 890-4687-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

**Client Sample ID: SS05** 

Date Received: 05/18/23 15:15

Lab Sample ID: 890-4687-1 Date Collected: 05/18/23 11:00

Matrix: Solid

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.01 g	5 mL	53895	05/22/23 14:03	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	54127	05/26/23 06:51	AJ	EET MID
Total/NA	Analysis	Total BTEX		1			54297	05/26/23 17:42	SM	EET MID
Total/NA	Analysis	8015 NM		1			53972	05/23/23 10:13	SM	EET MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	53847	05/22/23 09:25	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	53828	05/22/23 12:57	SM	EET MID
Soluble	Leach	DI Leach			5.01 g	50 mL	53878	05/22/23 12:16	SMC	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	53996	05/23/23 14:44	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 Job ID: 890-4687-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

### **Laboratory: Eurofins Midland**

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

Authority	F	Program	Identification Number	Expiration Date			
Texas	<u> </u>	NELAP	T104704400-22-25	06-30-23			
The following analytes the agency does not of		but the laboratory is not certif	ied by the governing authority. This list ma	ay include analytes for which			
Analysis Method	Prep Method	Matrix	Analyte				
8015 NM		Solid	Total TPH				
8015B NM	8015NM Prep	Solid	Total TPH				
Total BTEX		Solid	Total BTEX				

## **Method Summary**

Client: Ensolum

Project/Site: (COP) Red Raider BKS State 001

Job ID: 890-4687-1 SDG: 03D2024187

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

**Eurofins Carlsbad** 

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## Sample Summary

Client: Ensolum

Project/Site: (COP) Red Raider BKS State 001

Job ID: 890-4687-1

SDG: 03D2024187

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-4687-1	SS05	Solid	05/18/23 11:00	05/18/23 15:15	0.25'

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Released to Imaging: 9/19/2023 7:49:48 AM

# **Environment Testing**

# **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:	

Project Manager:	Hadlie Gre	en			Bill to: (i	f differen	t)	Kalei	Jennin	gs						Wor	k Orde	r Comments					
Company Name:	Ensolum,				Compar			Ensol	um, LL	.C				Progr	am: UST/P	ST   PR	P Bro	wnfields RR	Superfund [				
Address:	601 N Mar		Suite 400		Address			601 N Marienfeld St Suite 400			State of Project:												
City, State ZIP:	Midland, T		oute 400		City, Sta					79701				Reporting: Level II Level III PST/UST TRRP Level IV									
Phone:	432-557-8			Email			dum c				ensolun	n com		Delive	rables: ED	D []	ADa	PT Othe	er:				
Priorie.	1432-337-6	090				een@ensolum.com, dnikanorov@ensolum.com																	
Project Name:	(COP) Re	d Raider E	SKS State 001		Around		Pres.					ANA	LYSIS F	REQUEST	<del></del>	T			vative Codes				
Project Number:		03D2024	187	Routine	Ru	sh	Code						-					None: NO	DI Water: H <sub>2</sub> O				
Project Location:	32.	1865, -10	3.5246	Due Date:														Cool: Cool	MeOH: Me				
Sampler's Name:	D	mitry Nika	norov	TAT starts th														HCL: HC	HNO <sub>3</sub> : HN				
PO #:	L_,			the lab, if re	ceived by	4:30pm	5					, 1166		100 MODELLE 1		HIII		H <sub>2</sub> S0 <sub>4</sub> : H <sub>2</sub>	NaOH: Na				
SAMPLE RECE	IPT Fe	mp Blank:	Yes No	Wet Ice:	Ye	No	met	6					HHH			MM		H <sub>3</sub> PO <sub>4</sub> : HP					
Samples Received I				mo		ara	(EPA: 300.0)			ļ				litikilli	11111		NaHSO <sub>4</sub> : NABIS						
Cooler Custody Sea			Correction F		-0		4 "	PA				1111						Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> : NaSO <sub>3</sub> Zn Acetate+NaOH: Zn					
Sample Custody Se	als: Yes	No N/A	-				5.2		.4				_	-		89	0-4687	Chain of Ci	ustody				bic Acid: SAPC
Total Containers:			Corrected Te	emperature:	1 3		<del> </del>	SE SE	3015	(802		-1		1 1	1	1 1		14aOTTASCOT	DIC ACIU. OAI O				
Sample Ide	ntification	Matri	X Date Sampled	Time Sampled	Depth	Grab/ Comp	,	CHLORIDES	TPH (8015)	BTEX (8021								Sample	Comments				
SS	05	S	5/18/2023	11:00	0.25'	Grab	1	х	х	x													
											-												
				Y																			
			10	1	-							-	-				-						
		/	1																				
	/																						
						-											_						
Total 200.7 / 6	010 200	8 / 6020:	85	RCRA 13PI	PM Tex	(as 11	AI S	b As	Ва В	e B C	d Ca	Cr Co C	Cu Fe F	b Ma Mr	Mo Ni	K Se Ad	SiO <sub>2</sub>	Na Sr TI Sn	U V Zn				

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
	ace as	5.1823 [5]	5		
3			4		
5			6		
5			6	R	evised Date 08/25/2020 R

## **Login Sample Receipt Checklist**

Client: Ensolum Job Number: 890-4687-1 SDG Number: 03D2024187

Login Number: 4687 List Source: Eurofins Carlsbad

List Number: 1 Creator: Clifton, Cloe

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 Number: 4687

## **Login Sample Receipt Checklist**

Client: Ensolum Job Number: 890-4687-1 SDG Number: 03D2024187

**List Source: Eurofins Midland** 

List Number: 2 Creator: Rodriguez, Leticia List Creation: 05/22/23 08:42 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	N/A	

<6mm (1/4").

**Environment Testing** 

# **ANALYTICAL REPORT**

# PREPARED FOR

Attn: Kalei Jennings Ensolum 601 N. Marienfeld St.

Suite 400 Midland, Texas 79701

Generated 5/25/2023 10:34:42 AM

# **JOB DESCRIPTION**

(COP) Red Raider BKS State 001 SDG NUMBER 03D2024187

## **JOB NUMBER**

890-4688-1

Eurofins Carlsbad 1089 N Canal St. Carlsbad NM 88220

# **Eurofins Carlsbad**

## **Job Notes**

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

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

## **Authorization**

Generated 5/25/2023 10:34:42 AM

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

Eurofins Carlsbad is a laboratory within Eurofins Environment Testing South Central, LLC, a company within Eurofins Environment Testing Group of Companies

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Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 Laboratory Job ID: 890-4688-1

SDG: 03D2024187

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## **Definitions/Glossary**

Job ID: 890-4688-1 Client: Ensolum Project/Site: (COP) Red Raider BKS State 001

SDG: 03D2024187

#### **Qualifiers**

**GC VOA** 

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

**GC Semi VOA** 

Qualifier **Qualifier Description** \*1 LCS/LCSD RPD exceeds control limits.

S1+ Surrogate recovery exceeds control limits, high biased. 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 Contains No Free Liquid **CNF** 

Duplicate Error Ratio (normalized absolute difference) DER

Dil Fac Dilution Factor

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) Limit of Quantitation (DoD/DOE) LOQ

MCL EPA recommended "Maximum Contaminant Level" MDA Minimum Detectable Activity (Radiochemistry) MDC Minimum Detectable Concentration (Radiochemistry)

Method Detection Limit MDL ML Minimum Level (Dioxin) MPN Most Probable Number MOI 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 **Practical Quantitation Limit PQL** 

**PRES** Presumptive **Quality Control** QC

Relative Error Ratio (Radiochemistry) **RER** 

Reporting Limit or Requested Limit (Radiochemistry) RL

**RPD** Relative Percent Difference, a measure of the relative difference between two points

Toxicity Equivalent Factor (Dioxin) TEF Toxicity Equivalent Quotient (Dioxin) **TEQ** 

**TNTC** Too Numerous To Count

#### **Case Narrative**

Client: Ensolum

Project/Site: (COP) Red Raider BKS State 001

Job ID: 890-4688-1 SDG: 03D2024187

2024187

Job ID: 890-4688-1

**Laboratory: Eurofins Carlsbad** 

Narrative

Job Narrative 890-4688-1

#### Receipt

The sample was received on 5/18/2023 3:15 PM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.2°C

#### GC VOA

Method 8021B: Surrogate recovery for the following sample was outside control limits: SS04 (890-4688-1). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: The continuing calibration verification (CCV) associated with batch 880-53992 recovered above the upper control limit for Benzene, m-Xylene & p-Xylene and o-Xylene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 8021B: The continuing calibration verification (CCV) associated with batch 880-53992 recovered above the upper control limit for Benzene, Toluene, Ethylbenzene, m-Xylene & p-Xylene and o-Xylene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 8021B: Surrogate recovery for the following samples were outside control limits: (CCV 880-53992/20), (CCV 880-53992/33), (LCS 880-53899/1-A) and (LCSD 880-53899/2-A). Evidence of matrix interferences is not obvious.

Method 8021B: Surrogate recovery for the following samples were outside control limits: (MB 880-53899/5-A), (890-4679-A-1-E), (890-4679-A-1-D MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: Surrogate recovery for the following sample was outside control limits: (CCV 880-53992/51). Evidence of matrix interferences is not obvious.

Method 8021B: The laboratory control sample (LCS) associated with preparation batch 880-53899 and analytical batch 880-53992 was outside acceptance criteria. Re-extraction and/or re-analysis could not be performed; therefore, the data have been reported. The batch matrix spike/matrix spike duplicate (MS/MSD) was within acceptance limits and may be used to evaluate matrix performance.

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

#### GC Semi VOA

Method 8015MOD\_NM: The surrogate recovery for the blank associated with preparation batch 880-53877 and analytical batch 880-53824 was outside the upper control limits.

Method 8015MOD\_NM: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 880-53877 and analytical batch 880-53824 recovered outside control limits for the following analytes: Gasoline Range Organics (GRO)-C6-C10.

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

#### HPLC/IC

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

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Eurofins Carlsbad 5/25/2023

Matrix: Solid

Lab Sample ID: 890-4688-1

## **Client Sample Results**

Client: Ensolum Job ID: 890-4688-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

**Client Sample ID: SS04** 

Date Collected: 05/18/23 10:50 Date Received: 05/18/23 15:15

Sample Depth: 0.25'

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U *+	0.00200	mg/Kg		05/22/23 15:18	05/24/23 16:33	1
Toluene	<0.00200	U *+	0.00200	mg/Kg		05/22/23 15:18	05/24/23 16:33	1
Ethylbenzene	<0.00200	U *+	0.00200	mg/Kg		05/22/23 15:18	05/24/23 16:33	1
m-Xylene & p-Xylene	<0.00401	U *+	0.00401	mg/Kg		05/22/23 15:18	05/24/23 16:33	1
o-Xylene	<0.00200	U *+	0.00200	mg/Kg		05/22/23 15:18	05/24/23 16:33	1
Xylenes, Total	<0.00401	U *+	0.00401	mg/Kg		05/22/23 15:18	05/24/23 16:33	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	334	S1+	70 - 130			05/22/23 15:18	05/24/23 16:33	1
1,4-Difluorobenzene (Surr)	98		70 - 130			05/22/23 15:18	05/24/23 16:33	1
Method: TAL SOP Total BTEX - 1	otal BTEX Cald	culation						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00401	U	0.00401	mg/Kg			05/25/23 08:44	1
Method: SW846 8015 NM - Diese	l Range Organ	ics (DRO) (	GC)					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH -	<49.8	U	49.8	mg/Kg			05/23/23 08:21	1
Method: SW846 8015B NM - Dies	sel Range Orga	nics (DRO)	(GC)					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U *1	49.8	mg/Kg		05/22/23 12:14	05/22/23 16:53	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8	mg/Kg		05/22/23 12:14	05/22/23 16:53	1
Oll Range Organics (Over C28-C36)	<49.8	U	49.8	mg/Kg		05/22/23 12:14	05/22/23 16:53	1
Total TPH	<49.8		49.8	mg/Kg		05/22/23 12:14	05/22/23 16:53	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	98		70 - 130			05/22/23 12:14	05/22/23 16:53	1
o-Terphenyl	105		70 - 130			05/22/23 12:14	05/22/23 16:53	1
Method: EPA 300.0 - Anions, Ion	Chromatograp	hy - Solubl	e					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
	71.7							

## **Surrogate Summary**

Client: Ensolum
Project/Site: (COP) Red Raider BKS State 001
SDG: 03D2024187

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)	
890-4679-A-1-C MS	Matrix Spike	174 S1+	72	
890-4679-A-1-D MSD	Matrix Spike Duplicate	182 S1+	103	
890-4688-1	SS04	334 S1+	98	
LCS 880-53899/1-A	Lab Control Sample	233 S1+	141 S1+	
LCSD 880-53899/2-A	Lab Control Sample Dup	237 S1+	146 S1+	
MB 880-53896/5-A	Method Blank	112	77	
MB 880-53899/5-A	Method Blank	158 S1+	71	

