



March 14, 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 Addendum
Vast State 002H
Incident Number NAPP2231148750
Lea County, New Mexico**

To Whom It May Concern:

Ensolum, LLC (Ensolum), on behalf of COG Operating, LLC (COG), has prepared this *Closure Request Addendum* to provide an update to the excavation and soil sampling activities performed at the Vast State 002H (Site). The purpose of the additional excavation and soil sampling activities was to address the denial of an original *Closure Request*, dated January 27, 2023, by the New Mexico Oil Conservation Division (NMOCD). In the denial, NMOCD expressed concern that the depth to groundwater assessment was inadequately determined and the release was not sufficiently addressed. Based on additional excavation and soil sampling activities described below, COG is requesting closure for Incident Number NAPP2231148750.

All of the release details regarding the incident, Site characterization, and remediation conducted can be referenced in the original *Closure Request*. NMOCD denied the submitted *Closure Request* for Incident Number NAPP2231148750 on February 16, 2023, for the following reason:

Closure Report Denied. The depth to groundwater has not been adequately determined. When nearby wells are used to determine depth to groundwater, the wells should be no further than ½ mile away from the site, and data should be no more than 25 years old, and well construction information should be provided in the submission. The responsible party may choose to remediate to the most stringent levels listed in Table 1 of 19.15.29 NMAC in lieu of drilling to determine depth to groundwater. The release has not been sufficiently addressed (FS01). Please submit a revised closure report to the OCD portal by March 16, 2023.

EXCAVATION ACTIVITIES AND ANALYTICAL RESULTS

Based on NMOCD's request, on March 3, 2023, Ensolum personnel were onsite to oversee additional excavation activities in the vicinity of confirmation floor soil samples FS01 and FS02 and sidewall soil sample SW01. Excavation activities were performed using a backhoe and hand shovel. To direct excavation activities, soil was field screened for volatile organic compounds (VOCs) and chloride utilizing a calibrated photoionization detector (PID) and Hach® chloride QuanTab® test strips, respectively. Upon completion of excavation activities, 5-point composite samples FS01A, FS02A, and SW05 were collected from the floor and sidewall of the excavation. The excavation was completed to an approximate depth of 3.25 feet below ground surface (bgs). Confirmation soil sample SW05 was collected from the sidewall of the excavation at depths ranging from the ground surface to 3.25 feet bgs. The soil sample

COG Operating, LLC
Closure Request Addendum
Vast State 002H

locations were mapped utilizing a handheld Global Positioning System (GPS) unit and are depicted on Figure 1. Photographic documentation was conducted during Site activities and is included in Appendix A.

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

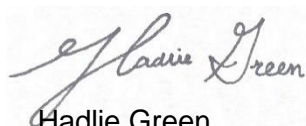
Laboratory analytical results for all three excavation soil samples (FS01A, FS02A, and SW05) indicated concentrations of all COCs were compliant with the most stringent Table I Closure Criteria. Laboratory analytical results are summarized in Table 1 and laboratory analytical reports are included in Appendix B.

CLOSURE REQUEST


Laboratory analytical results for the additional excavation soil samples FS01A, FS02A, and SW05, collected from the final excavation extent, indicated concentrations of all COCs were compliant with the most stringent Table I Closure Criteria as required by NMOCD's February 2023 denial. Remedial actions associated with the original *Closure Request* as well as this *Closure Request Addendum* have been protective of human health, the environment, and groundwater. As such, COG respectfully requests closure for Incident Number NAPP2231148750. The Final C-141 is included in Appendix C.

