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	NAPP2214735696
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party XTO Energy	OGRID 5380
Contact Name Garrett Green	Contact Telephone 575-200-0729
Contact email garrett.green@exxonmobil.com	Incident # *(assigned by OCD)*
Contact mailing address 3104 E. Greene Street, Carlsbad, New Mexico, 88220	

Location of Release Source

Latitude 32.20968 Longitude -103.81491

(NAD 83 in decimal degrees to 5 decimal places)

Site Name PLU 18 Twin Wells Ranch 155H	Site Type Production Well
Date Release Discovered 05/15/2022	API# *(if applicable)*

Unit Letter	Section	Township	Range	County
B	19	24S	31E	Eddy

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

Nature and Volume of Release

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

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☒ Other (describe) Produced water w/FR	Volume/Weight Released (provide units) 8.00 BBLS	Volume/Weight Recovered (provide units) 7.00 BBLS

Cause of Release: During frac operations, equipment failure on fluid end of pump caused fluids to release into containment and onto pad. All free fluids were recovered. A third-party contractor has been retained for remediation purposes.

Form C-141
Page 2

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2214735696
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Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☒ No	If YES, for what reason(s) does the responsible party consider this a major release? N/A
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? N/A	

Initial Response

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

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

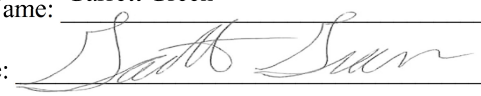
If all the actions described above have not been undertaken, explain why:

NA

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: Garrett Green Title: SSHE Coordinator

Signature:  Date: 05/27/2022

email: garrett.green@exxonmobil.com Telephone: 575-200-0729

OCD Only

Received by: Jocelyn Harimon Date: 05/27/2022

Location:	PLU 18 Twin Wells Ranch 155H	
Spill Date:	5/15/2022	

Area 1		
Approximate Area =	16.84	cu.ft.
VOLUME OF LEAK		
Total Crude Oil =	0.00	bbls
Total Produced Water =	3.00	bbls
Area 2		
Approximate Area =	2251.00	sq. ft.
Average Saturation (or depth) of spill =	1.00	inches

Average Porosity Factor =	0.03	

VOLUME OF LEAK		
Total Crude Oil =	0.00	bbls
Total Produced Water =	5.00	bbls

TOTAL VOLUME OF LEAK		
Total Crude Oil =	**0.00**	**bbls**
Total Produced Water =	**8.00**	**bbls**
TOTAL VOLUME RECOVERED		
Total Crude Oil =	**0.00**	**bbls**
Total Produced Water =	**7.00**	**bbls**

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2214735696
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?	> 100 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

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

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

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

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

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2214735696
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: _Garrett Green_____ Title: _Environmental Coordinator_____

Signature:_____ Date: ____09/20/2023_____

email: _garrett.green@exxonmobil.com_____ Telephone: ____575-200-0729_____

OCD Only

Received by: _____ Date: _____

Incident ID	NAPP2214735696
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: _Garrett Green_____ Title: _Environmental Coordinator_____

Signature: ____Scott Sun_____ Date: __9/20/2023_____

email: __garrett.green@exxonmobil.com_____ Telephone: ___575-200-0729_____

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: Scott Rodgers Date: 02/23/2024

Printed Name: Scott Rodgers Title: Environmental Specialist Adv.

ENSOLUM

September 20, 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
PLU 18 Twin Wells Ranch 155H
Incident Number NAPP2214735696
Eddy County, New Mexico

To Whom It May Concern:

Ensolum, LLC (Ensolum), on behalf of XTO Energy, Inc. (XTO), has prepared the following *Closure Request Addendum* to document depth to groundwater assessment for the PLU 18 Twin Wells Ranch 155H (Site, Figure 1) following a denial of the previous *Closure Request*, submitted on August 12, 2022 (Appendix A). The New Mexico Oil Conservation Division (NMOCD) denied the *Closure Request* based on absence of a water well within ½-mile of the release or would require the use of the strictest Closure Criteria for remediation purposes. A depth to water boring was installed and the following *Closure Request Addendum* details the observations and findings of the groundwater assessment and requests closure for Incident Number NAPP2214735696.

SITE DESCRIPTION AND CLOSURE REQUEST SUMMARY

The Site is located in Unit B, Section 19, Township 24 South, Range 31 East, in Eddy County, New Mexico (32.20968°, -103.81491°) and is associated with oil and gas exploration and production operations on federal land managed by the Bureau of Land Management (BLM).

On May 15, 2022, equipment failure of a pump resulted in the release of approximately 8 barrels (bbls) of produced water treated with friction reducer. A vacuum truck was immediately dispatched to the Site to recover free-standing fluids; approximately 7 bbls of fluid were recovered. XTO reported the release to the NMOCD and submitted a Form C-141 on May 27, 2022. The release was assigned Incident NAPP2214735696.

Based on the results of the August 2022 Site Characterization, the following NMOCD Table I Closure Criteria (Closure Criteria) were applied:

- 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
- TPH: 2,500 mg/kg

- Chloride: 10,000 mg/kg

Site assessment and excavation activities were conducted at the Site between June and July 2022 to address the May 15, 2022 release of produced water with friction reducer. Laboratory analytical results for the excavation soil samples, collected from the final excavation extent, indicated benzene, BTEX, TPH-GRO/TPH-DRO, TPH, and chloride concentrations were compliant with the Site Closure.

NMOCD denied the Closure Request on September 30, 2022 based on 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 the depth to groundwater. Confirmation samples should be delineated to 600 mg/kg for chlorides and 100 mg/kg TPH to define the edge of the release laterally. Please resubmit a revised Closure Report by October 31, 2022.*

DEPTH TO GROUNDWATER ASSESSMENT

Based on the *Closure Request* denial, a depth to groundwater boring was advanced on August 7, 2023. Soil boring BH01 was advanced approximately 0.20 miles from the release (Figure 1) utilizing an air rotary drill rig. Boring BH01 was completed to 110 feet below ground surface (bgs). The field geologist observed drill cuttings for indications of saturated soils indicative of groundwater conditions as well as documented the lithology on a Lithologic / Soil Sampling Log, which is provided in Appendix B. Field observations did not indicated groundwater was present throughout the 110-foot soil column.