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)	
890-4688-1	SS04	98	105	
890-4695-A-1-B MS	Matrix Spike	101	90	
890-4695-A-1-C MSD	Matrix Spike Duplicate	96	84	
LCS 880-53877/2-A	Lab Control Sample	85	83	
LCSD 880-53877/3-A	Lab Control Sample Dup	96	97	
MB 880-53877/1-A	Method Blank	161 S1+	175 S1+	
Surrogate Legend				

1CO = 1-Chlorooctane

OTPH = o-Terphenyl

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Client: Ensolum Job ID: 890-4688-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-53896/5-A

**Matrix: Solid** Analysis Batch: 53992 Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 53896

	MB	MR						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:48	05/23/23 16:24	1
Toluene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:48	05/23/23 16:24	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:48	05/23/23 16:24	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		05/22/23 14:48	05/23/23 16:24	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:48	05/23/23 16:24	1
Xylenes, Total	< 0.00400	U	0.00400	mg/Kg		05/22/23 14:48	05/23/23 16:24	1

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	112		70 - 130	05/22/23 14:4	8 05/23/23 16:24	1
1,4-Difluorobenzene (Surr)	77		70 - 130	05/22/23 14:4	8 05/23/23 16:24	1

Lab Sample ID: MB 880-53899/5-A

Client Sample ID: Method Blank

Lub Gampio ID: IIID GGG GGGGG/G A	Chone Campic ID: III						
Matrix: Solid					Prep Type:	Total/NA	
Analysis Batch: 53992					Prep Bato	h: 53899	
	MB MB						
		 		_			

Analyte	Result C	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200 U	J	0.00200	mg/Kg		05/22/23 15:18	05/24/23 06:10	1
Toluene	<0.00200 L	J	0.00200	mg/Kg		05/22/23 15:18	05/24/23 06:10	1
Ethylbenzene	<0.00200 L	J	0.00200	mg/Kg		05/22/23 15:18	05/24/23 06:10	1
m-Xylene & p-Xylene	<0.00400 L	J	0.00400	mg/Kg		05/22/23 15:18	05/24/23 06:10	1
o-Xylene	<0.00200 L	J	0.00200	mg/Kg		05/22/23 15:18	05/24/23 06:10	1
Xylenes, Total	<0.00400 L	J	0.00400	mg/Kg		05/22/23 15:18	05/24/23 06:10	1

мв мв

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	158	S1+	70 - 130	05/22/23 15:18	05/24/23 06:10	1
1,4-Difluorobenzene (Surr)	71		70 - 130	05/22/23 15:18	05/24/23 06:10	1

Lab Sample ID: LCS 880-53899/1-A

**Matrix: Solid** 

Analysis Batch: 53992

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA Prep Batch: 53899

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	0.100	0.1828	*+	mg/Kg		183	70 - 130	
Toluene	0.100	0.1504	*+	mg/Kg		150	70 - 130	
Ethylbenzene	0.100	0.1439	*+	mg/Kg		144	70 - 130	
m-Xylene & p-Xylene	0.200	0.3027	*+	mg/Kg		151	70 - 130	
o-Xylene	0.100	0.1519	*+	mg/Kg		152	70 - 130	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	233	S1+	70 - 130
1.4-Difluorobenzene (Surr)	141	S1+	70 - 130

Lab Sample ID: LCSD 880-53899/2-A

**Matrix: Solid** 

Analysis Batch: 53992

Client Sample ID: Lab	<b>Control Sample Dup</b>
	Dren Trees Total/NA

Prep Type: Total/NA

Prep Batch: 53899

	Spike	LCSD LCSD				%Rec		RPD	
Analyte	Added	Result Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Benzene	0.100	0.1682 *+	mg/Kg		168	70 - 130	8	35	

### QC Sample Results

Client: Ensolum Job ID: 890-4688-1 SDG: 03D2024187 Project/Site: (COP) Red Raider BKS State 001

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

Lab Sample ID: LCSD 880-53899/2-A **Matrix: Solid** 

Analysis Batch: 53992

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA Prep Batch: 53899

	Spike L	.CSD	LCSD				%Rec		RPD
Analyte	Added R	esult	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Toluene	0.100	1519	*+	mg/Kg		152	70 - 130	1	35
Ethylbenzene	0.100 0.	1449	*+	mg/Kg		145	70 - 130	1	35
m-Xylene & p-Xylene	0.200 0.	3028	*+	mg/Kg		151	70 - 130	0	35
o-Xylene	0.100 0.	1575	*+	mg/Kg		157	70 - 130	4	35

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	237	S1+	70 - 130
1,4-Difluorobenzene (Surr)	146	S1+	70 - 130

Lab Sample ID: 890-4679-A-1-C MS Client Sample ID: Matrix Spike

**Matrix: Solid** 

Analysis Batch: 53992

Prep Type: Total/NA

Prep Batch: 53899

	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	<0.00200	U *+	0.0998	0.1223		mg/Kg		123	70 - 130	
Toluene	<0.00200	U *+	0.0998	0.1086		mg/Kg		109	70 - 130	
Ethylbenzene	<0.00200	U *+	0.0998	0.1006		mg/Kg		101	70 - 130	
m-Xylene & p-Xylene	<0.00401	U *+	0.200	0.2114		mg/Kg		106	70 - 130	
o-Xylene	<0.00200	U *+	0.0998	0.1046		mg/Kg		105	70 - 130	

MS MS

Surrogate	%Recovery	Qualifier	Limits		
4-Bromofluorobenzene (Surr)	174	S1+	70 - 130		
1.4-Difluorobenzene (Surr)	72		70 - 130		

Lab Sample ID: 890-4679-A-1-D MSD

**Matrix: Solid** 

Analysis Batch: 53992

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 53899

_	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	<0.00200	U *+	0.100	0.1287		mg/Kg		128	70 - 130	5	35
Toluene	<0.00200	U *+	0.100	0.1171		mg/Kg		117	70 - 130	8	35
Ethylbenzene	<0.00200	U *+	0.100	0.1115		mg/Kg		111	70 - 130	10	35
m-Xylene & p-Xylene	<0.00401	U *+	0.200	0.2335		mg/Kg		117	70 - 130	10	35
o-Xylene	<0.00200	U *+	0.100	0.1159		mg/Kg		116	70 - 130	10	35

MSD MSD

Surrogate	76Recovery	Qualifier	LIIIIII
4-Bromofluorobenzene (Surr)	182	S1+	70 - 130
1,4-Difluorobenzene (Surr)	103		70 - 130

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

Lab Sample ID: MB 880-53877/1-A

**Matrix: Solid** 

Analysis Batch: 53824

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

Prep Batch: 53877

мв мв Result Qualifier Unit Prepared <50.0 U 50.0 mg/Kg 05/22/23 10:14 05/22/23 11:17 Gasoline Range Organics

(GRO)-C6-C10

Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 Job ID: 890-4688-1 SDG: 03D2024187

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

Lab Sample ID: MB 880-53877/1-A **Matrix: Solid** 

Analysis Batch: 53824

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 53877

Prep Type: Total/NA

20

Prep Batch: 53877

	MB	MB						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		05/22/23 10:14	05/22/23 11:17	1
Oll Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		05/22/23 10:14	05/22/23 11:17	1
Total TPH	<50.0	U	50.0	mg/Kg		05/22/23 10:14	05/22/23 11:17	1
	МВ	МВ						

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	161	S1+	70 - 130	05/22/23 10:14	05/22/23 11:17	1
o-Terphenyl	175	S1+	70 - 130	05/22/23 10:14	05/22/23 11:17	1

Lab Sample ID: LCS 880-53877/2-A **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

**Matrix: Solid** 

Analysis Batch: 53824

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Gasoline Range Organics	1000	936.1		mg/Kg		94	70 - 130	
(GRO)-C6-C10								
Diesel Range Organics (Over	1000	1017		mg/Kg		102	70 - 130	

C10-C28)

	LUS	LUS	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	85		70 - 130
o-Terphenyl	83		70 - 130

Lab Sample ID: LCSD 880-53877/3-A **Client Sample ID: Lab Control Sample Dup** 

**Matrix: Solid** 

A

Analysis Batch: 53824							Prep	Batch:	53877	
	Spike	LCSD	LCSD				%Rec		RPD	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Gasoline Range Organics	1000	1169	*1	mg/Kg		117	70 - 130	22	20	
(CBO) C6 C40										

1106

mg/Kg

111

70 - 130

1000

Diesel Range Organics (Over C10-C28)

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	96		70 - 130
o-Terphenyl	97		70 - 130

Lab Sample ID: 890-4695-A-1-B MS Client Sample ID: Matrix Spike **Matrix: Solid** Prep Type: Total/NA

Analysis Batch: 53824

	Sample	Sample	Spike	MS	MS				%Rec
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
Gasoline Range Organics	<49.9	U *1	998	974.5		mg/Kg		95	70 - 130
(GRO)-C6-C10									
Diesel Range Organics (Over	<49.9	U	998	1101		mg/Kg		108	70 - 130
0.40, 0.00)									

C10-C28)

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	101		70 - 130

Prep Batch: 53877

Job ID: 890-4688-1 Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

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

%Recovery Qualifier

Lab Sample ID: 890-4695-A-1-B MS Client Sample ID: Matrix Spike Prep Type: Total/NA

**Matrix: Solid** 

Limits

Analysis Batch: 53824 Prep Batch: 53877 MS MS

o-Terphenyl 90 70 - 130

Lab Sample ID: 890-4695-A-1-C MSD Client Sample ID: Matrix Spike Duplicate

**Matrix: Solid** Prep Type: Total/NA Analysis Batch: 53824 Prep Batch: 53877

MSD MSD Sample Sample Spike %Rec RPD Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits RPD Limit Gasoline Range Organics <49.9 U \*1 999 1003 mg/Kg 98 70 - 130 20 (GRO)-C6-C10 Diesel Range Organics (Over <49.9 U 999 1032 mg/Kg 101 70 - 130 6 20

C10-C28) MSD MSD %Recovery Qualifier Limits Surrogate 1-Chlorooctane 70 - 130 96

84

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-53878/1-A Client Sample ID: Method Blank **Matrix: Solid Prep Type: Soluble** 

70 - 130

Analysis Batch: 53996

MB MB

Analyte Result Qualifier RL Unit Prepared Analyzed Dil Fac Chloride <5.00 U 5.00 05/23/23 13:34 mg/Kg

Lab Sample ID: LCS 880-53878/2-A **Client Sample ID: Lab Control Sample Matrix: Solid Prep Type: Soluble** 

Surrogate

o-Terphenyl

**Analysis Batch: 53996** 

LCS LCS Spike %Rec Added Analyte Result Qualifier Unit %Rec Limits Chloride 250 251.1 100 90 - 110 mg/Kg

Lab Sample ID: LCSD 880-53878/3-A Client Sample ID: Lab Control Sample Dup **Prep Type: Soluble** 

**Matrix: Solid** 

Analysis Batch: 53996

Spike LCSD LCSD %Rec RPD Analyte Added Result Qualifier Unit %Rec RPD Limit Limits Chloride 250 248.9 100 20 90 - 110 mg/Kg

Lab Sample ID: 880-28616-A-1-C MS Client Sample ID: Matrix Spike Matrix: Solid **Prep Type: Soluble** 

Analysis Batch: 53996

Sample Sample Spike MS MS %Rec Analyte Result Qualifier Added Result Qualifier %Rec Limits Unit Chloride 249 200 435.3 mg/Kg 95 90 \_ 110

## **QC Sample Results**

Client: Ensolum Job ID: 890-4688-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 880-28616-A-1-D MSD **Client Sample ID: Matrix Spike Duplicate Prep Type: Soluble** 

**Matrix: Solid** 

Analysis Batch: 53996

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride	200		249	434.5		mg/Kg		95	90 - 110	0	20

## **QC Association Summary**

Client: Ensolum

Job ID: 890-4688-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

**GC VOA** 

Prep Batch: 53896

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-53896/5-A	Method Blank	Total/NA	Solid	5035	

Prep Batch: 53899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batc
890-4688-1	SS04	Total/NA	Solid	5035	
MB 880-53899/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-53899/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-53899/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-4679-A-1-C MS	Matrix Spike	Total/NA	Solid	5035	
890-4679-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 53992

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4688-1	SS04	Total/NA	Solid	8021B	53899
MB 880-53896/5-A	Method Blank	Total/NA	Solid	8021B	53896
MB 880-53899/5-A	Method Blank	Total/NA	Solid	8021B	53899
LCS 880-53899/1-A	Lab Control Sample	Total/NA	Solid	8021B	53899
LCSD 880-53899/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	53899
890-4679-A-1-C MS	Matrix Spike	Total/NA	Solid	8021B	53899
890-4679-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	53899

**Analysis Batch: 54130** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4688-1	SS04	Total/NA	Solid	Total BTEX	

### **GC Semi VOA**

Analysis Batch: 53824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4688-1	SS04	Total/NA	Solid	8015B NM	53877
MB 880-53877/1-A	Method Blank	Total/NA	Solid	8015B NM	53877
LCS 880-53877/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	53877
LCSD 880-53877/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	53877
890-4695-A-1-B MS	Matrix Spike	Total/NA	Solid	8015B NM	53877
890-4695-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	53877