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

Sincerely,
Ensolum, LLC



Hadlie Green
Project Manager



Daniel R. Moir, PG
Senior Managing Geologist

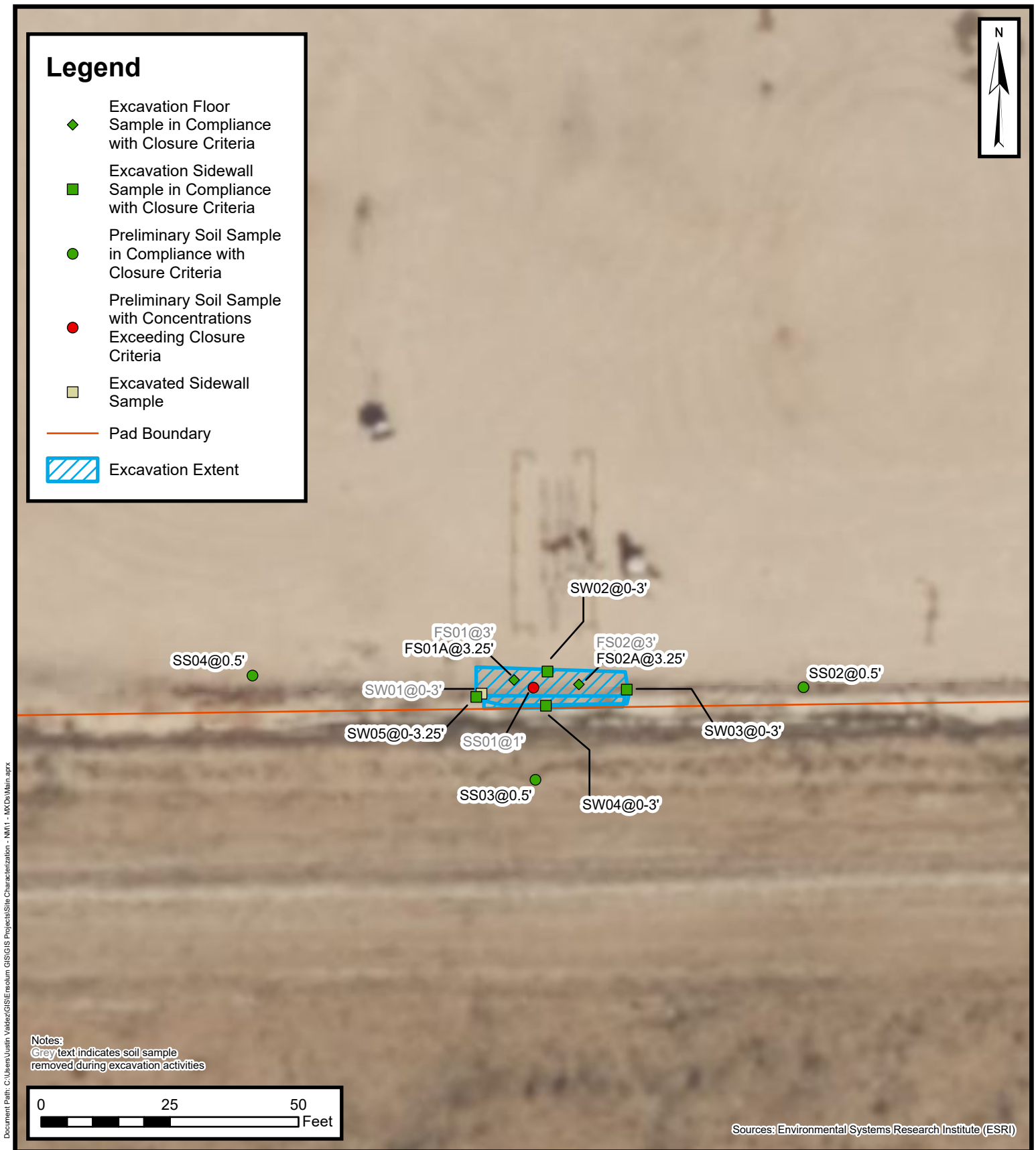
cc: Charles Beauvais, COG Operating, LLC
Bureau of Land Management

Appendices:

Figure 1	Soil Sample Locations
Table 1	Soil Sample Analytical Results
Appendix A	Photographic Log
Appendix B	Laboratory Analytical Reports & Chain-of-Custody Documentation
Appendix C	Final C-141
Appendix D	NMOCD Notifications



FIGURES



Soil Sample Locations

COG Operating, LLC
 Vast State 002H
 Incident Number: NAPP2231148750
 Unit P, Sec 17, T26S, R33E
 Lea County, New Mexico

FIGURE

1

ENSOLUM
 Environmental, Engineering and
 Hydrogeologic Consultants



TABLES



TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
 Vast State 002H
 COG Operating, LLC
 Lea County, New Mexico

Sample I.D.	Sample Date	Sample 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
Preliminary Soil Samples										
SS01	11/16/2022	1	<0.00201	0.0271	94.8	338	<49.9	433	433	48,700
SS02	11/16/2022	0.5	<0.00200	<0.00401	<49.8	73.9	<49.8	73.9	73.9	54.0
SS03	11/16/2022	0.5	<0.00200	<0.00399	<49.9	<49.9	<49.9	<49.9	<49.9	16.7
SS04	11/16/2022	0.5	<0.00199	<0.00398	<49.9	<49.9	<49.9	<49.9	<49.9	24.4
Excavation Floor Soil Samples										
FS01	12/15/2022	3	<0.00200	<0.00401	<50.0	<50.0	<50.0	<50.0	<50.0	3,850
FS01A	03/03/2023	3.25	<0.00202	<0.00403	<49.9	<49.9	<49.9	<49.9	<49.9	426
FS02	12/15/2022	3	<0.00200	<0.00401	<49.9	203	<49.9	203	203	34.3
FS02A	03/03/2023	3.25	<0.00201	<0.00402	<49.9	<49.9	<49.9	<49.9	<49.9	127
Excavation Sidewall Soil Samples										
SW01	12/15/2022	0 - 3	<0.00200	<0.00399	<49.9	<49.9	<49.9	<49.9	<49.9	773
SW02	01/13/2023	0 - 3	<0.00200	<0.00401	<50.0	<50.0	<50.0	<50.0	<50.0	60.6
SW03	01/13/2023	0 - 3	<0.00199	<0.00398	<50.0	<50.0	<50.0	<50.0	<50.0	464
SW04	01/13/2023	0 - 3	<0.00199	<0.00398	<50.0	<50.0	<50.0	<50.0	<50.0	339
SW05	03/03/2023	0 - 3.5	<0.00200	<0.00401	<49.9	<49.9	<49.9	<49.9	<49.9	356

Notes:

bgs: below ground surface

mg/kg: milligrams per kilogram

NMOCD: New Mexico Oil Conservation Division

BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes

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

GRO: Gasoline Range Organics

DRO: Diesel Range Organics

ORO: Oil Range Organics

TPH: Total Petroleum Hydrocarbon

NMAC: New Mexico Administrative Code

Grey text indicates soil sample removed during excavation activities



APPENDIX A

Photographic Log

**Photographic Log**

COG Operating, LLC

Vast State 002H

Incident Number NAPP2231148750



Photograph: 1 Date: 11/22/2022

Description: Soil staining in release footprint

View: South



Photograph: 2 Date: 11/22/2022

Description: Soil staining in release footprint

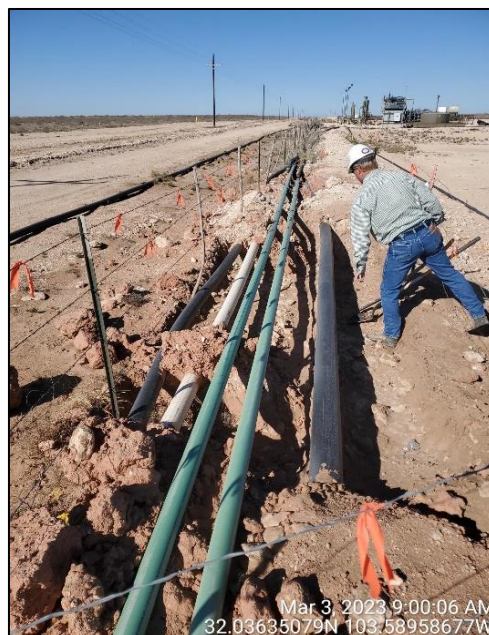
View: Southeast



Photograph: 3 Date: 1/13/2023

Description: Excavation activities!

View: Southeast



Photograph: 4 Date: 3/3/2023

Description: Excavation activities

View: Northwest



APPENDIX B

Laboratory Analytical Reports & Chain of Custody Documentation



Environment Testing

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ANALYTICAL REPORT

PREPARED FOR

Attn: Hadlie Green
Ensolum
601 N. Marienfeld St.
Suite 400
Midland, Texas 79701
Generated 3/8/2023 2:58:25 PM

JOB DESCRIPTION

Vast State 002H
SDG NUMBER 03D2024105

JOB NUMBER

890-4234-1

Eurofins Carlsbad
1089 N Canal St.
Carlsbad NM 88220

Eurofins Carlsbad**Job Notes**

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

Authorization

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

Client: Ensolum
Project/Site: Vast State 002H

Laboratory Job ID: 890-4234-1
SDG: 03D2024105

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Definitions/Glossary

Client: Ensolum
Project/Site: Vast State 002H

Job ID: 890-4234-1
SDG: 03D2024105

Qualifiers

GC VOA

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

GC Semi VOA

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

HPLC/IC

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Case Narrative

Client: Ensolum
Project/Site: Vast State 002H

Job ID: 890-4234-1
SDG: 03D2024105

Job ID: 890-4234-1**Laboratory: Eurofins Carlsbad****Narrative****Job Narrative
890-4234-1****Receipt**

The samples were received on 3/3/2023 1:23 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 1.4°C

Receipt Exceptions

The following samples were received and analyzed from an unpreserved bulk soil jar: FS01A (890-4234-1), FS02A (890-4234-2) and SW05 (890-4234-3).

GC VOA

Method 8021B: Surrogate recovery for the following samples were outside control limits: FS01A (890-4234-1), FS02A (890-4234-2), SW05 (890-4234-3), (CCV 880-48027/20), (LCS 880-47354/1-A) and (890-4234-A-1-E MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: The laboratory control sample duplicate (LCSD) for preparation batch 880-47354 and analytical batch 880-48027 recovered outside control limits for the following analytes: m-Xylene & p-Xylene. These analytes were biased high in the LCSD but only an LCS or LCSD is required; therefore, the data have been reported.

Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 880-47354 and analytical batch 880-48027 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Method 8021B: Surrogate recovery for the following samples were outside control limits: (LCS 880-47354/1-A), (LCSD 880-47354/2-A) and (890-4234-A-1-E MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

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

GC Semi VOA

Method 8015MOD_NM: Surrogate recovery for the following sample was outside control limits: (LCS 880-47868/2-A). Evidence of matrix interferences is not obvious.

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

HPLC/IC

Method 300_ORGFM_28D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 880-47867 and analytical batch 880-47930 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

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

Client Sample Results

Client: Ensolum
Project/Site: Vast State 002H

Job ID: 890-4234-1
SDG: 03D2024105

Client Sample ID: FS01A

Lab Sample ID: 890-4234-1

Date Collected: 03/03/23 10:20

Matrix: Solid

Date Received: 03/03/23 13:23

Sample Depth: 3.25'

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00202	U	0.00202	mg/Kg		03/07/23 14:16	03/07/23 18:02	1
Toluene	<0.00202	U F1	0.00202	mg/Kg		03/07/23 14:16	03/07/23 18:02	1
Ethylbenzene	<0.00202	U	0.00202	mg/Kg		03/07/23 14:16	03/07/23 18:02	1
m-Xylene & p-Xylene	<0.00403	U F1 *+	0.00403	mg/Kg		03/07/23 14:16	03/07/23 18:02	1
o-Xylene	<0.00202	U	0.00202	mg/Kg		03/07/23 14:16	03/07/23 18:02	1
Xylenes, Total	<0.00403	U F1 *+	0.00403	mg/Kg		03/07/23 14:16	03/07/23 18:02	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	165	S1+	70 - 130			03/07/23 14:16	03/07/23 18:02	1
1,4-Difluorobenzene (Surr)	87		70 - 130			03/07/23 14:16	03/07/23 18:02	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00403	U	0.00403	mg/Kg			03/08/23 14:39	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9	mg/Kg			03/07/23 13:47	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9	mg/Kg		03/06/23 08:24	03/06/23 17:21	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9	mg/Kg		03/06/23 08:24	03/06/23 17:21	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9	mg/Kg		03/06/23 08:24	03/06/23 17:21	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	109		70 - 130			03/06/23 08:24	03/06/23 17:21	1
o-Terphenyl	120		70 - 130			03/06/23 08:24	03/06/23 17:21	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	426		25.0	mg/Kg			03/06/23 13:49	5