Following completion of drilling activities, the boring was allowed to sit for at least 72 hours to allow slow infill of groundwater, if present, to enter the boring. Observations of boring BH01 following the 72-hour wait period confirmed the absence of groundwater, indicating groundwater beneath the Site is greater than 110 feet bgs.

CLOSURE REQUEST

Site assessment and excavation activities were conducted at the Site to address the May 2022 release of produced water with friction reducer utilizing the Closure Criteria for sites with no sensitive receptors and an estimated depth to groundwater between 51 feet and 100 feet bgs. The August 2022 *Closure Request* was denied by NMOCD for not adequately assessing depth to groundwater beneath the Site. A depth to groundwater boring was advanced to assess groundwater beneath the Site, which indicated groundwater beneath the Site is actually greater than 110 feet bgs. This follow-up assessment appears to have reasonably estimated depth to groundwater and confirms remedial actions completed at the Site utilizing the Site-specific Closure Criteria were appropriate and protective of human health, the environment, and groundwater. As such, XTO respectfully requests closure for Incident Number NAPP2214735696.

If you have any questions or comments, please contact Ms. Tacoma Morrissey at (337) 257-8307 or tmorrissey@ensolum.com.

Sincerely,
Ensolum, LLC

Daniel R. Moir, PG
Senior Managing Geologist

Ashley L. Ager, M.S., PG
Principal

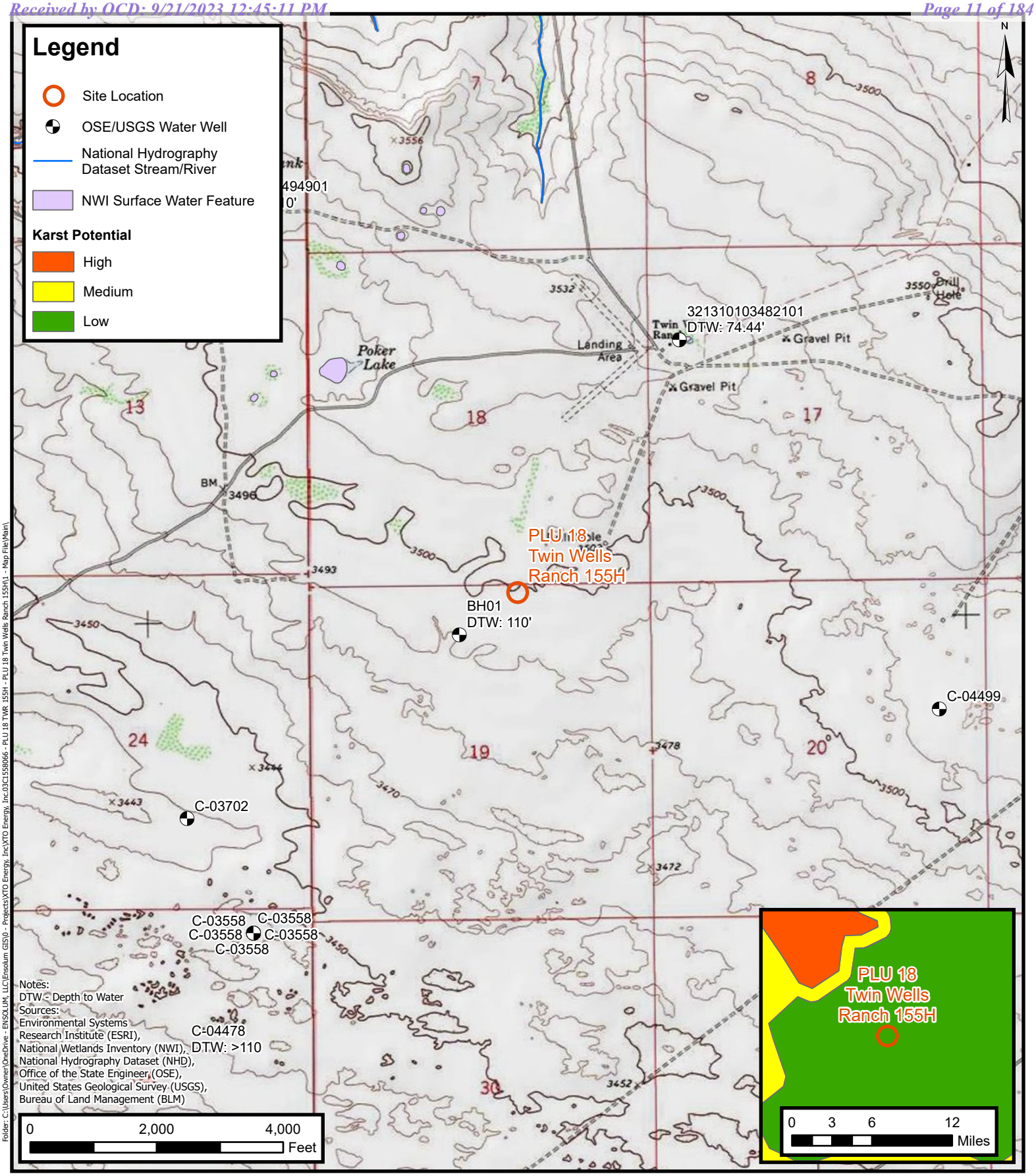
cc: Garrett Green, XTO
Tommee Lambert, XTO
Bureau of Land Management

Appendices:

Figure 1	Site Receptor Map
Appendix A	Closure Request, dated August 12, 2022
Appendix B	Lithologic / Soil Sampling Log

ENSOLUM

Figure



ENSOLUM
Environmental, Engineering and Hydrogeologic Consultants

Site Receptor Map

XTO Energy, Inc.
PLU 18 Twin Wells Ranch 155H
Incident Number: NAPP2214735696
Unit B, Section 19, Township 24 South, Range 31 East
Eddy County, New Mexico