Prep Batch: 53877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4688-1	SS04	Total/NA	Solid	8015NM Prep	
MB 880-53877/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-53877/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-53877/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-4695-A-1-B MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-4695-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 53949

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4688-1	SS04	Total/NA	Solid	8015 NM	

# **QC Association Summary**

Client: Ensolum
Project/Site: (COP) Red Raider BKS State 001
SDG: 03D2024187

HPLC/IC

Leach Batch: 53878

<b>Lab Sample ID</b> 890-4688-1	Client Sample ID SS04	Prep Type Soluble	Matrix Solid	Method DI Leach	Prep Batch
MB 880-53878/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-53878/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-53878/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
880-28616-A-1-C MS	Matrix Spike	Soluble	Solid	DI Leach	
880-28616-A-1-D MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 53996

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4688-1	SS04	Soluble	Solid	300.0	53878
MB 880-53878/1-A	Method Blank	Soluble	Solid	300.0	53878
LCS 880-53878/2-A	Lab Control Sample	Soluble	Solid	300.0	53878
LCSD 880-53878/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	53878
880-28616-A-1-C MS	Matrix Spike	Soluble	Solid	300.0	53878
880-28616-A-1-D MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	53878

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4.0

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### **Lab Chronicle**

Client: Ensolum
Project/Site: (COP) Red Raider BKS State 001
SDG: 03D2024187

Client Sample ID: SS04

Lab Sample ID: 890-4688-1

Matrix: Solid

Date Collected: 05/18/23 10:50 Date Received: 05/18/23 15:15

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.99 g	5 mL	53899	05/22/23 15:18	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	53992	05/24/23 16:33	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			54130	05/25/23 08:44	SM	EET MID
Total/NA	Analysis	8015 NM		1			53949	05/23/23 08:21	SM	EET MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	53877	05/22/23 12:14	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	53824	05/22/23 16:53	SM	EET MID
Soluble	Leach	DI Leach			4.98 g	50 mL	53878	05/22/23 12:16	SMC	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	53996	05/23/23 14:50	SMC	EET MID

#### Laboratory References:

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

**Eurofins Carlsbad** 

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# **Accreditation/Certification Summary**

Client: Ensolum
Project/Site: (COP) Red Raider BKS State 001
SDG: 03D2024187

### **Laboratory: Eurofins Midland**

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

Authority	y Prog		Identification Number	Expiration Date 06-30-23
exas		ELAP	T104704400-22-25	
The following analytes the agency does not of	•	ut the laboratory is not certif	ied by the governing authority. This list ma	ay include analytes for which
Analysis Method	Prep Method	Matrix	Analyte	
Analysis Method 8015 NM	Prep Method	Matrix Solid	Analyte Total TPH	
	Prep Method 8015NM Prep			

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### **Method Summary**

Client: Ensolum

Method

8021B

Total BTEX

8015 NM

8015B NM

8015NM Prep

DI Leach

300.0

5035

Project/Site: (COP) Red Raider BKS State 001

**Method Description** 

Total BTEX Calculation

Volatile Organic Compounds (GC)

Diesel Range Organics (DRO) (GC)

Diesel Range Organics (DRO) (GC)

**Deionized Water Leaching Procedure** 

Anions, Ion Chromatography

Closed System Purge and Trap

Job ID: 890-4688-1

SDG: 03D2024187

Protocol	Laboratory
SW846	EET MID
TAL SOP	EET MID
SW846	EET MID
SW846	EET MID
EPA	EET MID
SW846	EET MID

EET MID

**EET MID** 

SW846

ASTM

#### **Protocol References:**

ASTM = ASTM International

EPA = US Environmental Protection Agency

Microextraction

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: (COP) Red Raider BKS State 001

Job ID: 890-4688-1

SDG: 03D2024187

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-4688-1	SS04	Solid	05/18/23 10:50	05/18/23 15:15	0.25'

Received by OCD: 6/20/2023 1:00:39 PM

Page 19 of 21

**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:		

Company Name: Er Address: 60															
Company Name: Er Address: 60	insolum, LLC	Hadlie Green				Bill to: (if different) Kalei Jennings			Work Order Comments						
	Ensolum, LLC				Company Name: Ense			Ensolu	Ensolum, LLC			Program: UST/PS	Program: UST/PST PRP Brownfields RRC Superfund		
City, State ZIP: Mi	01 N Marienfel	ld St Si	uite 400		Address: 601 N Marienfeld St Suite 400					nfeld St S	uite 400	State of Project:	_		
	Midland, TX 797	701			City, Stat	le ZIP:		Midlar	nd, TX	79701			Reporting: Level II Level III PST/UST TRRP Level IV		
Phone: 43	32-557-8895			Email:	hgreen(	@ensol	um.co	om, dr	nikano	rov@ens	olum.com	Deliverables: EDI	) <u> </u> A	DaPT Other:	
Project Name: (C	COP) Red Rai	der BK	S State 001	Turn	Around						ANALYSIS	REQUEST		Preservative Codes	
Project Number:		202418		✓ Routine	Rus	n	Pres. Code							None: NO DI Water: H <sub>2</sub> O	
Project Location:	32.1865	, -103.	5246	Due Date:										Cool: Cool MeOH: Me	
Sampler's Name: PO #:	Dmitry	Nikano	rov	TAT starts the			S							HCL: HC HNO <sub>3</sub> : HN H <sub>2</sub> SO <sub>4</sub> : H <sub>2</sub> NaOH: Na	
SAMPLE RECEIPT Samples Received Intac Cooler Custody Seals: Sample Custody Seals: Total Containers: Sample Identifi	Yes No Yes No	No N/A	Yes No Thermometer Correction Fa emperature Corrected Te Date Sampled	ctor: Reading:	Jes Jes Jes Jes Jes Jes Jes Jes Jes Jes	Grab/	the Cont	CHLORIDES (EPA: 300.0)	TPH (8015)	BTEX (8021	890-4688 Ch	ain of Custody		H <sub>3</sub> PO <sub>4</sub> : HP NaHSO <sub>4</sub> : NABIS Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> : NaSO <sub>3</sub> Zn Acetate+NaOH: Zn NaOH+Ascorbic Acid: SAPC  Sample Comments	
SS04		S	5/18/2023	10:50	0.25'	Grab	1	х	х	х					
		/													
-														D <sub>2</sub> Na Sr TI Sn U V Zn	

TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag TI U Circle Method(s) and Metal(s) to be analyzed 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
01/	(100 Cel	5.18.23 151	5		
	T/		4		
			6		

### **Login Sample Receipt Checklist**

Client: Ensolum Job Number: 890-4688-1 SDG Number: 03D2024187

Login Number: 4688 List Source: Eurofins Carlsbad

List Number: 1 Creator: Clifton, Cloe

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	

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### **Login Sample Receipt Checklist**

 Client: Ensolum
 Job Number: 890-4688-1

 SDG Number: 03D2024187

List Source: Eurofins Midland List Creation: 05/22/23 08:42 AM

List Number: 2 Creator: Rodriguez, Leticia

Login Number: 4688

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	

N/A

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<6mm (1/4").

Containers requiring zero headspace have no headspace or bubble is

**Environment Testing** 

# **ANALYTICAL REPORT**

# PREPARED FOR

Attn: Hadlie Green Ensolum 601 N. Marienfeld St.

Suite 400

Midland, Texas 79701

Generated 5/25/2023 10:34:42 AM

# **JOB DESCRIPTION**

(COP) Red Raider BKS State 001 SDG NUMBER 03D2024187

# **JOB NUMBER**

890-4689-1

Eurofins Carlsbad 1089 N Canal St. Carlsbad NM 88220



# **Eurofins Carlsbad**

### **Job Notes**

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

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

## **Authorization**

Generated 5/25/2023 10:34:42 AM

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

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Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 Laboratory Job ID: 890-4689-1 SDG: 03D2024187

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## **Definitions/Glossary**

Client: Ensolum Job ID: 890-4689-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

#### **Qualifiers**

**GC VOA** 

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

#### **HPLC/IC**

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

### **Glossary**

**PRES** 

QC

RER

RPD

TEF

TEQ

TNTC

RL

Glossary	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
п	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

**Eurofins Carlsbad** 

Presumptive

**Quality Control** 

Relative Error Ratio (Radiochemistry)

Toxicity Equivalent Factor (Dioxin)

Too Numerous To Count

Toxicity Equivalent Quotient (Dioxin)

Reporting Limit or Requested Limit (Radiochemistry)

Relative Percent Difference, a measure of the relative difference between two points

#### Case Narrative

Client: Ensolum

Job ID: 890-4689-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

Job ID: 890-4689-1

**Laboratory: Eurofins Carlsbad** 

Narrative

Job Narrative 890-4689-1

#### Receipt

The sample was received on 5/18/2023 3:15 PM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.2°C

#### GC VOA

Method 8021B: Surrogate recovery for the following sample was outside control limits: SS07 (890-4689-1). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: The continuing calibration verification (CCV) associated with batch 880-53992 recovered above the upper control limit for Benzene, m-Xylene & p-Xylene and o-Xylene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 8021B: The continuing calibration verification (CCV) associated with batch 880-53992 recovered above the upper control limit for Benzene, Toluene, Ethylbenzene, m-Xylene & p-Xylene and o-Xylene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 8021B: Surrogate recovery for the following samples were outside control limits: (CCV 880-53992/20), (CCV 880-53992/33), (LCS 880-53899/1-A) and (LCSD 880-53899/2-A). Evidence of matrix interferences is not obvious.

Method 8021B: Surrogate recovery for the following samples were outside control limits: (MB 880-53899/5-A), (890-4679-A-1-E), (890-4679-A-1-C MS) and (890-4679-A-1-D MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: Surrogate recovery for the following sample was outside control limits: (CCV 880-53992/51). Evidence of matrix interferences is not obvious.

Method 8021B: The laboratory control sample (LCS) associated with preparation batch 880-53899 and analytical batch 880-53992 was outside acceptance criteria. Re-extraction and/or re-analysis could not be performed; therefore, the data have been reported. The batch matrix spike/matrix spike duplicate (MS/MSD) was within acceptance limits and may be used to evaluate matrix performance.

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

#### GC Semi VOA

Method 8015MOD NM: The surrogate recovery for the blank associated with preparation batch 880-53877 and analytical batch 880-53824 was outside the upper control limits.

Method 8015MOD NM: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 880-53877 and analytical batch 880-53824 recovered outside control limits for the following analytes: Gasoline Range Organics (GRO)-C6-C10.

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

#### HPLC/IC

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

Matrix: Solid

Lab Sample ID: 890-4689-1

## **Client Sample Results**

Client: Ensolum Job ID: 890-4689-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

**Client Sample ID: SS07** 

Date Collected: 05/18/23 11:20 Date Received: 05/18/23 15:15

Sample Depth: 0.25

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U *+	0.00199	mg/Kg		05/22/23 15:18	05/24/23 17:00	1
Toluene	< 0.00199	U *+	0.00199	mg/Kg		05/22/23 15:18	05/24/23 17:00	,
Ethylbenzene	< 0.00199	U *+	0.00199	mg/Kg		05/22/23 15:18	05/24/23 17:00	
m-Xylene & p-Xylene	<0.00398	U *+	0.00398	mg/Kg		05/22/23 15:18	05/24/23 17:00	
o-Xylene	< 0.00199	U *+	0.00199	mg/Kg		05/22/23 15:18	05/24/23 17:00	,
Xylenes, Total	<0.00398	U *+	0.00398	mg/Kg		05/22/23 15:18	05/24/23 17:00	
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fa
4-Bromofluorobenzene (Surr)	52	S1-	70 - 130			05/22/23 15:18	05/24/23 17:00	
1,4-Difluorobenzene (Surr)	134	S1+	70 - 130			05/22/23 15:18	05/24/23 17:00	
Method: TAL SOP Total BTEX - 1	Total BTEX Cald	culation						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398	mg/Kg			05/25/23 08:44	1
Method: SW846 8015 NM - Diese	el Range Organ	ics (DRO) (	GC)					
Analyte	•	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9	mg/Kg			05/23/23 08:21	,
Method: SW846 8015B NM - Dies	sel Range Orga	nics (DRO)	(GC)					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics	<49.9	U *1	49.9	mg/Kg		05/22/23 12:14	05/22/23 17:14	
(GRO)-C6-C10								
Diesel Range Organics (Over	<49.9	U	49.9	mg/Kg		05/22/23 12:14	05/22/23 17:14	•
C10-C28)	-40.0		40.0			05/00/00 40:44	05/00/00 47:44	
Oll Range Organics (Over C28-C36)	<49.9		49.9	mg/Kg		05/22/23 12:14	05/22/23 17:14	
Total TPH	<49.9	U	49.9	mg/Kg		05/22/23 12:14	05/22/23 17:14	•
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fa
1-Chlorooctane	97		70 - 130			05/22/23 12:14	05/22/23 17:14	
o-Terphenyl	104		70 - 130			05/22/23 12:14	05/22/23 17:14	
Method: EPA 300.0 - Anions, Ion	Chromatograp	hy - Solubl	e					
					_	_		
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac

## **Surrogate Summary**

Client: Ensolum
Project/Site: (COP) Red Raider BKS State 001
SDG: 03D2024187

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid Prep Type: Total/NA

				Percent Surrogate Reco
		BFB1	DFBZ1	
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	
890-4679-A-1-C MS	Matrix Spike	174 S1+	72	
890-4679-A-1-D MSD	Matrix Spike Duplicate	182 S1+	103	
890-4689-1	SS07	52 S1-	134 S1+	
LCS 880-53899/1-A	Lab Control Sample	233 S1+	141 S1+	
LCSD 880-53899/2-A	Lab Control Sample Dup	237 S1+	146 S1+	
MB 880-53896/5-A	Method Blank	112	77	
MB 880-53899/5-A	Method Blank	158 S1+	71	

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)	
890-4689-1	SS07	97	104	
890-4695-A-1-B MS	Matrix Spike	101	90	
890-4695-A-1-C MSD	Matrix Spike Duplicate	96	84	
LCS 880-53877/2-A	Lab Control Sample	85	83	
LCSD 880-53877/3-A	Lab Control Sample Dup	96	97	
MB 880-53877/1-A	Method Blank	161 S1+	175 S1+	
Surrogate Legend				

1CO = 1-Chlorooctane

OTPH = o-Terphenyl

1

Client: Ensolum Job ID: 890-4689-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-53896/5-A

**Matrix: Solid** Analysis Batch: 53992 Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 53896

	MB	MB						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fa
Benzene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:48	05/23/23 16:24	
Toluene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:48	05/23/23 16:24	
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:48	05/23/23 16:24	
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		05/22/23 14:48	05/23/23 16:24	
o-Xylene	<0.00200	U	0.00200	mg/Kg		05/22/23 14:48	05/23/23 16:24	
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		05/22/23 14:48	05/23/23 16:24	

MB MB

Surrogate	%Recovery	Qualifier	Limits		Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	112		70 - 130	•	05/22/23 14:48	05/23/23 16:24	1
1,4-Difluorobenzene (Surr)	77		70 - 130		05/22/23 14:48	05/23/23 16:24	1

Lab Sample ID: MB 880-53899/5-A

**Client Sample ID: Method Blank** 

Matrix: Solid Analysis Batch: 53992							Prep Type: 1 Prep Batcl	
	МВ	MB						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		05/22/23 15:18	05/24/23 06:10	1

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		05/22/23 15:18	05/24/23 06:10	1
Toluene	<0.00200	U	0.00200	mg/Kg		05/22/23 15:18	05/24/23 06:10	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		05/22/23 15:18	05/24/23 06:10	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		05/22/23 15:18	05/24/23 06:10	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		05/22/23 15:18	05/24/23 06:10	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		05/22/23 15:18	05/24/23 06:10	1

мв мв

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	158	S1+	70 - 130	05/22/23 15:18	05/24/23 06:10	1
1,4-Difluorobenzene (Surr)	71		70 - 130	05/22/23 15:18	05/24/23 06:10	1

Lab Sample ID: LCS 880-53899/1-A

**Matrix: Solid** 

**Analysis Batch: 53992** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA Prep Batch: 53899

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	0.100	0.1828	*+	mg/Kg		183	70 - 130	
Toluene	0.100	0.1504	*+	mg/Kg		150	70 - 130	
Ethylbenzene	0.100	0.1439	*+	mg/Kg		144	70 - 130	
m-Xylene & p-Xylene	0.200	0.3027	*+	mg/Kg		151	70 - 130	
o-Xylene	0.100	0.1519	*+	mg/Kg		152	70 - 130	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	233	S1+	70 - 130
1.4-Difluorobenzene (Surr)	141	S1+	70 - 130

Lab Sample ID: LCSD 880-53899/2-A

**Matrix: Solid** 

Analysis Batch: 53992

Client Sample ID: Lab	Control Sample Dup
	Dune Towns Total/NIA

Prep Type: Total/NA

Prep Batch: 53899

	<b>Spike</b>	LCSD LCSD				%Rec		RPD
Analyte	Added	Result Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	0.100	0.1682 *+	mg/Kg		168	70 - 130	8	35

### QC Sample Results

Job ID: 890-4689-1 Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

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

Lab Sample ID: LCSD 880-53899/2-A

**Matrix: Solid** Analysis Batch: 53992

Client Sample	ID: Lab	Control	Sample	Dup
---------------	---------	---------	--------	-----

Prep Type: Total/NA Prep Batch: 53899

Prep Batch: 53899

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Toluene	0.100	0.1519	*+	mg/Kg		152	70 - 130	1	35
Ethylbenzene	0.100	0.1449	*+	mg/Kg		145	70 - 130	1	35
m-Xylene & p-Xylene	0.200	0.3028	*+	mg/Kg		151	70 - 130	0	35
o-Xylene	0.100	0.1575	*+	mg/Kg		157	70 - 130	4	35

LCSD LCSD %Recovery Qualifier Limits 237 S1+

Surrogate 70 - 130 4-Bromofluorobenzene (Surr) 1,4-Difluorobenzene (Surr) 146 S1+ 70 - 130

Lab Sample ID: 890-4679-A-1-C MS Client Sample ID: Matrix Spike Prep Type: Total/NA

**Matrix: Solid** Analysis Batch: 53992

	Sample	Sample	Spike	MS	MS				%Rec
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
Benzene	<0.00200	U *+	0.0998	0.1223		mg/Kg		123	70 - 130
Toluene	<0.00200	U *+	0.0998	0.1086		mg/Kg		109	70 - 130
Ethylbenzene	<0.00200	U *+	0.0998	0.1006		mg/Kg		101	70 - 130
m-Xylene & p-Xylene	<0.00401	U *+	0.200	0.2114		mg/Kg		106	70 - 130
o-Xylene	<0.00200	U *+	0.0998	0.1046		mg/Kg		105	70 - 130

MS MS Qualifier Surrogate %Recovery Limits 70 - 130 S1+ 4-Bromofluorobenzene (Surr) 174 1,4-Difluorobenzene (Surr) 70 - 130 72

Lab Sample ID: 890-4679-A-1-D MSD

Client Sample ID: Matrix Spike Duplicate **Matrix: Solid** Prep Type: Total/NA Analysis Batch: 53992 Prep Batch: 53899

7											
	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	<0.00200	U *+	0.100	0.1287		mg/Kg		128	70 - 130	5	35
Toluene	<0.00200	U *+	0.100	0.1171		mg/Kg		117	70 - 130	8	35
Ethylbenzene	<0.00200	U *+	0.100	0.1115		mg/Kg		111	70 - 130	10	35
m-Xylene & p-Xylene	<0.00401	U *+	0.200	0.2335		mg/Kg		117	70 - 130	10	35
o-Xylene	<0.00200	U *+	0.100	0.1159		mg/Kg		116	70 - 130	10	35

MSD MSD %Recovery Qualifier Limits Surrogate 4-Bromofluorobenzene (Surr) 182 S1+ 70 - 130 1,4-Difluorobenzene (Surr)

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

Lab Sample ID: MB 880-53877/1-A

**Matrix: Solid** 

Analysis Batch: 53824

Client Sample ID: Method Blank Prep Type: Total/NA Prep Batch: 53877

мв мв Result Qualifier RL Unit Prepared Gasoline Range Organics <50.0 U 50.0 mg/Kg 05/22/23 10:14 05/22/23 11:17 (GRO)-C6-C10

Client Sample ID: Method Blank

05/22/23 11:17

Client Sample ID: Lab Control Sample Dup

05/22/23 10:14

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

Prep Batch: 53877

### QC Sample Results

Client: Ensolum Job ID: 890-4689-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

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

<50.0 U

Lab Sample ID: MB 880-53877/1-A

**Matrix: Solid** 

Diesel Range Organics (Over

OII Range Organics (Over C28-C36)

Analyte

C10-C28)

Total TPH

Analysis Batch: 53824

Prep Batch: 53877 мв мв Result Qualifier RL Unit D Prepared Analyzed Dil Fac <50.0 U 50.0 05/22/23 10:14 05/22/23 11:17 mg/Kg 50.0 05/22/23 10:14 05/22/23 11:17 <50.0 U mg/Kg

mg/Kg

MB MB %Recovery Qualifier Dil Fac Surrogate Limits Prepared Analyzed 161 S1+ 70 - 130 05/22/23 10:14 05/22/23 11:17 1-Chlorooctane o-Terphenyl 175 S1+ 70 - 130 05/22/23 10:14 05/22/23 11:17

50.0

Lab Sample ID: LCS 880-53877/2-A Client Sample ID: Lab Control Sample

**Matrix: Solid** 

Analysis Batch: 53824

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Gasoline Range Organics (GRO)-C6-C10	1000	936.1		mg/Kg		94	70 - 130	
Diesel Range Organics (Over C10-C28)	1000	1017		mg/Kg		102	70 - 130	

LCS LCS %Recovery Qualifier Limits Surrogate 1-Chlorooctane 85 70 - 130 o-Terphenyl 83 70 - 130

Lab Sample ID: LCSD 880-53877/3-A

**Matrix: Solid** 

Analysis Batch: 53824							Prep	Batch:	53877
	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline Range Organics	1000	1169	*1	mg/Kg		117	70 - 130	22	20
(GRO)-C6-C10 Diesel Range Organics (Over C10-C28)	1000	1106		mg/Kg		111	70 - 130	8	20

LCSD LCSD Surrogate %Recovery Qualifier Limits 1-Chlorooctane 96 70 - 130 97 o-Terphenyl 70 - 130

101

1-Chlorooctane

Α

Lab Sample ID: 890-4695-A-1-B MS	Client Sample ID: Matrix Spike
Matrix: Solid	Prep Type: Total/NA
Analysis Batch: 53824	Prep Batch: 53877

/ maryone Datem Cool .										Julionii Juonii
	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Gasoline Range Organics (GRO)-C6-C10	<49.9	U *1	998	974.5		mg/Kg		95	70 - 130	
Diesel Range Organics (Over C10-C28)	<49.9	U	998	1101		mg/Kg		108	70 - 130	
	MS	MS								
Surrogate	%Recovery	Qualifier	Limits							

**Eurofins Carlsbad** 

70 - 130

Job ID: 890-4689-1

Prep Type: Total/NA

Prep Type: Total/NA

Prep Batch: 53877

Prep Batch: 53877

Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

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

90

Lab Sample ID: 890-4695-A-1-B MS Client Sample ID: Matrix Spike **Matrix: Solid** 

70 - 130

Analysis Batch: 53824

Surrogate

o-Terphenyl

MS MS %Recovery Qualifier Limits

**Analysis Batch: 53824** 

Lab Sample ID: 890-4695-A-1-C MSD Client Sample ID: Matrix Spike Duplicate **Matrix: Solid** 

MSD MSD Sample Sample Spike %Rec RPD Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits RPD Limit Gasoline Range Organics <49.9 U \*1 999 1003 mg/Kg 98 70 - 130 20 (GRO)-C6-C10 Diesel Range Organics (Over <49.9 U 999 1032 mg/Kg 101 70 - 130 6 20 C10-C28)

MSD MSD %Recovery Qualifier Limits Surrogate 1-Chlorooctane 70 - 130 96 84 70 - 130 o-Terphenyl

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-53878/1-A Client Sample ID: Method Blank **Prep Type: Soluble** 

**Matrix: Solid** 

Analysis Batch: 53996

мв мв

Analyte Result Qualifier RL Unit Prepared Analyzed Dil Fac Chloride <5.00 U 5.00 05/23/23 13:34 mg/Kg

Lab Sample ID: LCS 880-53878/2-A **Client Sample ID: Lab Control Sample Prep Type: Soluble** 

**Matrix: Solid** 

Analysis Batch: 53996

LCS LCS Spike %Rec Added Qualifier Analyte Result Unit %Rec Limits Chloride 250 251.1 100 90 - 110 mg/Kg

Lab Sample ID: LCSD 880-53878/3-A

**Matrix: Solid** 

Analysis Batch: 53996

Spike LCSD LCSD %Rec RPD Analyte Added Result Qualifier Unit %Rec RPD Limit Limits Chloride 250 248.9 20 100 90 - 110 mg/Kg

Lab Sample ID: 880-28616-A-1-C MS Client Sample ID: Matrix Spike

Matrix: Solid

Analysis Batch: 53996

Time July 2 and 1									
	Sample	Sample	Spike	MS	MS				%Rec
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
Chloride	200		249	435.3		ma/Ka		95	90 - 110

**Eurofins Carlsbad** 

**Prep Type: Soluble** 

**Prep Type: Soluble** 

Client Sample ID: Lab Control Sample Dup

## **QC Sample Results**

Client: Ensolum
Project/Site: (COP) Red Raider BKS State 001
SDG: 03D2024187

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 880-28616-A-1-D MSD

Matrix: Solid

Client Sample ID: Matrix Spike Duplicate
Prep Type: Soluble

Analysis Batch: 53996

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride	200		249	434.5		mg/Kg		95	90 - 110	0	20

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## **QC Association Summary**

Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 Job ID: 890-4689-1

SDG: 03D2024187

### **GC VOA**

### Prep Batch: 53896

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-53896/5-A	Method Blank	Total/NA	Solid	5035	

### Prep Batch: 53899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4689-1	SS07	Total/NA	Solid	5035	
MB 880-53899/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-53899/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-53899/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-4679-A-1-C MS	Matrix Spike	Total/NA	Solid	5035	
890-4679-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

### Analysis Batch: 53992

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4689-1	SS07	Total/NA	Solid	8021B	53899
MB 880-53896/5-A	Method Blank	Total/NA	Solid	8021B	53896
MB 880-53899/5-A	Method Blank	Total/NA	Solid	8021B	53899
LCS 880-53899/1-A	Lab Control Sample	Total/NA	Solid	8021B	53899
LCSD 880-53899/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	53899
890-4679-A-1-C MS	Matrix Spike	Total/NA	Solid	8021B	53899
890-4679-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	53899

### Analysis Batch: 54131

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4689-1	SS07	Total/NA	Solid	Total BTEX	

### **GC Semi VOA**

### Analysis Batch: 53824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4689-1	SS07	Total/NA	Solid	8015B NM	53877
MB 880-53877/1-A	Method Blank	Total/NA	Solid	8015B NM	53877
LCS 880-53877/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	53877
LCSD 880-53877/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	53877
890-4695-A-1-B MS	Matrix Spike	Total/NA	Solid	8015B NM	53877
890-4695-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	53877

### Prep Batch: 53877

<b>Lab Sample ID</b> 890-4689-1	Client Sample ID SS07	Prep Type Total/NA	Matrix Solid	Method 8015NM Prep	Prep Batch
MB 880-53877/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-53877/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-53877/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-4695-A-1-B MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-4695-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

#### Analysis Batch: 53950

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4689-1	SS07	Total/NA	Solid	8015 NM	

# **QC Association Summary**

Client: Ensolum
Project/Site: (COP) Red Raider BKS State 001
SDG: 03D2024187

HPLC/IC

Leach Batch: 53878

<b>Lab Sample ID</b> 890-4689-1	Client Sample ID SS07	Prep Type Soluble	Matrix Solid	Method DI Leach	Prep Batch
MB 880-53878/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-53878/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-53878/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
880-28616-A-1-C MS	Matrix Spike	Soluble	Solid	DI Leach	
880-28616-A-1-D MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 53996

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4689-1	SS07	Soluble	Solid	300.0	53878
MB 880-53878/1-A	Method Blank	Soluble	Solid	300.0	53878
LCS 880-53878/2-A	Lab Control Sample	Soluble	Solid	300.0	53878
LCSD 880-53878/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	53878
880-28616-A-1-C MS	Matrix Spike	Soluble	Solid	300.0	53878
880-28616-A-1-D MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	53878

**Eurofins Carlsbad** 

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### Lab Chronicle

Client: Ensolum
Project/Site: (COP) Red Raider BKS State 001
SDG: 03D2024187

Client Sample ID: SS07

Lab Sample ID: 890-4689-1

Matrix: Solid

Date Collected: 05/18/23 11:20 Date Received: 05/18/23 15:15

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	53899	05/22/23 15:18	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	53992	05/24/23 17:00	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			54131	05/25/23 08:44	SM	EET MID
Total/NA	Analysis	8015 NM		1			53950	05/23/23 08:21	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	53877	05/22/23 12:14	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	53824	05/22/23 17:14	SM	EET MID
Soluble	Leach	DI Leach			4.98 g	50 mL	53878	05/22/23 12:16	SMC	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	53996	05/23/23 14:55	SMC	EET MID

#### Laboratory References:

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

**Eurofins Carlsbad** 

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# **Accreditation/Certification Summary**

Client: Ensolum Job ID: 890-4689-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

### **Laboratory: Eurofins Midland**

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

Authority	Program		Identification Number	<b>Expiration Date</b>
Texas		NELAP	T104704400-22-25	06-30-23
The following analytes the agency does not of		but the laboratory is not certifi	ed by the governing authority. This list ma	ay include analytes for which
Analysis Method	Prep Method	Matrix	Analyte	
			,,	
8015 NM	·	Solid	Total TPH	
8015 NM 8015B NM	8015NM Prep	Solid Solid		

### **Method Summary**

Client: Ensolum

Project/Site: (COP) Red Raider BKS State 001

Job ID: 890-4689-1

SDG: 03D2024187

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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

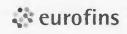
Project/Site: (COP) Red Raider BKS State 001

Job ID: 890-4689-1

SDG: 03D2024187

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-4689-1	SS07	Solid	05/18/23 11:20	05/18/23 15:15	0.25

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**Environment Testing Xenco** 

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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:	

Droinet Manager	Hadlia Cra				Bill to: (iii	different	1)	Kalai	lennir	nas								Wor	k Ord	er Comm	ents	
Project Manager:	Hadlie Gree				Bill to: (if different) Kalei Jennings  Company Name: Ensolum, LLC						Program: UST/PST PRP Brownfields RRC Superfund											
Company Name:	Ensolum, L							Ensolum, LLC														
Address:	601 N Mari		Suite 400		Address: 601 N Marienfel											Reporting: Level III   Level III   PST/UST   TRRP   Level IV						
City, State ZIP:	Midland, T	79701			City, State ZIP: Midland, TX 79701							Deliverables: EDD ADaPT Other:										
Phone:	432-557-88	95		Email:	: hgreen@ensolum.com, dnikanorov@ensolum.com																	
Project Name:	(COP) Rec	Raider B	KS State 001	Turr	n Around ANALYSIS					YSIS R	REQUEST Preser					reserv	ative Codes					
Project Number:		)3D20241	87	☑ Routine	Rus	h	Pres. Code													None:	O	DI Water: H <sub>2</sub> O
Project Location:	32.	1865, -103	.5246	Due Date:																Cool: 0	lool	MeOH: Me
Sampler's Name:	Dr	nitry Nikan	orov	TAT starts th	e day rece	eived by						i								HCL: H	IC	HNO <sub>3</sub> ; HN
PO #:				the lab, if re	ceived by 4	4:30pm	So.										1 1		- 1	H <sub>2</sub> S0 <sub>4</sub> :	H <sub>2</sub>	NaOH: Na
SAMPLE RECE			Wet Ice:	Ye) No		ete	=			1110(13) 1111 1111 1111			4 S B 11 11 S B 11 S B 12 S B 13 S B 13 S B 14 S B 15 S				H <sub>3</sub> PO <sub>4</sub> : HP					
Samples Received I			r ID:			Iran	300.0)												NaHSO <sub>4</sub> : NABIS			
Cooler Custody Sea	ls: Yes	No N/A	Correction Fa	actor:	-0	.0	à	(EPA:												Na <sub>2</sub> S <sub>2</sub>	3: NaS	O <sub>3</sub>
Sample Custody Se	ple Custody Seals: Yes No N/A/Temperature		Reading:	5-4			(E)							<u>                                     </u>				Zn Acetate+NaOH: Zn				
Total Containers:			Corrected Te	mperature:	15	9		DE	15)	(8021		_8	890-4	689 Cha	in of C	ustody			_	NaOH	-Ascort	oic Acid: SAPC
Sample Identification Matrix Date Sampled		Time Sampled	Depth	Grab/ Comp	# of Cont	CHLORIDES	TPH (8015)	BTEX (									Sample Comments					
SS	07	S	5/18/2023	11:20	0.25'	Grab	1	X	×	х			_	-	-	-		-				
														-					-			
			DI																			
-	/	R										_										
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									L													
Total 200.7 / 6	010 200.8	7 6020:	8F	CRA 13PF	PM Tex	as 11	AI SI	b As	Ва Е	Be B	Cd Ca	Cr (	Co Cı	u Fe P	b Mg	Mn M	o Ni K	Se A	g SiO	Na Sr 7	I Sn I	J V Zn
Circle Method(s) a	and Metal(s)	to be analy	zed	TCLP / SI	PLP 601	0: 8RC	CRA	Sb A	s Ba	Be C	Cd Cr	Co C	u Pb	Mn M	o Ni S	e Ag	TI U	F	lg: 16	31 / 245.1	7470	/ 7471
lotice: Signature of this	document and re	linquishment	of samples const	shall not assun	e any resp	onsibility	for any	losses	or expe	enses in	curred by	the clie	ent if su	ch losses	are due to	circum	stances b	eyond the	control			
f Eurofins Xenco. A mi	nimum charge of	\$85.00 will be	applied to each p	project and a ch	arge of \$5 f	or each s	ample s	submitte	d to Eu	rofins X	enco, but	not an	alyzed.	These terr	ns will be	enforce	d unless p	reviously	negotia	ted.		

5.18.23 1515

Revised Date: 08/25/2020 Rev. 2020 2

## **Login Sample Receipt Checklist**

 Client: Ensolum
 Job Number: 890-4689-1

 SDG Number: 03D2024187

Login Number: 4689 List Source: Eurofins Carlsbad

List Number: 1 Creator: Clifton, Cloe

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	

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### **Login Sample Receipt Checklist**

Client: Ensolum Job Number: 890-4689-1 SDG Number: 03D2024187

**List Source: Eurofins Midland** 

Login Number: 4689 List Number: 2 List Creation: 05/22/23 08:42 AM

Creator: Rodriguez, Leticia

<6mm (1/4").

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	N/A	

**Eurofins Carlsbad** 

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**Environment Testing** 

# **ANALYTICAL REPORT**

# PREPARED FOR

Attn: Hadlie Green Ensolum

601 N. Marienfeld St.

Suite 400

Midland, Texas 79701

Generated 5/24/2023 12:51:28 PM

# **JOB DESCRIPTION**

(COP) Red Raider BKS State 001 SDG NUMBER 03D2024187

# **JOB NUMBER**

890-4690-1

Eurofins Carlsbad 1089 N Canal St. Carlsbad NM 88220

# **Eurofins Carlsbad**

### **Job Notes**

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

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

## **Authorization**

Generated 5/24/2023 12:51:28 PM

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

Eurofins Carlsbad is a laboratory within Eurofins Environment Testing South Central, LLC, a company within Eurofins Environment Testing Group of Companies

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Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 Laboratory Job ID: 890-4690-1 SDG: 03D2024187

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### **Definitions/Glossary**

Job ID: 890-4690-1 Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

**Qualifiers** 

**GC VOA** 

Qualifier **Qualifier Description** 

Indicates the analyte was analyzed for but not detected.

**GC Semi VOA** 

Qualifier **Qualifier Description** 

\*1 LCS/LCSD RPD exceeds control limits.

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

**HPLC/IC** 

Qualifier **Qualifier Description** 

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" Minimum Detectable Activity (Radiochemistry) MDA MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit Minimum Level (Dioxin) ML MPN Most Probable Number Method Quantitation Limit MQL

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)

Reporting Limit or Requested Limit (Radiochemistry) RL

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin) Toxicity Equivalent Quotient (Dioxin) TEQ

**TNTC** Too Numerous To Count

#### **Case Narrative**

Client: Ensolum

Job ID: 890-4690-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

Job ID: 890-4690-1

**Laboratory: Eurofins Carlsbad** 

Narrative

Job Narrative 890-4690-1

#### Receipt

The samples were received on 5/18/2023 3:20 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 5.2°C

#### **GC VOA**

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

#### GC Semi VOA

Method 8015MOD NM: The surrogate recovery for the blank associated with preparation batch 880-53877 and analytical batch 880-53824 was outside the upper control limits.

Method 8015MOD\_NM: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 880-53877 and analytical batch 880-53824 recovered outside control limits for the following analytes: Gasoline Range Organics (GRO)-C6-C10.