Client Sample ID: FS02A

Lab Sample ID: 890-4234-2

Date Collected: 03/03/23 10:00

Matrix: Solid

Date Received: 03/03/23 13:23

Sample Depth: 3.25'

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00201	U	0.00201	mg/Kg		03/07/23 14:16	03/08/23 00:09	1
Toluene	<0.00201	U	0.00201	mg/Kg		03/07/23 14:16	03/08/23 00:09	1
Ethylbenzene	<0.00201	U	0.00201	mg/Kg		03/07/23 14:16	03/08/23 00:09	1
m-Xylene & p-Xylene	<0.00402	U *+	0.00402	mg/Kg		03/07/23 14:16	03/08/23 00:09	1
o-Xylene	<0.00201	U	0.00201	mg/Kg		03/07/23 14:16	03/08/23 00:09	1
Xylenes, Total	<0.00402	U *+	0.00402	mg/Kg		03/07/23 14:16	03/08/23 00:09	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	172	S1+	70 - 130			03/07/23 14:16	03/08/23 00:09	1

Eurofins Carlsbad

Client Sample Results

Client: Ensolum
Project/Site: Vast State 002H

Job ID: 890-4234-1
SDG: 03D2024105

Client Sample ID: FS02A

Lab Sample ID: 890-4234-2

Date Collected: 03/03/23 10:00

Matrix: Solid

Date Received: 03/03/23 13:23

Sample Depth: 3.25'

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	77		70 - 130	03/07/23 14:16	03/08/23 00:09	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00402	U	0.00402	mg/Kg			03/08/23 14:39	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9	mg/Kg			03/07/23 13:47	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9	mg/Kg		03/06/23 08:24	03/06/23 17:43	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9	mg/Kg		03/06/23 08:24	03/06/23 17:43	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9	mg/Kg		03/06/23 08:24	03/06/23 17:43	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	102		70 - 130			03/06/23 08:24	03/06/23 17:43	1
o-Terphenyl	113		70 - 130			03/06/23 08:24	03/06/23 17:43	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	127		4.99	mg/Kg			03/06/23 13:55	1

Client Sample ID: SW05

Lab Sample ID: 890-4234-3

Date Collected: 03/03/23 10:15

Matrix: Solid

Date Received: 03/03/23 13:23

Sample Depth: 0-3.25'

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		03/07/23 14:16	03/08/23 00:36	1
Toluene	<0.00200	U	0.00200	mg/Kg		03/07/23 14:16	03/08/23 00:36	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		03/07/23 14:16	03/08/23 00:36	1
m-Xylene & p-Xylene	<0.00401	U **	0.00401	mg/Kg		03/07/23 14:16	03/08/23 00:36	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		03/07/23 14:16	03/08/23 00:36	1
Xylenes, Total	<0.00401	U **	0.00401	mg/Kg		03/07/23 14:16	03/08/23 00:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	176	S1+	70 - 130	03/07/23 14:16	03/08/23 00:36	1
1,4-Difluorobenzene (Surr)	73		70 - 130	03/07/23 14:16	03/08/23 00:36	1

Method: TAL SOP Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00401	U	0.00401	mg/Kg			03/08/23 14:39	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9	mg/Kg			03/07/23 13:47	1

Eurofins Carlsbad

Client Sample Results

Client: Ensolum
Project/Site: Vast State 002H

Job ID: 890-4234-1
SDG: 03D2024105

Client Sample ID: SW05
Date Collected: 03/03/23 10:15
Date Received: 03/03/23 13:23
Sample Depth: 0-3.25'

Lab Sample ID: 890-4234-3
Matrix: Solid

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)									
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9	mg/Kg		03/06/23 08:24	03/06/23 18:05	1	
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9	mg/Kg		03/06/23 08:24	03/06/23 18:05	1	
Oil Range Organics (Over C28-C36)	<49.9	U	49.9	mg/Kg		03/06/23 08:24	03/06/23 18:05	1	
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
1-Chlorooctane	106		70 - 130			03/06/23 08:24	03/06/23 18:05	1	
o-Terphenyl	115		70 - 130			03/06/23 08:24	03/06/23 18:05	1	

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble									
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Chloride	356	F1	5.05	mg/Kg			03/06/23 14:01	1	

Surrogate Summary

Client: Ensolum
Project/Site: Vast State 002H

Job ID: 890-4234-1
SDG: 03D2024105

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	BFB1 (70-130)	DFBZ1 (70-130)
890-4234-1	FS01A	165 S1+	87
890-4234-1 MS	FS01A	171 S1+	89
890-4234-1 MSD	FS01A	180 S1+	82
890-4234-2	FS02A	172 S1+	77
890-4234-3	SW05	176 S1+	73
LCS 880-47354/1-A	Lab Control Sample	161 S1+	86
LCSD 880-47354/2-A	Lab Control Sample Dup	181 S1+	86
MB 880-47354/5-A	Method Blank	104	72
Surrogate Legend			
BFB = 4-Bromofluorobenzene (Surr)			
DFBZ = 1,4-Difluorobenzene (Surr)			

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

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	1CO1 (70-130)	OTPH1 (70-130)
880-25357-A-22-C MS	Matrix Spike	115	111
880-25357-A-22-D MSD	Matrix Spike Duplicate	105	106
890-4234-1	FS01A	109	120
890-4234-2	FS02A	102	113
890-4234-3	SW05	106	115
LCS 880-47868/2-A	Lab Control Sample	126	135 S1+
LCSD 880-47868/3-A	Lab Control Sample Dup	114	119
MB 880-47868/1-A	Method Blank	110	125
Surrogate Legend			
1CO = 1-Chlorooctane			
OTPH = o-Terphenyl			