FIGURE 1

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APPENDIX A

Closure Request, dated August 12, 2022

August 12, 2022

District II
New Mexico Oil Conservation Division
811 S. First Street
Artesia, New Mexico 88210

Re: Closure Request
PLU 18 Twin Wells Ranch 155H
Incident Number NAPP2214735696
Eddy County, New Mexico

To Whom It May Concern:

Ensolum, LLC (Ensolum), on behalf of XTO Energy, Inc. (XTO), has prepared the following Closure Request to document excavation and soil sampling activities completed to address impacted soil at the PLU 18 Twin Wells Ranch 155H (Site). Soil was impacted by a release of produced water and friction reducer onto the surface of the well pad. Based on the excavation activities and analytical results from the soil sampling events, XTO is submitting this Closure Request, describing remediation that has occurred and requesting closure for Incident Number NAPP2214735696.

SITE DESCRIPTION AND RELEASE SUMMARY

The Site is located in Unit B, Section 19, Township 24 South, Range 31 East, in Eddy County, New Mexico (32.20968° N, 103.81491° W) and is associated with oil and gas exploration and production operations on federal land managed by the Bureau of Land Management (BLM).

On May 15, 2022, equipment failure of a pump resulted in the release of approximately 8 barrels (bbls) of produced water treated with friction reducer. A vacuum truck was immediately dispatched to the Site to recover free-standing fluids; approximately 7 bbls of fluid were recovered. XTO reported the release to the NMOCD and submitted a Form C-141 on May 27, 2022. The release was assigned Incident Number NAPP2214735696.

The friction reducer is mixed with the produced water and used as frac fluid during the well completion process. The safety data sheet (SDS) for the friction reducer is provided as an attachment.

SITE CHARATERIZATION AND CLOSURE CRITERIA

The Site was characterized according to Table 1, Closure Criteria for Soils Impacted by a Release, of Title 19, Chapter 15, Part 29, Section 12 (19.15.29.12) 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 50 feet below ground surface (bgs) and 100 feet bgs based on the nearest groundwater well data. The nearest groundwater well is United States

Geological Survey (USGS) well 321310103482101, located approximately 0.8 miles northeast of the Site. The depth to groundwater in the well, 74 feet bgs, was most recently measured in 2013. In addition, New Mexico Office of the State Engineer documents three wells, C-4483, C-4499, and C-4478, located approximately 1 mile to 1.5 miles to the west, east, and south of the Site, respectively, all indicating regional depth to groundwater is greater that 100 feet bgs. Multiple data point exist around the Site and there are no surface features indicative of the presence of shallow groundwater. All wells used for depth to water determination are depicted on Figure 1 and the referenced well records are included in Appendix A.

The closest continuously flowing or significant watercourse to the Site is Poker Lake approximately 4,360 feet northwest 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 1 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
- TPH: 2,500 mg/kg
- Chloride: 10,000 mg/kg

SITE ASSESSMENT AND SAMPLING ACTIVITIES

On June 30, 2022 and July 21, 2022, Ensolum personnel visited the Site to evaluate the release extent based on information provided on the Form C-141 and visual observations. Seven preliminary soil samples (SS01 through SS07) were collected within and around the release extent from a depth of 0.5 feet bgs to assess the lateral exent of the release. The preliminary soil samples were field screened for volatile organic compounds (VOCs) utilizing a calibrated photoionization detector (PID) and chloride Hach® chloride QuanTab® test strips. The release extent and preliminary soil sample locations were mapped utilizing a handheld Global Positioning System (GPS) unit and are depicted on Figure 2. Photographic documentation was completed during the site visit and a photographic log is included in Appendix B.

The preliminary 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 at or below 4 degrees Celsius (°C) under strict chain-of-custody (COC) procedures to Eurofins Laboratories (Eurofins) in Carlsbad, New Mexico, for analysis of 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 preliminary soil samples SS01 and SS02, collected within the release extent indicated that TPH-GRO/TPH-DRO and/or TPH concentrations exceeded the Closure Criteria. Laboratory analytical results for preliminary soil samples SS04 through SS07, collected around the release extent, indicated that benzene, BTEX, TPH-GRO/TPH-DRO and TPH, and chloride concentrations were compliant with the strictest Table 1 Closure Criteria, and confirmed the lateral extent of the release. Laboratory analytical results are summarized on Table 1 and the complete laboratory

analytical reports are included in Appendix C. Based on the laboratory analytical results, additional remediation activities were warranted.

EXCAVATION SOIL SAMPLING ACTIVITIES AND ANALYTICAL RESULTS

On July 21, 2022, Ensolum personnel returned to the Site to oversee excavation activites. Impacted soil was excavated from the release area as indicated by visible staining and laboratory analytical results for the preliminary soil samples. Excavation activities were performed using track-mounted backhoe and transport vehicle. To direct excavation activities, soil was screened for volatile aromatic hydrocarbons and chloride utilizing a PID and Hach® chloride QuanTab® test strips, respectively. The excavation was completed to a depth of 1.5 feet bgs. Photographic documentation of the excavation activities is included in Appendix B.

Following removal of the impacted soil, 5-point composite soil samples were collected at least every 200 square feet from the floor of the excavation. The 5-point composite samples were collected by placing five equivalent aliquots of soil into a 1-gallon, resealable plastic bag and homogenizing the samples by thoroughly mixing. Composite soil samples FS01 through FS05 were collected from the floor of the excavation from depths ranging from 1-foot bgs to 1.5 feet bgs. Because the excavation was shallow, the floor sample composite samples included aliquots collected from the nearby sidewalls. The soil samples were collected, handled, and analyzed following the same procedures as described above. The excavation extent and excavation soil sample locations are presented on Figure 3.

The excavation area measured approximately 955 square feet. A total of approximately 55 cubic yards of impacted soil were removed during the excavation activities. The impacted soil was transported and properly disposed of at the R360 Facility in Carlsbad, New Mexico.