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

#### HPLC/IC

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

Client: Ensolum

Job ID: 890-4690-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

**Client Sample ID: SS01** Lab Sample ID: 890-4690-1 Date Collected: 05/18/23 10:20 Matrix: Solid

Date Received: 05/18/23 15:20

Sample Depth: 0.25'

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		05/23/23 09:51	05/23/23 14:01	1
Toluene	<0.00200	U	0.00200	mg/Kg		05/23/23 09:51	05/23/23 14:01	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		05/23/23 09:51	05/23/23 14:01	1
m-Xylene & p-Xylene	<0.00399	U	0.00399	mg/Kg		05/23/23 09:51	05/23/23 14:01	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		05/23/23 09:51	05/23/23 14:01	1
Xylenes, Total	<0.00399	U	0.00399	mg/Kg		05/23/23 09:51	05/23/23 14:01	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	80		70 - 130			05/23/23 09:51	05/23/23 14:01	1
1,4-Difluorobenzene (Surr)	89		70 - 130			05/23/23 09:51	05/23/23 14:01	1
Method: TAL SOP Total BTEX	- Total BTEX Cald	culation						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00399	П	0.00399	mg/Kg			05/24/23 11:22	1

Method: SW846 8015 NM - Diesel F	Range Organi	ics (DRO) (G	iC)					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.8	U	49.8	mg/Kg			05/23/23 08:21	1

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics	<49.8	U *1	49.8	mg/Kg		05/22/23 12:14	05/22/23 17:35	1
(GRO)-C6-C10								
Diesel Range Organics (Over	<49.8	U	49.8	mg/Kg		05/22/23 12:14	05/22/23 17:35	1
C10-C28)								
Oll Range Organics (Over C28-C36)	<49.8	U	49.8	mg/Kg		05/22/23 12:14	05/22/23 17:35	1
Total TPH	<49.8	U	49.8	mg/Kg		05/22/23 12:14	05/22/23 17:35	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	99		70 - 130			05/22/23 12:14	05/22/23 17:35	1

Method: EPA 300.0 - Anions, Ion C	hromatography - S	oluble					
Analyte	Result Qualifi	ier RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	106	4.96	mg/Kg			05/23/23 15:01	1

70 - 130

106

**Client Sample ID: SS02** Lab Sample ID: 890-4690-2

Date Collected: 05/18/23 10:30 Date Received: 05/18/23 15:20

Sample Depth: 0.25'

o-Terphenyl

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00201	U	0.00201	mg/Kg		05/23/23 09:51	05/23/23 19:16	1
Toluene	<0.00201	U	0.00201	mg/Kg		05/23/23 09:51	05/23/23 19:16	1
Ethylbenzene	<0.00201	U	0.00201	mg/Kg		05/23/23 09:51	05/23/23 19:16	1
m-Xylene & p-Xylene	<0.00402	U	0.00402	mg/Kg		05/23/23 09:51	05/23/23 19:16	1
o-Xylene	<0.00201	U	0.00201	mg/Kg		05/23/23 09:51	05/23/23 19:16	1
Xylenes, Total	< 0.00402	U	0.00402	mg/Kg		05/23/23 09:51	05/23/23 19:16	1

**Eurofins Carlsbad** 

**Matrix: Solid** 

Job ID: 890-4690-1

Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

**Client Sample ID: SS02** 

Lab Sample ID: 890-4690-2 Date Collected: 05/18/23 10:30 **Matrix: Solid** 

Sample Depth: 0.25'

Date Received: 05/18/23 15:20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	95		70 - 130	05/23/23 09:51	05/23/23 19:16	1
1,4-Difluorobenzene (Surr)	93		70 - 130	05/23/23 09:51	05/23/23 19:16	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 05/24/23 11:22 mg/Kg

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC) Result Qualifier RL Unit D Prepared Analyzed Dil Fac Total TPH <49.8 U 49.8 mg/Kg 05/23/23 08:21

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC) Result Qualifier D Analyte RL Unit Prepared Analyzed Dil Fac <49.8 U \*1 49.8 05/22/23 12:14 05/22/23 17:57 Gasoline Range Organics mg/Kg (GRO)-C6-C10 Diesel Range Organics (Over <49.8 U 49.8 mg/Kg 05/22/23 12:14 05/22/23 17:57 C10-C28) 05/22/23 12:14 OII Range Organics (Over C28-C36) <49.8 U 49.8 mg/Kg 05/22/23 17:57 Total TPH <49.8 U 49.8 05/22/23 12:14 05/22/23 17:57 mg/Kg Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac

1-Chlorooctane 97 70 - 130 05/22/23 12:14 05/22/23 17:57 o-Terphenyl 103 70 - 130 05/22/23 12:14 05/22/23 17:57

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble Analyte Result Qualifier RL Unit D Dil Fac Prepared Analyzed 4.98 101 05/23/23 15:06 Chloride mg/Kg

Client Sample ID: SS03 Lab Sample ID: 890-4690-3 Date Collected: 05/18/23 10:40 Matrix: Solid

Date Received: 05/18/23 15:20

Sample Depth: 0.25'

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00202	U	0.00202	mg/Kg		05/23/23 09:51	05/23/23 19:36	1
Toluene	<0.00202	U	0.00202	mg/Kg		05/23/23 09:51	05/23/23 19:36	1
Ethylbenzene	<0.00202	U	0.00202	mg/Kg		05/23/23 09:51	05/23/23 19:36	1
m-Xylene & p-Xylene	<0.00403	U	0.00403	mg/Kg		05/23/23 09:51	05/23/23 19:36	1
o-Xylene	<0.00202	U	0.00202	mg/Kg		05/23/23 09:51	05/23/23 19:36	1
Xylenes, Total	<0.00403	U	0.00403	mg/Kg		05/23/23 09:51	05/23/23 19:36	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	93		70 - 130			05/23/23 09:51	05/23/23 19:36	1
1,4-Difluorobenzene (Surr)	90		70 - 130			05/23/23 09:51	05/23/23 19:36	1
Method: TAL SOP Total BTEX	- Total BTEX Cald	culation						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac

**Eurofins Carlsbad** 

05/24/23 11:22

0.00403

mg/Kg

<0.00403 U

Total BTEX

### **Client Sample Results**

Client: Ensolum Job ID: 890-4690-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

**Client Sample ID: SS03** Lab Sample ID: 890-4690-3 Date Collected: 05/18/23 10:40

101

05/23/23 15:22

Date Received: 05/18/23 15:20

Matrix: Solid

Sample Depth: 0.25'

Chloride

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9	mg/Kg			05/23/23 08:21	1
Method: SW846 8015B NM - Dies	el Range Orga	nics (DRO)	(GC)					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U *1	49.9	mg/Kg		05/22/23 12:14	05/22/23 18:18	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9	mg/Kg		05/22/23 12:14	05/22/23 18:18	1
Oll Range Organics (Over C28-C36)	<49.9	U	49.9	mg/Kg		05/22/23 12:14	05/22/23 18:18	1
Total TPH	<49.9	U	49.9	mg/Kg		05/22/23 12:14	05/22/23 18:18	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	101		70 - 130			05/22/23 12:14	05/22/23 18:18	1
o-Terphenyl	109		70 - 130			05/22/23 12:14	05/22/23 18:18	1
Method: EPA 300.0 - Anions, Ion	Chromatogran	hv - Solubl	e					
Analyte	• •	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac

5.03

mg/Kg

### **Surrogate Summary**

Job ID: 890-4690-1 Client: Ensolum Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid Prep Type: Total/NA

				Percent Surrogate
		BFB1	DFBZ1	
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	
890-4690-1	SS01	80	89	
890-4690-1 MS	SS01	93	95	
890-4690-1 MSD	SS01	91	105	
890-4690-2	SS02	95	93	
890-4690-3	SS03	93	90	
LCS 880-53960/1-A	Lab Control Sample	83	123	
LCSD 880-53960/2-A	Lab Control Sample Dup	97	112	
MB 880-53960/5-A	Method Blank	85	100	
Surrogate Legend				
BFB = 4-Bromofluorobenz	zene (Surr)			

DFBZ = 1,4-Difluorobenzene (Surr)

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

Matrix: Solid Prep Type: Total/NA

				Percent Surrogate Recovery
		1CO1	OTPH1	
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	
890-4690-1	SS01	99	106	
890-4690-2	SS02	97	103	
890-4690-3	SS03	101	109	
890-4695-A-1-B MS	Matrix Spike	101	90	
890-4695-A-1-C MSD	Matrix Spike Duplicate	96	84	
LCS 880-53877/2-A	Lab Control Sample	85	83	
LCSD 880-53877/3-A	Lab Control Sample Dup	96	97	
MB 880-53877/1-A	Method Blank	161 S1+	175 S1+	

Surrogate Legend

1CO = 1-Chlorooctane

OTPH = o-Terphenyl

Client: Ensolum

Job ID: 890-4690-1

SDG: 03D2024187

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-53960/5-A

Lab Sample ID: LCS 880-53960/1-A

**Matrix: Solid** Analysis Batch: 53967

Project/Site: (COP) Red Raider BKS State 001

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

Prep Batch: 53960

	MB	MB						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		05/23/23 09:51	05/23/23 13:32	1
Toluene	<0.00200	U	0.00200	mg/Kg		05/23/23 09:51	05/23/23 13:32	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		05/23/23 09:51	05/23/23 13:32	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		05/23/23 09:51	05/23/23 13:32	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		05/23/23 09:51	05/23/23 13:32	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		05/23/23 09:51	05/23/23 13:32	1
l .								

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	85		70 - 130	05/23/23 09:5	1 05/23/23 13:32	1
1,4-Difluorobenzene (Surr)	100		70 - 130	05/23/23 09:5	1 05/23/23 13:32	1

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 53960

LCS LCS Spike Analyte Added Result Qualifier Unit %Rec Limits Benzene 0.100 0.1231 mg/Kg 123 70 - 130 Toluene 0.100 0.09465 mg/Kg 95 70 - 130 0.100 92 Ethylbenzene 0.09213 mg/Kg 70 - 130 0.200 0.1784 89 70 - 130 m-Xylene & p-Xylene mg/Kg 0.100 0.07972 70 - 130 o-Xylene mg/Kg

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	83		70 - 130
1,4-Difluorobenzene (Surr)	123		70 - 130

Client Sample ID: Lab Control Sample Dup

**Matrix: Solid** 

**Matrix: Solid** 

Analysis Batch: 53967

Analysis Batch: 53967

Lab Sample ID: LCSD 880-53960/2-A

Prep Type: Total/NA Prep Batch: 53960 LCSD LCSD RPD Spike %Rec

	Opino	LOOD L	OOD			/01100		INI D	
Analyte	Added	Result Q	ualifier Uni	t D	%Rec	Limits	RPD	Limit	
Benzene	0.100	0.1212	mg,	/Kg	121	70 - 130	1	35	
Toluene	0.100	0.1039	mg/	/Kg	104	70 - 130	9	35	
Ethylbenzene	0.100	0.1028	mg/	/Kg	103	70 - 130	11	35	
m-Xylene & p-Xylene	0.200	0.2107	mg	/Kg	105	70 - 130	17	35	
o-Xylene	0.100	0.09677	mg/	/Kg	97	70 - 130	19	35	

LCSD LCSD

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene (Surr)	97	70 - 130
1,4-Difluorobenzene (Surr)	112	70 - 130

Lab Sample ID: 890-4690-1 MS

**Matrix: Solid** 

Analysis Batch: 53967

**Client Sample ID: SS01** Prep Type: Total/NA

Prep Batch: 53960

_	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	<0.00200	U	0.101	0.1221		mg/Kg		121	70 - 130	
Toluene	<0.00200	U	0.101	0.1138		mg/Kg		113	70 - 130	

Client: Ensolum

Job ID: 890-4690-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

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

Lab Sample ID: 890-4690-1 MS **Matrix: Solid** 

Analysis Batch: 53967

**Client Sample ID: SS01** Prep Type: Total/NA

Prep Batch: 53960

Sample Sample Spike MS MS %Rec Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits D Ethylbenzene <0.00200 U 0.101 0.1113 110 70 - 130 mg/Kg m-Xylene & p-Xylene <0.00399 0.202 0.2251 mg/Kg 112 70 - 130 o-Xylene <0.00200 U 0.101 0.1004 100 70 - 130 mg/Kg

MS MS

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene (Surr)	93	70 - 130
1,4-Difluorobenzene (Surr)	95	70 - 130

Lab Sample ID: 890-4690-1 MSD

**Matrix: Solid** 

Analysis Batch: 53967

**Client Sample ID: SS01** Prep Type: Total/NA

Prep Batch: 53960 RPD

Sample Sample Spike MSD MSD Result Qualifier RPD Limit Analyte babbA Result Qualifier %Rec Limits Unit Benzene <0.00200 U 0.0990 0.1258 mg/Kg 127 70 - 130 3 35 Toluene <0.00200 0.0990 0.1112 mg/Kg 112 70 - 130 2 35 Ethylbenzene <0.00200 U 0.0990 0.1032 104 70 - 130 8 35 mg/Kg 0.198 m-Xylene & p-Xylene <0.00399 U 0.2053 mq/Kq 104 70 - 130 9 35 0.0990 <0.00200 U 0.09190 70 - 130 o-Xylene mg/Kg 93

MSD MSD

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	91		70 - 130
1,4-Difluorobenzene (Surr)	105		70 - 130

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

Lab Sample ID: MB 880-53877/1-A

**Matrix: Solid** 

Analysis Batch: 53824

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

Prep Batch: 53877

мв мв Result Qualifier RL Unit D Prepared Dil Fac Analyte Analyzed 05/22/23 10:14 05/22/23 11:17 <50.0 U 50.0 Gasoline Range Organics mg/Kg (GRO)-C6-C10 50.0 05/22/23 11:17 Diesel Range Organics (Over <50.0 U 05/22/23 10:14 mg/Kg C10-C28) OII Range Organics (Over C28-C36) <50.0 U 50.0 05/22/23 10:14 05/22/23 11:17 mg/Kg <50.0 U 50.0 Total TPH 05/22/23 10:14 05/22/23 11:17 mg/Kg

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	161	S1+	70 - 130	05/22/23 10:14	05/22/23 11:17	1
o-Terphenyl	175	S1+	70 - 130	05/22/23 10:14	05/22/23 11:17	1

Lab Sample ID: LCS 880-53877/2-A

**Matrix: Solid** 

Analysis Batch: 53824

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

Prep Batch: 53877

LCS LCS Spike %Rec Added Result Qualifier Analyte Unit %Rec Limits Gasoline Range Organics 1000 936.1 94 70 - 130 mg/Kg