QC Sample Results

Client: Ensolum
Project/Site: Vast State 002H

Job ID: 890-4234-1
SDG: 03D2024105

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-47354/5-A

Matrix: Solid

Analysis Batch: 48027

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 47354

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		02/27/23 14:16	03/07/23 17:36	1
Toluene	<0.00200	U	0.00200	mg/Kg		02/27/23 14:16	03/07/23 17:36	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		02/27/23 14:16	03/07/23 17:36	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		02/27/23 14:16	03/07/23 17:36	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		02/27/23 14:16	03/07/23 17:36	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		02/27/23 14:16	03/07/23 17:36	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		70 - 130	02/27/23 14:16	03/07/23 17:36	1
1,4-Difluorobenzene (Surr)	72		70 - 130	02/27/23 14:16	03/07/23 17:36	1

Lab Sample ID: LCS 880-47354/1-A

Matrix: Solid

Analysis Batch: 48027

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 47354

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.1211		mg/Kg		121	70 - 130
Toluene	0.100	0.1108		mg/Kg		111	70 - 130
Ethylbenzene	0.100	0.1196		mg/Kg		120	70 - 130
m-Xylene & p-Xylene	0.200	0.2575		mg/Kg		129	70 - 130
o-Xylene	0.100	0.1171		mg/Kg		117	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	161	S1+	70 - 130
1,4-Difluorobenzene (Surr)	86		70 - 130

Lab Sample ID: LCSD 880-47354/2-A

Matrix: Solid

Analysis Batch: 48027

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 47354

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	0.100	0.1298		mg/Kg		130	70 - 130	7	35
Toluene	0.100	0.1281		mg/Kg		128	70 - 130	14	35
Ethylbenzene	0.100	0.1261		mg/Kg		126	70 - 130	5	35
m-Xylene & p-Xylene	0.200	0.2727	*+	mg/Kg		136	70 - 130	6	35
o-Xylene	0.100	0.1250		mg/Kg		125	70 - 130	7	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	181	S1+	70 - 130
1,4-Difluorobenzene (Surr)	86		70 - 130

Lab Sample ID: 890-4234-1 MS

Matrix: Solid

Analysis Batch: 48027

Client Sample ID: FS01A

Prep Type: Total/NA

Prep Batch: 47354

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	<0.00202	U	0.100	0.1278		mg/Kg		127	70 - 130
Toluene	<0.00202	U F1	0.100	0.1154		mg/Kg		115	70 - 130

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QC Sample Results

Client: Ensolum
Project/Site: Vast State 002H

Job ID: 890-4234-1
SDG: 03D2024105

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

Lab Sample ID: 890-4234-1 MS

Matrix: Solid

Analysis Batch: 48027

Client Sample ID: FS01A

Prep Type: Total/NA

Prep Batch: 47354

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00202	U	0.100	0.1247		mg/Kg		124	70 - 130
m-Xylene & p-Xylene	<0.00403	U F1 *+	0.201	0.2720	F1	mg/Kg		135	70 - 130
o-Xylene	<0.00202	U	0.100	0.1246		mg/Kg		124	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	171	S1+	70 - 130
1,4-Difluorobenzene (Surr)	89		70 - 130

Lab Sample ID: 890-4234-1 MSD

Matrix: Solid

Analysis Batch: 48027

Client Sample ID: FS01A

Prep Type: Total/NA

Prep Batch: 47354

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00202	U	0.0990	0.1246		mg/Kg		126	70 - 130	3	35
Toluene	<0.00202	U F1	0.0990	0.1300	F1	mg/Kg		131	70 - 130	12	35
Ethylbenzene	<0.00202	U	0.0990	0.1252		mg/Kg		126	70 - 130	0	35
m-Xylene & p-Xylene	<0.00403	U F1 *+	0.198	0.2712	F1	mg/Kg		137	70 - 130	0	35
o-Xylene	<0.00202	U	0.0990	0.1244		mg/Kg		126	70 - 130	0	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	180	S1+	70 - 130
1,4-Difluorobenzene (Surr)	82		70 - 130

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

Lab Sample ID: MB 880-47868/1-A

Matrix: Solid

Analysis Batch: 47856

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 47868

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0	mg/Kg		03/06/23 08:24	03/06/23 08:33	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		03/06/23 08:24	03/06/23 08:33	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		03/06/23 08:24	03/06/23 08:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	110		70 - 130	03/06/23 08:24	03/06/23 08:33	1
o-Terphenyl	125		70 - 130	03/06/23 08:24	03/06/23 08:33	1

Lab Sample ID: LCS 880-47868/2-A

Matrix: Solid

Analysis Batch: 47856

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 47868

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	1000	1067		mg/Kg		107	70 - 130
Diesel Range Organics (Over C10-C28)	1000	1020		mg/Kg		102	70 - 130

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QC Sample Results

Client: Ensolum
Project/Site: Vast State 002H

Job ID: 890-4234-1
SDG: 03D2024105

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

Lab Sample ID: LCS 880-47868/2-A
Matrix: Solid
Analysis Batch: 47856

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 47868

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	126		70 - 130
o-Terphenyl	135	S1+	70 - 130

Lab Sample ID: LCSD 880-47868/3-A
Matrix: Solid
Analysis Batch: 47856

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 47868

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	1000	961.3		mg/Kg		96	70 - 130	10	20
Diesel Range Organics (Over C10-C28)	1000	912.4		mg/Kg		91	70 - 130	11	20