Laboratory analytical results for excavation floor samples FS01 through FS20 indicated that benzene, BTEX, TPH-GRO/TPH-DRO, TPH, and chloride concentrations were compliant with the Closure Criteria and no further remediation was required. The laboratory analytical results are summarized on Table 1 and the complete laboratory analytical reports are included in Appendix C.

CLOSURE REQUEST

Site assessment and excavation activities were conducted at the Site to address the May 15, 2022 release of produced water with friction reducer. Laboratory analytical results for the excavation soil samples, collected from the final excavation extent, indicated benzene, BTEX, TPH-GRO/TPH-DRO, TPH, and chloride concentrations were compliant with the Site Closure. Based on the soil sample laboratory analytical results, no further remediation is required. XTO will backfill the excavation with material purchased locally and recontour the Site to match pre-existing site conditions. As such, XTO respectfully requests closure for Incident Number NAPP2214735696.

If you have any questions or comments, please contact Ms. Tacoma Morrissey at (337) 257-8307 or tmorrissey@ensolum.com.

Sincerely,
Ensolum, LLC

Tacoma Morrissey
Senior Geologist

Ashley L. Ager, M.S., P.G.
Program Director

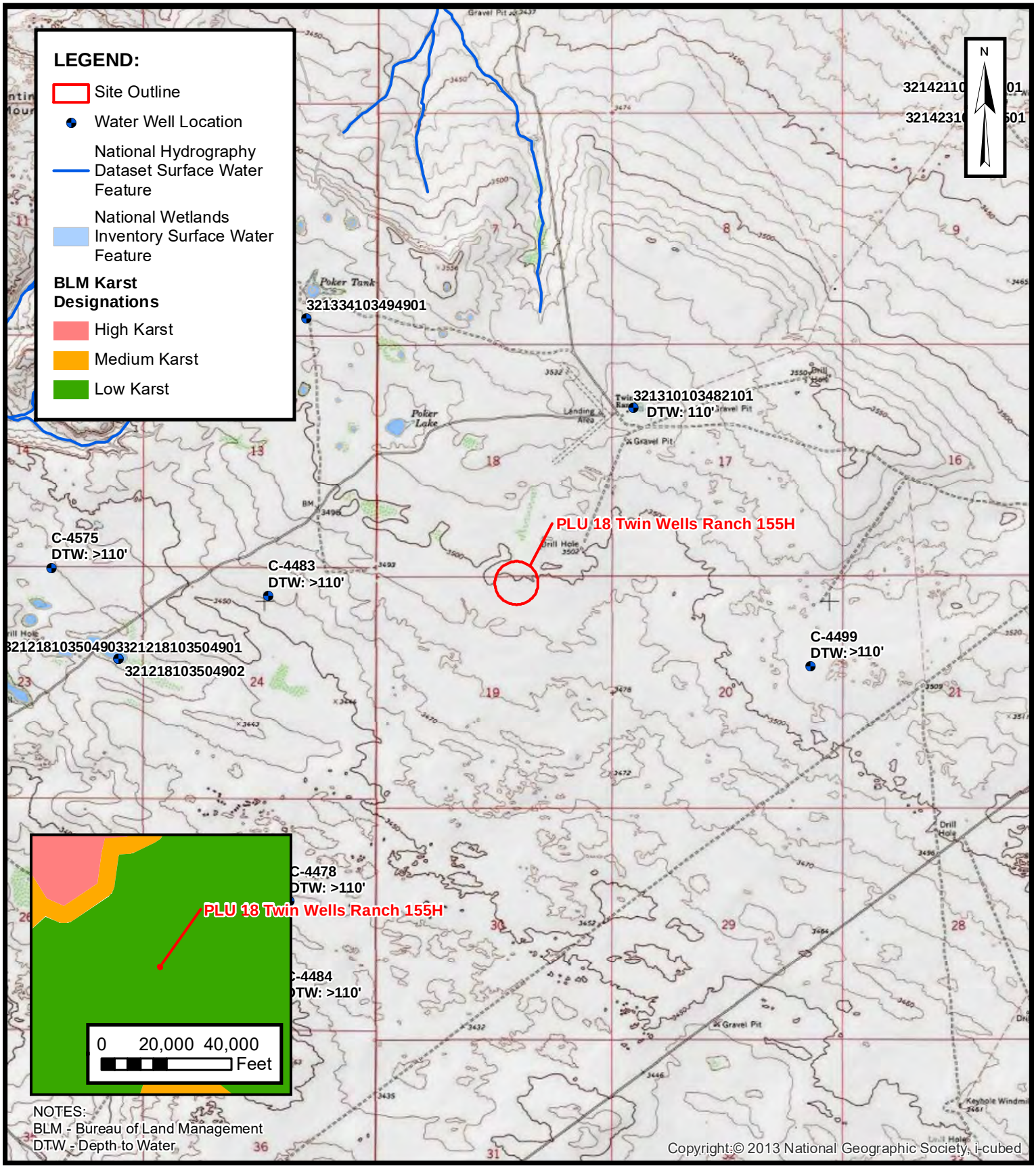
cc: Garrett Green, XTO
Shelby Pennington, XTO
Bureau of Land Management

Appendices:

Figure 1	Site Receptor Map
Figure 2	Preliminary Soil Sample Locations
Figure 3	Excavation Soil Sample Locations
Table 1	Soil Sample Analytical Results
Appendix A	Referenced Well Records
Appendix B	Photographic Log
Appendix C	Laboratory Analytical Reports & Chain-of-Custody Documentation
Appendix D	NMOCD Notifications
Appendix E	Safety Data Sheet for Friction Reducer