(GRO)-C6-C10

Client: Ensolum Job ID: 890-4690-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

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

Lab Sample ID: LCS 880-53877/2-A **Client Sample ID: Lab Control Sample Matrix: Solid** Prep Type: Total/NA Analysis Batch: 53824 Prep Batch: 53877

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Diesel Range Organics (Over	 1000	1017		mg/Kg		102	70 - 130	
040,000)								

C10-C28)

	LUS	LUS	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	85		70 _ 130
o-Terphenyl	83		70 - 130

Lab Sample ID: LCSD 880-53877/3-A Client Sample ID: Lab Control Sample Dup

**Matrix: Solid** Prep Type: Total/NA Analysis Batch: 53824 Prep Batch: 53877

Spike LCSD LCSD %Rec RPD Result Qualifier Limit Analyte Added Unit D %Rec Limits RPD 1000 1169 \*1 117 70 - 130 22 20 Gasoline Range Organics mg/Kg (GRO)-C6-C10 Diesel Range Organics (Over 1000 1106 mg/Kg 111 70 - 130 8 20

C10-C28)

	LCSD LC	รับ
Surrogate	%Recovery Qu	alifier Limits
1-Chlorooctane	96	70 - 130
o-Terphenyl	97	70 - 130

Lab Sample ID: 890-4695-A-1-B MS Client Sample ID: Matrix Spike **Matrix: Solid** Prep Type: Total/NA

Analysis Batch: 53824

Prep Batch: 53877 Sample Sample Spike MS MS %Rec Result Qualifier Added Result Qualifier Unit D %Rec Limits

Analyte Gasoline Range Organics <49.9 U \*1 998 974.5 mg/Kg 95 70 - 130 (GRO)-C6-C10 <49.9 U 998 1101 108 70 - 130 Diesel Range Organics (Over mg/Kg

C10-C28)			
	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	101		70 - 130

70 - 130

999

Lab Sample ID: 890-4695-A-1-C MSD Client Sample ID: Matrix Spike Duplicate **Matrix: Solid** Prep Type: Total/NA

Analysis Batch: 53824

Sample Sample Spike MSD MSD %Rec RPD Analyte Result Qualifier Added RPD Limit Result Qualifier Unit D %Rec Limits Gasoline Range Organics <49.9 U \*1 999 1003 mg/Kg 98 70 - 130 20 (GRO)-C6-C10

1032

mg/Kg

Diesel Range Organics (Over C10-C28)

o-Terphenyl

	MSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	96		70 - 130
o-Terphenyl	84		70 - 130

90

<49.9 U

Prep Batch: 53877

101

70 - 130

20

Job ID: 890-4690-1 Client: Ensolum Project/Site: (COP) Red Raider BKS State 001

SDG: 03D2024187

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-53878/1-A

**Matrix: Solid** 

Analysis Batch: 53996

Client Sample ID: Method Blank **Prep Type: Soluble** 

мв мв

Dil Fac Analyte Result Qualifier RL Unit D Prepared Analyzed Chloride <5.00 U 5.00 mg/Kg 05/23/23 13:34

Lab Sample ID: LCS 880-53878/2-A Client Sample ID: Lab Control Sample **Matrix: Solid Prep Type: Soluble** 

Analysis Batch: 53996

Spike LCS LCS %Rec Added Analyte Result Qualifier Unit D %Rec Limits Chloride 250 251.1 mg/Kg 100 90 - 110

Lab Sample ID: LCSD 880-53878/3-A Client Sample ID: Lab Control Sample Dup **Prep Type: Soluble** 

**Matrix: Solid** 

Analysis Batch: 53996

LCSD LCSD %Rec RPD Spike Analyte Added Result Qualifier Unit %Rec Limits RPD Limit Chloride 250 248.9 mg/Kg 100 90 - 110

Lab Sample ID: 890-4690-2 MS Client Sample ID: SS02 **Prep Type: Soluble** 

**Matrix: Solid** 

Analysis Batch: 53996

MS MS Sample Sample Spike %Rec Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits Chloride 101 249 326.4 91 90 - 110 mg/Kg

Lab Sample ID: 890-4690-2 MSD

**Matrix: Solid** 

Analysis Batch: 53996

Sample Sample Spike MSD MSD %Rec RPD Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits RPD Limit Chloride 249 101 325.7 mg/Kg 90 90 - 110 0 20

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Client Sample ID: SS02

**Prep Type: Soluble** 

### **QC Association Summary**

Client: Ensolum
Project/Site: (COP) Red Raider BKS State 001
SDG: 03D2024187

**GC VOA** 

Prep Batch: 53960

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4690-1	SS01	Total/NA	Solid	5035	
890-4690-2	SS02	Total/NA	Solid	5035	
890-4690-3	SS03	Total/NA	Solid	5035	
MB 880-53960/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-53960/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-53960/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-4690-1 MS	SS01	Total/NA	Solid	5035	
890-4690-1 MSD	SS01	Total/NA	Solid	5035	

Analysis Batch: 53967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4690-1	SS01	Total/NA	Solid	8021B	53960
890-4690-2	SS02	Total/NA	Solid	8021B	53960
890-4690-3	SS03	Total/NA	Solid	8021B	53960
MB 880-53960/5-A	Method Blank	Total/NA	Solid	8021B	53960
LCS 880-53960/1-A	Lab Control Sample	Total/NA	Solid	8021B	53960
LCSD 880-53960/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	53960
890-4690-1 MS	SS01	Total/NA	Solid	8021B	53960
890-4690-1 MSD	SS01	Total/NA	Solid	8021B	53960

Analysis Batch: 54065

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4690-1	SS01	Total/NA	Solid	Total BTEX	
890-4690-2	SS02	Total/NA	Solid	Total BTEX	
890-4690-3	SS03	Total/NA	Solid	Total BTEX	

**GC Semi VOA** 

Analysis Batch: 53824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4690-1	SS01	Total/NA	Solid	8015B NM	53877
890-4690-2	SS02	Total/NA	Solid	8015B NM	53877
890-4690-3	SS03	Total/NA	Solid	8015B NM	53877
MB 880-53877/1-A	Method Blank	Total/NA	Solid	8015B NM	53877
LCS 880-53877/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	53877
LCSD 880-53877/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	53877
890-4695-A-1-B MS	Matrix Spike	Total/NA	Solid	8015B NM	53877
890-4695-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	53877

Prep Batch: 53877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4690-1	SS01	Total/NA	Solid	8015NM Prep	· ·
890-4690-2	SS02	Total/NA	Solid	8015NM Prep	
890-4690-3	SS03	Total/NA	Solid	8015NM Prep	
MB 880-53877/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-53877/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-53877/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-4695-A-1-B MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-4695-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

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### **QC Association Summary**

Client: Ensolum
Project/Site: (COP) Red Raider BKS State 001
SDG: 03D2024187

### GC Semi VOA

### Analysis Batch: 53951

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4690-1	SS01	Total/NA	Solid	8015 NM	
890-4690-2	SS02	Total/NA	Solid	8015 NM	
890-4690-3	SS03	Total/NA	Solid	8015 NM	

### **HPLC/IC**

#### Leach Batch: 53878

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4690-1	SS01	Soluble	Solid	DI Leach	
890-4690-2	SS02	Soluble	Solid	DI Leach	
890-4690-3	SS03	Soluble	Solid	DI Leach	
MB 880-53878/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-53878/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-53878/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-4690-2 MS	SS02	Soluble	Solid	DI Leach	
890-4690-2 MSD	SS02	Soluble	Solid	DI Leach	

#### Analysis Batch: 53996

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4690-1	SS01	Soluble	Solid	300.0	53878
890-4690-2	SS02	Soluble	Solid	300.0	53878
890-4690-3	SS03	Soluble	Solid	300.0	53878
MB 880-53878/1-A	Method Blank	Soluble	Solid	300.0	53878
LCS 880-53878/2-A	Lab Control Sample	Soluble	Solid	300.0	53878
LCSD 880-53878/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	53878
890-4690-2 MS	SS02	Soluble	Solid	300.0	53878
890-4690-2 MSD	SS02	Soluble	Solid	300.0	53878

**Eurofins Carlsbad** 

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Client: Ensolum

Job ID: 890-4690-1 Project/Site: (COP) Red Raider BKS State 001 SDG: 03D2024187

**Client Sample ID: SS01** Lab Sample ID: 890-4690-1

Date Collected: 05/18/23 10:20 Matrix: Solid Date Received: 05/18/23 15:20

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.01 g	5 mL	53960	05/23/23 09:51	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	53967	05/23/23 14:01	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			54065	05/24/23 11:22	SM	EET MID
Total/NA	Analysis	8015 NM		1			53951	05/23/23 08:21	SM	EET MID
Total/NA	Prep	8015NM Prep			10.05 g	10 mL	53877	05/22/23 12:14	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	53824	05/22/23 17:35	SM	EET MID
Soluble	Leach	DI Leach			5.04 g	50 mL	53878	05/22/23 12:16	SMC	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	53996	05/23/23 15:01	SMC	EET MID

**Client Sample ID: SS02** Lab Sample ID: 890-4690-2 Matrix: Solid

Date Collected: 05/18/23 10:30 Date Received: 05/18/23 15:20

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.97 g	5 mL	53960	05/23/23 09:51	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	53967	05/23/23 19:16	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			54065	05/24/23 11:22	SM	EET MID
Total/NA	Analysis	8015 NM		1			53951	05/23/23 08:21	SM	EET MIC
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	53877	05/22/23 12:14	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	53824	05/22/23 17:57	SM	EET MID
Soluble	Leach	DI Leach			5.02 g	50 mL	53878	05/22/23 12:16	SMC	EET MIC
Soluble	Analysis	300.0		1	50 mL	50 mL	53996	05/23/23 15:06	SMC	EET MID

**Client Sample ID: SS03** Lab Sample ID: 890-4690-3

Date Collected: 05/18/23 10:40 **Matrix: Solid** Date Received: 05/18/23 15:20

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.96 g	5 mL	53960	05/23/23 09:51	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	53967	05/23/23 19:36	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			54065	05/24/23 11:22	SM	EET MID
Total/NA	Analysis	8015 NM		1			53951	05/23/23 08:21	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	53877	05/22/23 12:14	AM	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	53824	05/22/23 18:18	SM	EET MID
Soluble	Leach	DI Leach			4.97 g	50 mL	53878	05/22/23 12:16	SMC	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	53996	05/23/23 15:22	SMC	EET MID

**Laboratory References:** 

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

**Eurofins Carlsbad** 

Released to Imaging: 9/19/2023 7:49:43 AM

### **Accreditation/Certification Summary**

Client: Ensolum Job ID: 890-4690-1 Project/Site: (COP) Red Raider BKS State 001

SDG: 03D2024187

### **Laboratory: Eurofins Midland**

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

Authority	Pr	ogram	Identification Number	Expiration Date		
Texas	NE	ELAP	T104704400-22-25	06-30-23		
The following analytes are included in this repo the agency does not offer certification.		t the laboratory is not certif	ied by the governing authority. This list ma	ay include analytes for w		
A 1 ' M 11 1			<b>A</b> 1.1			
Analysis Method	Prep Method	Matrix	Analyte			
Analysis Method 8015 NM		Matrix Solid	Analyte Total TPH			

### **Method Summary**

Client: Ensolum

Project/Site: (COP) Red Raider BKS State 001

Job ID: 890-4690-1

SDG: 03D2024187

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

**Eurofins Carlsbad** 

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### Sample Summary

Client: Ensolum

Project/Site: (COP) Red Raider BKS State 001

Job ID: 890-4690-1

SDG: 03D2024187

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-4690-1	SS01	Solid	05/18/23 10:20	05/18/23 15:20	0.25'
890-4690-2	SS02	Solid	05/18/23 10:30	05/18/23 15:20	0.25'
890-4690-3	SS03	Solid	05/18/23 10:40	05/18/23 15:20	0.25'

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**Environment Testing** Xenco