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	114		70 - 130
o-Terphenyl	119		70 - 130

Lab Sample ID: 880-25357-A-22-C MS
Matrix: Solid
Analysis Batch: 47856

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 47868

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	998	999.6		mg/Kg		97	70 - 130		
Diesel Range Organics (Over C10-C28)	<49.9	U	998	1099		mg/Kg		110	70 - 130		

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	115		70 - 130
o-Terphenyl	111		70 - 130

Lab Sample ID: 880-25357-A-22-D MSD
Matrix: Solid
Analysis Batch: 47856

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 47868

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	999	1079		mg/Kg		105	70 - 130	8	20
Diesel Range Organics (Over C10-C28)	<49.9	U	999	1050		mg/Kg		105	70 - 130	5	20

	MSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	105		70 - 130
o-Terphenyl	106		70 - 130

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QC Sample Results

Client: Ensolum
Project/Site: Vast State 002H

Job ID: 890-4234-1
SDG: 03D2024105

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-47867/1-A Matrix: Solid Analysis Batch: 47930										Client Sample ID: Method Blank Prep Type: Soluble	
Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac			
Chloride	<5.00	U	5.00	mg/Kg			03/06/23 12:16	1			

Lab Sample ID: LCS 880-47867/2-A Matrix: Solid Analysis Batch: 47930										Client Sample ID: Lab Control Sample Prep Type: Soluble	
Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	236.4		mg/Kg		95	90 - 110		

Lab Sample ID: LCSD 880-47867/3-A Matrix: Solid Analysis Batch: 47930										Client Sample ID: Lab Control Sample Dup Prep Type: Soluble	
Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	236.1		mg/Kg		94	90 - 110	0	20

Lab Sample ID: 890-4234-3 MS Matrix: Solid Analysis Batch: 47930										Client Sample ID: SW05 Prep Type: Soluble	
Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	356	F1	253	579.9	F1	mg/Kg		89	90 - 110		

Lab Sample ID: 890-4234-3 MSD Matrix: Solid Analysis Batch: 47930										Client Sample ID: SW05 Prep Type: Soluble	
Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	356	F1	253	579.0	F1	mg/Kg		88	90 - 110	0	20

QC Association Summary

Client: Ensolum
Project/Site: Vast State 002H

Job ID: 890-4234-1
SDG: 03D2024105

GC VOA

Prep Batch: 47354

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4234-1	FS01A	Total/NA	Solid	5035	
890-4234-2	FS02A	Total/NA	Solid	5035	
890-4234-3	SW05	Total/NA	Solid	5035	
MB 880-47354/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-47354/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-47354/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-4234-1 MS	FS01A	Total/NA	Solid	5035	
890-4234-1 MSD	FS01A	Total/NA	Solid	5035	

Analysis Batch: 48027

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4234-1	FS01A	Total/NA	Solid	8021B	47354
890-4234-2	FS02A	Total/NA	Solid	8021B	47354
890-4234-3	SW05	Total/NA	Solid	8021B	47354
MB 880-47354/5-A	Method Blank	Total/NA	Solid	8021B	47354
LCS 880-47354/1-A	Lab Control Sample	Total/NA	Solid	8021B	47354
LCSD 880-47354/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	47354
890-4234-1 MS	FS01A	Total/NA	Solid	8021B	47354
890-4234-1 MSD	FS01A	Total/NA	Solid	8021B	47354

Analysis Batch: 48136

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4234-1	FS01A	Total/NA	Solid	Total BTEX	
890-4234-2	FS02A	Total/NA	Solid	Total BTEX	
890-4234-3	SW05	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 47856

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4234-1	FS01A	Total/NA	Solid	8015B NM	47868
890-4234-2	FS02A	Total/NA	Solid	8015B NM	47868
890-4234-3	SW05	Total/NA	Solid	8015B NM	47868
MB 880-47868/1-A	Method Blank	Total/NA	Solid	8015B NM	47868
LCS 880-47868/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	47868
LCSD 880-47868/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	47868
880-25357-A-22-C MS	Matrix Spike	Total/NA	Solid	8015B NM	47868
880-25357-A-22-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	47868

Prep Batch: 47868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4234-1	FS01A	Total/NA	Solid	8015NM Prep	
890-4234-2	FS02A	Total/NA	Solid	8015NM Prep	
890-4234-3	SW05	Total/NA	Solid	8015NM Prep	
MB 880-47868/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-47868/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-47868/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
880-25357-A-22-C MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
880-25357-A-22-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

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QC Association Summary

Client: Ensolum
Project/Site: Vast State 002H

Job ID: 890-4234-1
SDG: 03D2024105

GC Semi VOA

Analysis Batch: 48050

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4234-1	FS01A	Total/NA	Solid	8015 NM	
890-4234-2	FS02A	Total/NA	Solid	8015 NM	
890-4234-3	SW05	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 47867

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4234-1	FS01A	Soluble	Solid	DI Leach	
890-4234-2	FS02A	Soluble	Solid	DI Leach	
890-4234-3	SW05	Soluble	Solid	DI Leach	
MB 880-47867/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-47867/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-47867/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-4234-3 MS	SW05	Soluble	Solid	DI Leach	
890-4234-3 MSD	SW05	Soluble	Solid	DI Leach	