ENSOLUM

FIGURES



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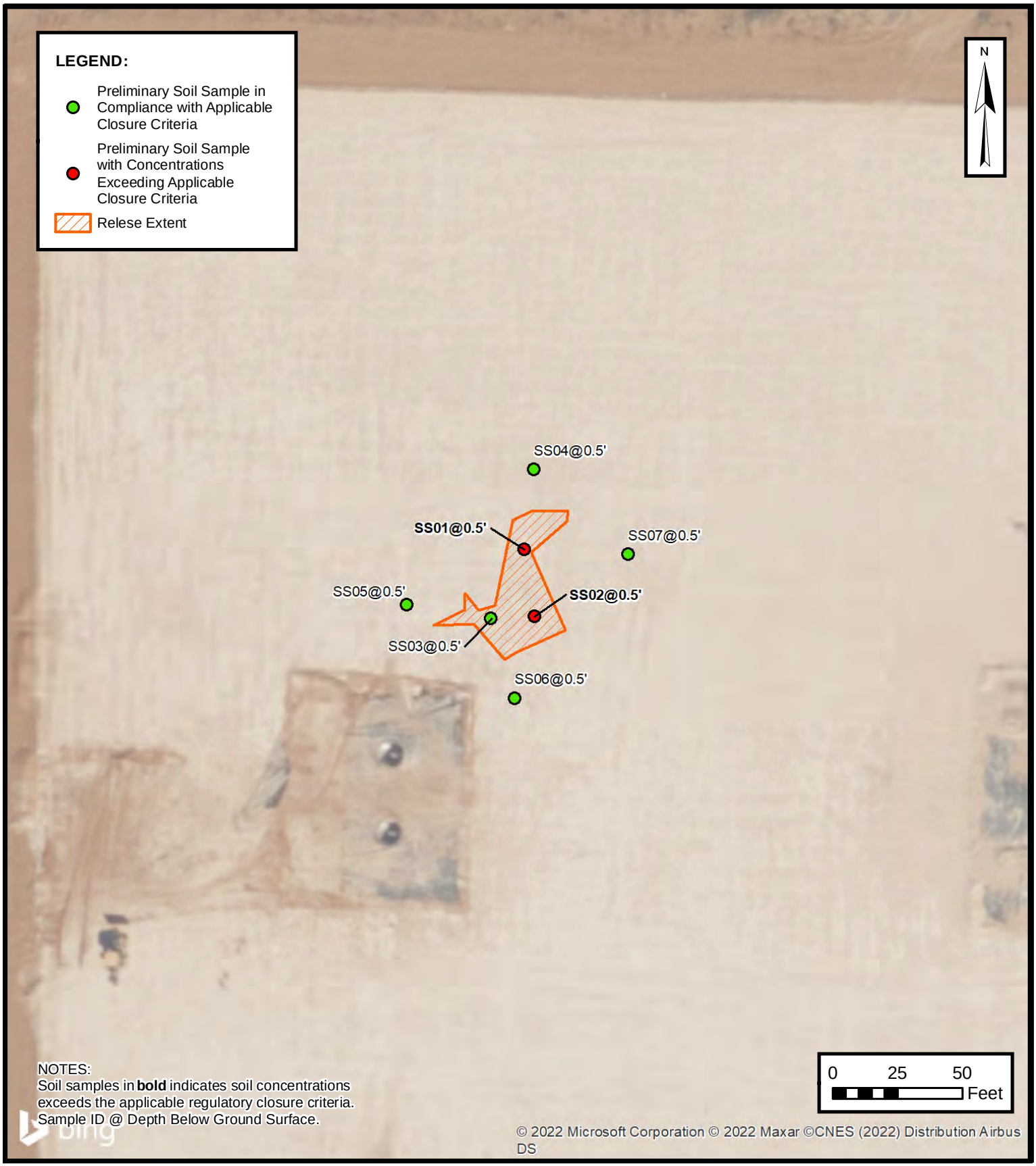
Environmental & Hydrogeologic Consultants

SITE RECEPTOR MAP

XTO ENERGY, INC
PLU 18 TWIN WELLS RANCH 155H
NAPP2214735696
Unit B, Section 19, Township 24S, Range 31E
Eddy County, New Mexico