### **Chain of Custody**

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

Work Orde	r No:	

																		www	v.xenc	o.com	Page	of	-
Project Manager:	Hadli	e Green				Bill to: (if	different	t)	Kalei	Jennir	ngs							V	ork O	rder C	omments		
Company Name:	Enso	lum, LLC				Compan	y Name	<b>)</b> :	Ensol	um, Ll	_C					Program: UST/PST PRP Brownfields RRC Superfund							
Address:	601 N	Marienfe	eld St Si	uite 400		Address:			601 N Marienfeld St Suite 400					State of Project:									
City, State ZIP:		nd, TX 79				City, Sta	te ZIP:		Midla	nd, TX	79701					Reporting: Level II  Level III PST/UST TRRP Level IV							
Phone:	432-5	57-8895			Email:	hgreen	@enso	lum.c	om, di	nikan	orov@	ensolu	m.com			Deliver	ables: E	DD _		ADaPT	Ot	ner:	
Project Name:	I (COF	P) Red Ra	ider BK	S State 001	Turr	Around							ANA	LYSI	S REQ	UEST					Prese	rvative Cod	ies
Project Number:	1,001		202418		✓ Routine	Rusi	h	Pres.												ı	None: NO	DI Wat	er: H <sub>2</sub> O
Project Location:			5, -103.		Due Date:			Coue												1	Cool: Cool	MeOH:	Me
Sampler's Name:			/ Nikano		TAT starts th	e day rece	ived by													1	HCL: HC	HNO <sub>3</sub> :	HN
PO#:					the lab, if red	ceived by 4	:30pm	20							1		; = :=:::: <b>11</b>	1181		1	H <sub>2</sub> SO <sub>4</sub> : H <sub>2</sub>	NaOH:	Na
SAMPLE RECE	IPT	(Temp	Blank:	Yes No	Wet Ice:	Yes	No	rameters	6				1111					H <sub>3</sub> PO <sub>4</sub> : HP					
Samples Received	Intact:	Yee		Thermometer		mac	1	arar	300.								N/M			NaHSO <sub>4</sub> : NA		İ	
Cooler Custody Sea		Yes No	-	Correction Fa		-0	-2	<u>a</u>	PA				111					WW.		1	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> : Na Zn Acetate+		
Sample Custody Se	als:	Yes No		Temperature		5	닛		ES (E		2			0-469	0 Chai	n of Cus	tody		-		NaOH+Ascorbic Acid: SAPC		
Total Containers:				Corrected Te		٠ د ا		-	8	801	(8021		_03	0.40			1			1			
Sample Ide	ntificat	ion	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp		CHLORIDES (EPA: 300.0)	TPH (8015)	втех							1			Samp	le Comme	nts
SS	01		s	5/18/2023	10:20	0.25'	Grab	1	x	х	×								-				
SS	02		s	5/18/2023	10:30	0.25'	Grab	1	x	x	×				-				-	-			
SS	03		S	5/18/2023	10:40	0.25'	Grab	1	x	X	X		_	+	+				-	-			
									ļ	_			-	-			-+-		-	+			
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F =	_				CRA 13PF	314 7	- 44	A L O	L	D- 5	L. D	Cd C-	Cr. Co	Cu E	. Dh	Ma Ma	Mo Ni	K Sa	An S	iO. Na	Sr TI Sr	II V Zn	
Total 200.7 / 6		200.8 / 6			TCLP/SI														Ha:	1631 / 1	245.1 / 747	0 / 7471	
Circle Method(s) a	arid Me	tai(s) to t	e analy.	zeu	ICLF / S	LF OUT	U. OIN	21/7	30 /	13 Da	20 0	01 0	55 Gu i	2 1411	. 11.0		3						

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	(000 00)	5.18.23 1	515		
3			4		
5			6		
					levised Date 08/25/2020 Rev 2020.2

### **Login Sample Receipt Checklist**

 Client: Ensolum
 Job Number: 890-4690-1

 SDG Number: 03D2024187

Login Number: 4690 List Source: Eurofins Carlsbad

List Number: 1 Creator: Clifton, Cloe

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	

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### **Login Sample Receipt Checklist**

Client: Ensolum Job Number: 890-4690-1 SDG Number: 03D2024187

Login Number: 4690 **List Source: Eurofins Midland** List Number: 2

List Creation: 05/22/23 08:42 AM

Creator: Rodriguez, Leticia

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

<6mm (1/4").



APPENDIX E

**NMOCD Notifications** 

From: Enviro, OCD, EMNRD

To: Hadlie Green

Cc: Bratcher, Michael, EMNRD

Subject: RE: [EXTERNAL] COP - Sampling Notification (Week of 5/29/2023)

**Date:** Wednesday, May 24, 2023 3:30:50 PM

Attachments: <u>image005.jpg</u>

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 <a href="mailto:hgreen@ensolum.com">hgreen@ensolum.com</a>>
Sent: Wednesday, May 24, 2023 2:16 PM

To: Enviro, OCD, EMNRD < OCD. Enviro@emnrd.nm.gov>

Cc: Kalei Jennings <kjennings@ensolum.com>

**Subject:** [EXTERNAL] COP - Sampling Notification (Week of 5/29/2023)

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

All,

ConocoPhillips Company (COP) plans to complete sampling activities at the following site the week of May 29, 2023.

- Red Raider BKS State 001 / NAPP23136415
  - Sampling Date: 5/31/2023 @ 10:00 AM MST

•

Thank you,





Project Geologist 432-557-8895 hgreen@ensolum.com Ensolum, LLC



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

Responsible Party

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	NAPP2313136415
District RP	
Facility ID	fAPP2203856832
Application ID	

### **Release Notification**

### **Responsible Party**

OGRID

Responsible Party COG Operating, LLC			O	GRID		229137	
Contact Nam	ne	Jacob Laird			ontact Tel	ephone	(575) 703-5482
Contact ema	Contact email Jacon.Laird@ConocoPhillips.com				cident # (a	ussigned by OCD)	NAPP2313136415
Contact mailing address 600 West Illinois Avenue, Midland, Texas 79701							
Latitude	32.186	65	Location o	Lor	ngitude	-103.5	246
Site Name		Red Raider	BKS State 00	01 Sit	te Type	Tank	Battery
Date Release Discovered May 2, 2023  API# (if applicable)				-			
Γ	1			l .		1	
Unit Letter	Section	Township	Range		Count	У	
J	25	24S	33E		Lea		
Surface Owner	r: 🔳 State	Federal Tr	ibal Private ( <i>Na</i>		ne of R	elease	)
	Materia	l(s) Released (Select al	l that apply and attach ca	alculations of	or specific ju	stification for the	volumes provided below)
Crude Oil		Volume Release	1 (1 1 1 )	1009		Volume Recov	
Produced	Water	Volume Release	d (bbls)			Volume Recov	vered (bbls)
Is the concentration of dissolved chloride in the					the	Yes No	)

Volume Recovered (bbls)

Volume Recovered (Mcf)

Volume/Weight Recovered (provide units)

Cause of Release

Condensate

Natural Gas

Other (describe)

The release was caused by an oil dump failure resulting in a flare fire on and off the pad. No fluid was recovered due to the fire burning off any standing fluid.

produced water >10,000 mg/l?

Volume/Weight Released (provide units)

Volume Released (bbls)

Volume Released (Mcf)

Received by OCD: 6/20/2023 1:00:39 PM1 Form C-141 State of New Mexico Page 2 Oil Conservation Division

Page	113400	f 140

Incident ID	NAPP2313136415
District RP	
Facility ID	fAPP2203856832
Application ID	

Was this a major	If YES, for what reason(s) does the resp	onsible party consider this a major release?
release as defined by	The release involved a fire.	
19.15.29.7(A) NMAC?		
■ Yes □ No		
If YES, was immediate n	otice given to the OCD? By whom? To	whom? When and by what means (phone, email, etc)?
Immediate notice w	as given by Jacob Laird via e-m	nail May 2, 2023 at 10:19 AM to spills@
slo.state.nm.us and	ocd.enviro@state.nm.us.	, ,
	Initial 1	Response
The responsible	party must undertake the following actions immedia	tely unless they could create a safety hazard that would result in injury
■ The source of the rele	ease has been stopped.	
■ The impacted area ha	as been secured to protect human health an	nd the environment.
Released materials ha	ave been contained via the use of berms o	r dikes, absorbent pads, or other containment devices.
All free liquids and re	ecoverable materials have been removed a	and managed appropriately.
If all the actions describe	d above have <u>not</u> been undertaken, explair	n why:
Don 10 15 20 9 D (4) NIM	(AC) the magneriable neutry may commone	romodiction immediately often discovery of a release. If nomediation
		remediation immediately after discovery of a release. If remediation all efforts have been successfully completed or if the release occurred
C 7 1		, please attach all information needed for closure evaluation.
I hereby certify that the info	rmation given above is true and complete to the	ne best of my knowledge and understand that pursuant to OCD rules and
regulations all operators are	required to report and/or file certain release no	otifications and perform corrective actions for releases which may endanger
		COCD does not relieve the operator of liability should their operations have areat to groundwater, surface water, human health or the environment. In
addition, OCD acceptance o		of responsibility for compliance with any other federal, state, or local laws
and/or regulations.	N. =	
Printed Name. Brittar	ıy N. Esparza	Title: Environmental Technician
Signature:	ny N. Esparza	Date: 5/11/2023 Telephone: (432) 221-0398
., Brittany.Espar	za@ConocoPhillips.com	
email:		Telephone: (1947)
OCD Only		
loor	olyn Hariman	05/11/2023
Received by:	elyn Harimon	Date:

L48 Spill Volume Estimate Form - Fill In Gray Cells														
	Facility Name & Well Number(s): RED RAIDER BKS BATTERY				Y		Release Disco	very Date & Time:	5/2/23 @ 530am					
				Provide an	ny known det	ails about the event:	HAD AN AIR COMP FAULT THEN PROD SEP LVL SWI' TO FLARE. ALSO , THERE BUT NO COMMS IS NOT A	TCH HH ON 5/2/23 @ 3A IS A NO COMMS ON SI	M CAUSING FL FE, PLC IS GET	LUIDS TO GO TING ALARMS	Primary Cause (dropdown):	V	Secondary Cause (dropdown):	~
_							Recovered Volume (bbl.) (if available, not included in volume calculations)	Method of Determination (dropdown)	Release Type	e (dropdown):		ain in Last 24 Hours dropdown):		ecovered (not included in lations, informational):
BU:	Permiar	1	~	Asse	t Area:	DBE - Asset Avg.		Field Measurement	C	Dil ~		No ~		
					Known	Volume (dropdown):	No ~							
					Knov	vn Area (dropdown):	No ×							
						Spi	Il Calculation - Subsurface	Spill - Rectangle					Remediation	n Recommendation
Convert Irregular sha into a series of rectangles	pe Leng		/idth (ft.)	Average Depth (in.)	On/Off Pad (dropdown )	Soil Spilled-Fluid Saturation (%.)	Estimated volume of each area (bbl.)	Total Estimated Volume of Spill (bbl.)					Total Estimated Contaminated Soil, uncompacted, 25% (yd <sup>3</sup> .)	Current Rule of Thumb - RMR Handover Volume, (yd³.)
Rectangle A	8.0		2.0	0.3	On-PadY	10.50%	0.06	0.01					0.02	
Rectangle B	11.0		4.0		Off-Pad <sup>∨</sup>	15.02%	0.16 0.47	0.02 0.07					0.04	
Rectangle C Rectangle D	6.0	1 2	21.0	0.3	Off-Pad <sup>∨</sup>	15.02%	0.47	0.07					0.12 0.00	
Rectangle E		-			~		0.00						0.00	
Rectangle F					~		0.00						0.00	750
Rectangle G					~		0.00						0.00	
Rectangle H					~		0.00						0.00	
Rectangle I		_			×		0.00						0.00	
Rectangle J						Total 9	0.00 ubsurface Volume Released:	0.1009					0.00	BU
						i otal S	ubsuriace volume released.	0.1009					0.16	BU

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

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 215933

#### CONDITIONS

Operator:	OGRID:
COG OPERATING LLC	229137
600 W Illinois Ave	Action Number:
Midland, TX 79701	215933
	Action Type:
	[C-141] Release Corrective Action (C-141)

#### CONDITIONS

Created	Condition Cor	ondition ate
jharin	None 5/	5/11/2023

State of New Mexico

Incident ID	NAPP2313136415
District RP	
Facility ID	
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?	(ft bgs)			
Did this release impact groundwater or surface water?				
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?				
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?				
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?				
Are the lateral extents of the release overlying a subsurface mine?				
Are the lateral extents of the release overlying an unstable area such as karst geology?				
Are the lateral extents of the release within a 100-year floodplain? ☐ Yes ☐				
Did the release impact areas <b>not</b> on an exploration, development, production, or storage site?				
Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soi 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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Incident ID	NAPP2313136415
District RP	

Facility ID 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\_\_\_\_\_ email: \_\_Jacob.Laird@conocophillips.com\_\_\_\_\_\_ Telephone: \_\_\_575-703-5482\_\_\_\_\_\_ **OCD Only** Received by: Date: \_\_\_\_\_

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Incident ID	NAPP2313136415
District RP	
Facility ID	
Application ID	

## Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: Each of the following items must be included in the closure report.

☐ A scaled site and sampling diagram as described in 19.15.29.11 NMAC			
Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)			
Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)			
☐ Description of remediation activities			
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.  Printed Name:Jacob Laird			
OCD Only			
Received by: Date:			
Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.			
Closure Approved by:			
Printed Name: Nelson Velez Title: Environmental Specialist – Adv			

District I
1625 N. French Dr., Hobbs, NM 88240
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**State of New Mexico Energy, Minerals and Natural Resources Oil Conservation Division** 1220 S. St Francis Dr. **Santa Fe, NM 87505** 

CONDITIONS

Action 230756

#### **CONDITIONS**

Operator:	OGRID:
COG OPERATING LLC	229137
600 W Illinois Ave	Action Number:
Midland, TX 79701	230756
	Action Type:
	[C-141] Release Corrective Action (C-141)

#### CONDITIONS

Created By		Condition Date
nvelez	None	9/19/2023