Analysis Batch: 47930

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4234-1	FS01A	Soluble	Solid	300.0	47867
890-4234-2	FS02A	Soluble	Solid	300.0	47867
890-4234-3	SW05	Soluble	Solid	300.0	47867
MB 880-47867/1-A	Method Blank	Soluble	Solid	300.0	47867
LCS 880-47867/2-A	Lab Control Sample	Soluble	Solid	300.0	47867
LCSD 880-47867/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	47867
890-4234-3 MS	SW05	Soluble	Solid	300.0	47867
890-4234-3 MSD	SW05	Soluble	Solid	300.0	47867

Lab Chronicle

Client: Ensolum
Project/Site: Vast State 002H

Job ID: 890-4234-1
SDG: 03D2024105

Client Sample ID: FS01A**Lab Sample ID: 890-4234-1****Date Collected: 03/03/23 10:20****Matrix: Solid****Date Received: 03/03/23 13:23**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.96 g	5 mL	47354	03/07/23 14:16	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	48027	03/07/23 18:02	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			48136	03/08/23 14:39	AJ	EET MID
Total/NA	Analysis	8015 NM		1			48050	03/07/23 13:47	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	47868	03/06/23 08:24	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	47856	03/06/23 17:21	SM	EET MID
Soluble	Leach	DI Leach			5 g	50 mL	47867	03/06/23 08:14	CH	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	47930	03/06/23 13:49	CH	EET MID

Client Sample ID: FS02A**Lab Sample ID: 890-4234-2****Date Collected: 03/03/23 10:00****Matrix: Solid****Date Received: 03/03/23 13:23**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.97 g	5 mL	47354	03/07/23 14:16	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	48027	03/08/23 00:09	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			48136	03/08/23 14:39	AJ	EET MID
Total/NA	Analysis	8015 NM		1			48050	03/07/23 13:47	SM	EET MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	47868	03/06/23 08:24	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	47856	03/06/23 17:43	SM	EET MID
Soluble	Leach	DI Leach			5.01 g	50 mL	47867	03/06/23 08:14	CH	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	47930	03/06/23 13:55	CH	EET MID

Client Sample ID: SW05**Lab Sample ID: 890-4234-3****Date Collected: 03/03/23 10:15****Matrix: Solid****Date Received: 03/03/23 13:23**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.99 g	5 mL	47354	03/07/23 14:16	MNR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	48027	03/08/23 00:36	MNR	EET MID
Total/NA	Analysis	Total BTEX		1			48136	03/08/23 14:39	AJ	EET MID
Total/NA	Analysis	8015 NM		1			48050	03/07/23 13:47	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	47868	03/06/23 08:24	AJ	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	47856	03/06/23 18:05	SM	EET MID
Soluble	Leach	DI Leach			4.95 g	50 mL	47867	03/06/23 08:14	CH	EET MID
Soluble	Analysis	300.0		1	50 mL	50 mL	47930	03/06/23 14:01	CH	EET MID

Laboratory References:

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

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Accreditation/Certification Summary

Client: Ensolum
Project/Site: Vast State 002H

Job ID: 890-4234-1
SDG: 03D2024105

Laboratory: Eurofins Midland

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

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704400-22-25	06-30-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8015 NM		Solid	Total TPH
Total BTEX		Solid	Total BTEX

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

Method Summary

Client: Ensolum
Project/Site: Vast State 002H

Job ID: 890-4234-1
SDG: 03D2024105

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: Vast State 002H

Job ID: 890-4234-1
SDG: 03D2024105

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-4234-1	FS01A	Solid	03/03/23 10:20	03/03/23 13:23	3.25'
890-4234-2	FS02A	Solid	03/03/23 10:00	03/03/23 13:23	3.25'
890-4234-3	SW05	Solid	03/03/23 10:15	03/03/23 13:23	0-3.25'

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



Environment Testing
Xenco

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

Chain of Custody

Work Order No: _____

Page _____ of _____
www.xenco.com

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

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

ANALYSIS REQUEST										Preservative Codes	
										None: NO	DI Water: H ₂ O
										Cool: Cool	MeOH: Me
										HCL: HC	HNO ₃ : HN
										H ₂ SO ₄ : H ₂	NaOH: Na
										H ₃ PO ₄ : HP	
										NaHSO ₄ : NABIS	
										Na ₂ S ₂ O ₃ : NaSO ₃	
										Zn Acetate+NaOH: Zn	
										NaOH+Ascorbic Acid: SAPC	

[illegible]

Total	200.7 / 6010	200.8 / 6020:	Circle Method(s) and Metal(s) to be analyzed																											
8RCRA	13PPM	Texas 11	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	Mo	Ni	K	Se	Ag	SiO ₂	Na	Sr	II	Sn	U	V	Zr
TCLP / SPLP 6010: 8RCRA			Sb	As	Ba	Be	Cd	Cr	Co	Cu	Pb	Mn	Mo	Ni	Se	Ag	TI	U	Hg: 1631 / 245.1 / 7470 / 7477											

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Euroflins Xeno, its affiliates and subcontractors. It assigns standard terms and conditions of service. Euroflins Xeno 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 Euroflins Xeno. A minimum charge of \$85.00 will be applied to each project and a charge of \$5 for each sample submitted to Euroflins Xeno, 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 <i>Peter LaTette</i>	<i>Armando Lopez</i>	3-3-23 / 3:43			
3		4			
5		6			

Revised Date 08/25/2020 Rev. 2020

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-4234-1

SDG Number: 03D2024105

Login Number: 4234

List Number: 1

Creator: Stutzman, Amanda

List Source: Eurofins Carlsbad

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

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-4234-1

SDG Number: 03D2024105

Login Number: 4234

List Number: 2

Creator: Kramer, Jessica

List Source: Eurofins Midland

List Creation: 03/06/23 12:04 PM

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



APPENDIX C

Final C-141

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

State of New Mexico
Energy Minerals and Natural
Resources Department

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

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

Incident ID	NAPP2231148750
District RP	
Facility ID	fAPP2203457133
Application ID	