FIGURE
1

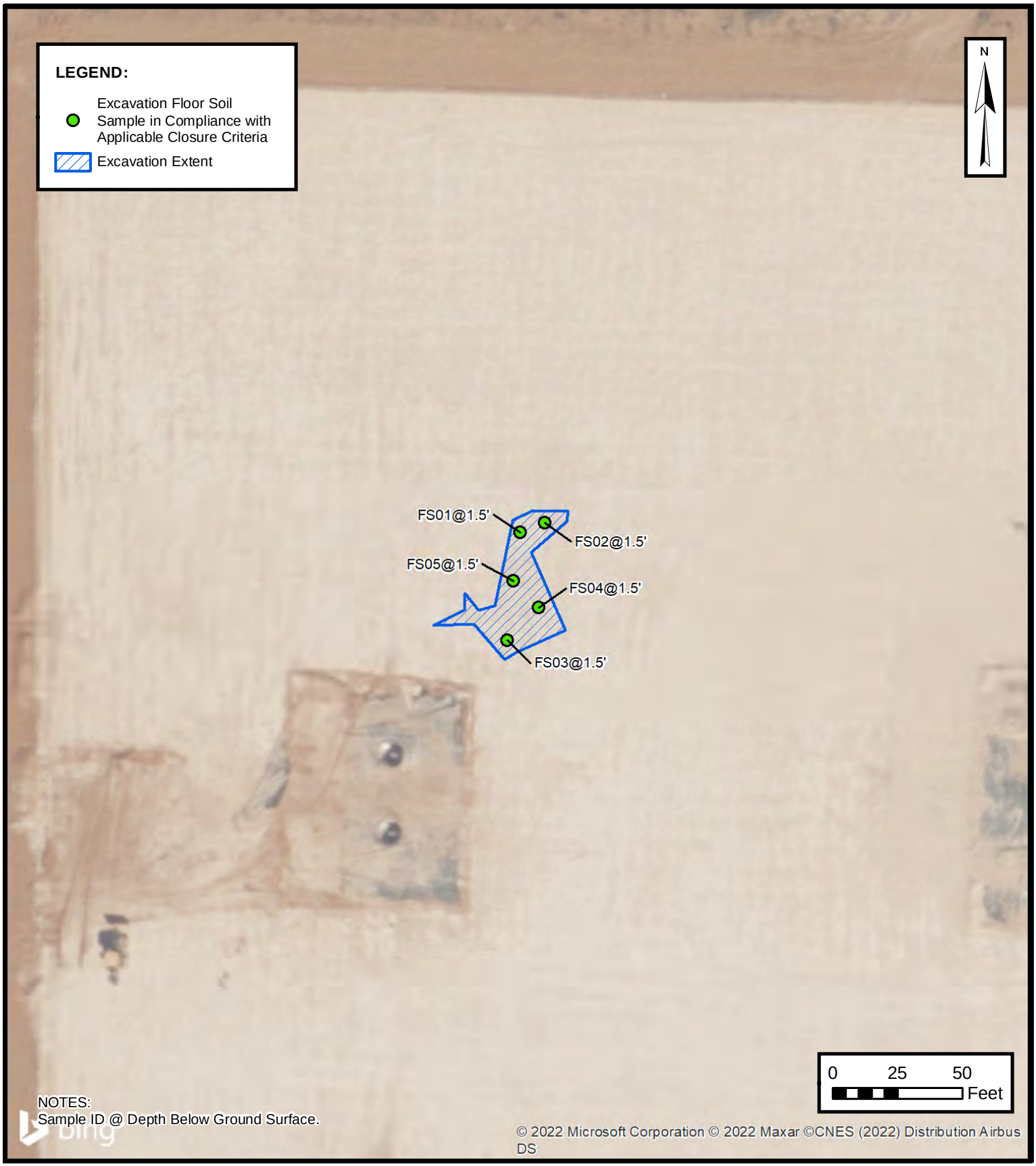


ENSOLUM
Environmental & Hydrogeologic Consultants

PRELIMINARY SOIL SAMPLE LOCATIONS

XTO ENERGY, INC
PLU 18 TWIN WELLS RANCH 155H
NAPP2214735696
Unit B, Section 19, Township 24S, Range 31E
Eddy County, New Mexico

FIGURE
2



ENSOLUM
Environmental & Hydrogeologic Consultants

EXCAVATION SOIL SAMPLE LOCATIONS

XTO ENERGY, INC
PLU 18 TWIN WELLS RANCH 155H
NAPP2214735696
Unit B, Section 19, Township 24S, Range 31E
Eddy County, New Mexico

FIGURE
3

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TABLES

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TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
PLU 18 Twin Wells Ranch 155H
XTO Energy, Inc.
Eddy 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 1 Closure Criteria (NMAC 19.15.29)			10	50	NE	NE	NE	1,000	2,500	10,000
Preliminary Soil Samples										
SS01	06/30/2022	0.5	0.0205	4.42	62.4	1,010	2,610	**1,070**	**3,680**	343
SS02	06/30/2022	0.5	<0.0202	<0.0404	121	787	4,340	908	**5,250**	3,240
SS03	06/30/2022	0.5	<0.00200	<0.00400	119	22.8	88.5	142	230	1,410
SS04	07/21/2022	0.5	<0.00200	<0.00399	<49.8	<49.8	<49.8	<49.8	<49.8	79.4
SS05	07/21/2022	0.5	<0.00199	<0.00398	<50.0	<50.0	<50.0	<50.0	<50.0	179
SS06	07/21/2022	0.5	<0.00202	<0.00404	<50.0	<50.0	<50.0	<50.0	<50.0	55.5
SS07	07/21/2022	0.5	<0.00200	<0.00399	<49.9	<49.9	84.0	<49.9	84.0	167
Excavation Floor Soil Samples										
FS01	07/21/2022	1.5	<0.00200	<0.00399	<49.9	<49.9	173	<49.9	173	11.0
FS02	07/21/2022	1.5	<0.00198	<0.00397	<49.9	<49.9	144	<49.9	144	34.0
FS03	07/21/2022	1.5	<0.00199	<0.00398	<50.0	<50.0	123	<50.0	123	15.8
FS04	07/21/2022	1.5	<0.00199	<0.00398	<50.0	<50.0	106	<50.0	106	30.3
FS05	07/21/2022	1.5	<0.00200	<0.00399	<50.0	<50.0	92.3	<50.0	92.3	38.0

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 1 Closure Criteria or reclamation standard where applicable.

GRO: Gasoline Range Organics
DRO: Diesel Range Organics
ORO: Oil Range Organics
TPH: Total Petroleum Hydrocarbon

ENSOLUM

APPENDIX A

Referenced Well Records

National Water Information System: Web Interface

USGS Water Resources

Data Category: Groundwater | Geographic Area: United States | GO

Click to hideNews Bulletins

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

Groundwater levels for the Nation

Important: Next Generation Monitoring Location Page

Search Results -- 1 sites found

site_no list =

- 321310103482101

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

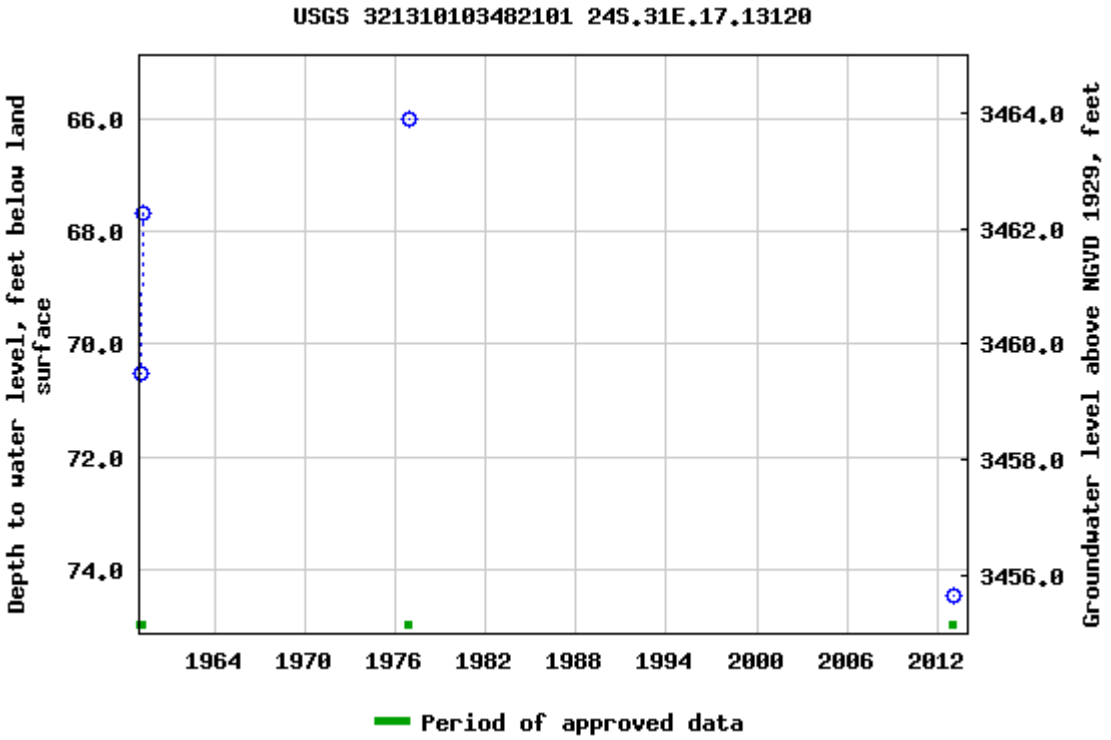
USGS 321310103482101 24S.31E.17.13120

Available data for this site | Groundwater: Field measurements | GO

Eddy County, New Mexico
Hydrologic Unit Code 13060011
Latitude 32°13'14.1", Longitude 103°48'23.4" NAD83
Land-surface elevation 3,530.00 feet above NGVD29
This well is completed in the Other aquifers (N9999OTHER) national aquifer.
This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.

Output formats

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



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

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

Title: Groundwater for USA: Water Levels
URL: https://nwis.waterdata.usgs.gov/nwis/gwlevels?

Page Contact Information: USGS Water Data Support Team
Page Last Modified: 2022-06-28 17:03:47 EDT
0.69 0.49 nadww01

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD1 (BH-01)	n/a	C-4483

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

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
6401 Holiday Hill Dr.	Midland	TX	79707

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32°	12'	31.77"	N
	LONGITUDE	-104°	50'	0.72"	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

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

NW NW NE Sec. 24 T24S R30E

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1249	Jackie D. Atkins	Atkins Engineering Associates, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
11/24/2020	11/24/2020	temporary well material	110	n/a

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): n/a

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

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

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0	110	±8.5	Boring- HSA	--	--	--	--

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
				OSE DII DEC 17 2020 PM3:29	

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/30/17)

FILE NO. C-4483	POD NO. 1	TRN NO. 679344	
LOCATION 23 T24S R30E Sec 24		WELL TAG ID NO. NA	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	24	24	Sand, Fine-grained,poorly-graded, with caliche, Tan-Off-White	Y ✓ N	
24	34	10	Sand, Fine-grained,poorly-graded, silty, with caliche gravel, Tan-Off-White	Y ✓ N	
34	51	17	Sand, Fine-grained,poorly-graded, silty, with caliche gravel, Light Brown	Y ✓ N	
51	54	3	Sand, Fine-grained,poorly-graded, silty, with caliche gravel, Light Brown-Brown	Y ✓ N	
54	76	22	Sand, Fine-grained,poorly-graded, Brown, dry	Y ✓ N	
76	101	25	Sand, Fine-grained,poorly-graded, Light-Brown, dry	Y ✓ N	
101	110	9	Sand, Fine-grained,poorly-graded, with gravel, Light-Brown, dry-moist	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

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

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST: TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION: Temporary well materials removed and the soil boring backfilled using drill cuttings from total depth to ten feet below ground surface, then hydrated bentonite chips from ten feet below ground surface to surface. Logs adapted from LTE on-site geologist.

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Shane Eldridge

6. SIGNATURE

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

Jack Atkins — Jackie D. Atkins — 12/14/20

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

OSE DII DEC 17 2020 PM 3:29

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/30/2017)

FILE NO. C-4483	POD NO. 1	TRN NO. 629544	
LOCATION 12 3 T24S R30E Sec 24		WELL TAG ID NO. N/A	PAGE 2 OF 2

John R. D Antonio, Jr., P.E.
State Engineer

Roswell Office
1900 WEST SECOND STREET
ROSWELL, NM 88201

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

Trn Nbr: 679344
File Nbr: C 04483
Well File Nbr: C 04483 POD1

Jan. 22, 2021

TACOMA MORRISSEY
LT ENVIRONMENTAL INC
508 WEST STEVENS
CARLSBAD, NM 88220

Greetings:

The above numbered permit was issued in your name on 09/29/2020.

The Well Record was received in this office on 12/17/2020, stating that it had been completed on 11/24/2020, and was a dry well. The well is to be plugged according to 19.27.4.30 NMAC.

Please note that another well can be drilled under this permit if the well is completed and the well log filed on or before 09/29/2021.

If you have any questions, please feel free to contact us.