Release Notification

Responsible Party

Responsible Party	COG Operating, LLC	OGRID	229137
Contact Name	Charles Beauvais	Contact Telephone	(575) 988-2043
Contact email	Charles.R.Beauvais@ConocoPhillips.com	Incident # (assigned by OCD)	NAPP2231148750
Contact mailing address	600 West Illinois Avenue, Midland, Texas 79701		

Location of Release Source

Latitude ~~32.0202~~ 32.036313 Longitude ~~-103.6894~~ -103.589630
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Vast State 002H	Site Type	Flowline
Date Release Discovered	October 29, 2022	API# (if applicable)	

Unit Letter	Section	Township	Range	County
A	29	26S	32E	Lea

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

Nature and Volume of Release

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

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input checked="" type="checkbox"/> Produced Water	Volume Released (bbls) .24	Volume Recovered (bbls) 0
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input checked="" type="checkbox"/> Natural Gas	Volume Released (Mcf) 2	Volume Recovered (Mcf) 0
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

The release was caused by a hole in flowline due to corrosion.
The release was off the pad. Evaluation will be made at the site to determine if we may commence remediation immediately or delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

Was this a major release as defined by 19.15.29.7(A) NMAC? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	


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

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

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

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

Printed Name: Brittany N. Esparza Title: Environmental Technician

Signature:  Date: 11/7/2022

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

Received by: Jocelyn Harimon Date: 11/07/2022

Spill Calculation - Subsurface Spill - Rectangle								NAPP2231148750	Remediation Recommendation	
Convert Irregular shape into a series of rectangles	Length (ft.)	Width (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% (yd³.)	Current Rule of Thumb - RMR Handover Volume, (yd³.)
Rectangle A	12.0	36.0	0.3	Off-Pad✓	15.02%	1.60	0.24		0.42	750
Rectangle B				On-Pad✓	10.50%	0.00	0.00		0.00	
Rectangle C				On-Pad✓	10.50%	0.00	0.00		0.00	
Rectangle D				✓		0.00			0.00	
Rectangle E				✓		0.00			0.00	
Rectangle F				✓		0.00			0.00	
Rectangle G				✓		0.00			0.00	
Rectangle H				✓		0.00			0.00	
Rectangle I				✓		0.00			0.00	
Rectangle J				✓		0.00			0.00	
Total Subsurface Volume Released:							0.24		0.42	BU

Received by OCD: 11/7/2022 1:34:48 PM

Released to Imaging: 11/7/2022 1:47:59 PM

Page 3 of 4

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

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

CONDITIONS

Action 156708

CONDITIONS

Operator: COG OPERATING LLC 600 W Illinois Ave Midland, TX 79701	OGRID: 229137
	Action Number: 156708
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jharimon	None	11/7/2022

Incident ID	NAPP2231148750
District RP	
Facility ID	fAPP2203457133
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?	<u>51-100</u> (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

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

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

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

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

Incident ID	NAPP2231148750
District RP	
Facility ID	fAPP2203457133
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: Charles Beauvais Title: Senior Environmental Engineer
Signature: *Charles R. Beauvais* Date: 3/14/2023
email: Charles.R.Beauvais@conocophillips.com Telephone: (575) 988-2043

OCD Only

Received by: Jocelyn Harimon Date: 03/15/2023

Incident ID	NAPP2231148750
District RP	
Facility ID	fAPP2203457133
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: Charles Beauvais Title: Senior Environmental Engineer
Signature: Charles R. Beauvais ?? Date: 3/14/2023
email: Charles.R.Beauvais@conocophillips.com Telephone: (575) 988-2043

OCD Only

Received by: Jocelyn Harimon Date: 03/15/2023

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: Jennifer Nobui Date: 03/22/2023
Printed Name: Jennifer Nobui Title: Environmental Specialist A



APPENDIX D

NMOCD Notifications

From: [Enviro, OCD, EMNRD](#)
To: [Hadlie Green](#)
Cc: [Bratcher, Michael, EMNRD](#); [Nobui, Jennifer, EMNRD](#)
Subject: RE: [EXTERNAL] ConocoPhillips Company - Sampling Notification (Week of 02/27/2023)
Date: Friday, February 24, 2023 2:45:13 PM
Attachments: [image005.jpg](#)
[image006.png](#)
[image007.png](#)
[image008.png](#)
[image009.png](#)

[**EXTERNAL EMAIL**]

Hadie,

Please be aware that notification requirements are **two business days**, per rule. You may proceed on your schedule. This, and all correspondence, should be included in the closure report to insure inclusion in the project file.

JH

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



From: Hadlie Green <hgreen@ensolum.com>
Sent: Friday, February 24, 2023 11:39 AM
To: Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>
Subject: [EXTERNAL] ConocoPhillips Company - Sampling Notification (Week of 02/27/2023)

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 February 27, 2023.

- Vast State 002H / NAPP2231148750
- Corvo Federal 4 CTB / NAPP2217430297

Thank you,



Hadlie Green

Staff Geologist

432-557-8895

hgreen@ensolum.com

Ensolum, LLC



District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
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811 S. First St., Artesia, NM 88210
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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 197145

CONDITIONS

Operator: COG OPERATING LLC 600 W Illinois Ave Midland, TX 79701	OGRID: 229137
	Action Number: 197145
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jnobui	Closure Report Approved.	3/22/2023