Sincerely,

Andrew Dennis
(575)622-6521

drywell

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD1 (MW-1)	n/a	C-4499

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

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
6401 Holiday Hill Dr.	Midland	TX	79707

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32°	12'	15.89"	N
	LONGITUDE	-103°	47'	36.29"	W

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

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

SE NE Sec. 20 T24S R31E

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1249	Jackie D. Atkins	Atkins Engineering Associates, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
12/30/2020	12/30/2020	temporary well material	110	n/a

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): n/a

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

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

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0	110	±8.5	Boring- HSA	--	--	--	--

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/30/17)

FILE NO. C-4499	POD NO. 1	TRN NO. 682532	
LOCATION 24S.31E.20.243		WELL TAG ID NO. —	PAGE 1 OF 2

OSE DII JAN 27 2021 PM3:34

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	6	6	SAND, well graded, fine-to-large grain particles red-brown, dry	~~Y~~ ✓ N	
6	8	2	SAND, poorly graded, fine grained little clay mod. plasitcity, red-brown, moist	Y ✓ N	
8	11	3	CALICHE, mod. consolidated, some sand, medium /fine grain, white-tan, dry	Y ✓ N	
11	46	35	CALICHE, mod. consolidated, some sand, medium to fine grain, white-tan, dry.	Y ✓ N	
46	74	28	SAND, well-graded, medium grain,caliche gravel (1-4mm), light brown, dry.	Y ✓ N	
74	110	36	SAND, well-graded, fine/large grain, few clay, cohesive, red-brown, dry	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

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

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST: TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION: Temporary well materials removed and the soil boring backfilled using drill cuttings from total depth to ten feet below ground surface, then hydrated bentonite chips from ten feet below ground surface to surface. Logs adapted from WSP on-site geologist.

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Shane Eldridge

6. SIGNATURE

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

Jack Atkins — Jackie D. Atkins — 01/15/2021

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/30/2017)

FILE NO. C-4499	POD NO. 1	TRN NO. 682532
LOCATION	WELL TAG ID NO.	PAGE 2 OF 2

OSE DIT JAN 27 2021 PM3:34

2021-1-15_C-4499_POD1_OSE_Well Record and Log_plu129-forsign

Final Audit Report 2021-01-15

Created:	2021-01-15
By:	Lucas Middleton (lucas@atkinseng.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAAgs296c366oCIfIrLCiy9WDKJlrUnq-9u

"2021-1-15_C-4499_POD1_OSE_Well Record and Log_plu129-forsign" History

Document created by Lucas Middleton (lucas@atkinseng.com)
2021-01-15 - 8:45:00 PM GMT- IP address: 69.21.248.123

Document emailed to Jack Atkins (jack@atkinseng.com) for signature
2021-01-15 - 8:45:35 PM GMT

Email viewed by Jack Atkins (jack@atkinseng.com)
2021-01-15 - 9:05:13 PM GMT- IP address: 74.50.153.115

Document e-signed by Jack Atkins (jack@atkinseng.com)
Signature Date: 2021-01-15 - 9:13:18 PM GMT - Time Source: server- IP address: 74.50.153.115

Agreement completed.
2021-01-15 - 9:13:18 PM GMT

OSE DIT JAN 27 2021 PM3:34

Adobe Sign

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

2020 OCT 22 PM 1:03

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD1 (BH-01)	n/a	C-4478

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

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
6401 Holiday Hill Dr.	Midland	TX	79707

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32°	11'	22.57"	N
LONGITUDE	-103°	49'	56.14"	W

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

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

SW SE NE Sec. 25 T24S R30E

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1249	Jackie D. Atkins	Atkins Engineering Associates, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
10/07/2020	10/07/2020	temporary well material	110	n/a

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): n/a

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

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

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0	110	±8.5	Boring- HSA	--	--	--	--

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/30/17)

FILE NO. C-4478	POD NO. 1	TRN NO. 678382	
LOCATION 24S.30E.25 23.3		WELL TAG ID NO. NA	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	3	3	Sand, fine-grained, poorly-graded , Red-Brown	Y ✓ N	
3	5	2	Gravel, 20-30 mil, well graded, little clay	Y ✓ N	
5	13	8	Caliche with some gravel (5-20 mil.) Tan/ Brown	Y ✓ N	
13	24	9	Sand, fine-grained, well-graded some silt, Tan/ Red	Y ✓ N	
24	34	10	Sand, Medium-grained, well-graded some silt, Tan/ Red	Y ✓ N	
34	44	10	Sand, Large-grained, well-graded some silt, Dark Brown	Y ✓ N	
44	110	66	Sand, fine-grained, well-graded, some clay, moist, caliche fragments Red/Brown	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

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

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST: TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION: Temporary well materials removed and the soil boring backfilled using drill cuttings from total depth to ten feet below ground surface, then hydrated bentonite chips from ten feet below ground surface to surface. Logs adapted from LTE on-site geologist.

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Shane Eldridge

6. SIGNATURE

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

Jack Atkins — Jackie D. Atkins — 10/26/2020

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/30/2017)

FILE NO. C-4478	POD NO. 1	TRN NO. 678382	
LOCATION 24S-30E-25 2-3-3		WELL TAG ID NO. NA	PAGE 2 OF 2

2020-10-26_C-4478POD1_OSE_Well Record and Log-89-forsign

Final Audit Report 2020-10-27

Created:	2020-10-27
By:	Lucas Middleton (lucas@atkinseng.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAAESGKFRG9AU3NcytvOCSRntC1Y-zTs43Y

"2020-10-26_C-4478POD1_OSE_Well Record and Log-89-forsign" History

Document created by Lucas Middleton (lucas@atkinseng.com)
2020-10-27 - 3:14:03 PM GMT- IP address: 69.21.248.123

Document emailed to Jack Atkins (jack@atkinseng.com) for signature
2020-10-27 - 3:14:17 PM GMT

Email viewed by Jack Atkins (jack@atkinseng.com)
2020-10-27 - 3:21:12 PM GMT- IP address: 74.50.153.115

Document e-signed by Jack Atkins (jack@atkinseng.com)
Signature Date: 2020-10-27 - 3:22:09 PM GMT - Time Source: server- IP address: 74.50.153.115

Agreement completed.
2020-10-27 - 3:22:09 PM GMT

Adobe Sign

ENSOLUM

APPENDIX B

Photographic Log

ENSOLUM

Photographic Log
XTO Energy, Inc.
PLU 18 Twin Wells Ranch 155H
NAPP2214735696

Photograph 1 Date: 05/16/2022

Description: View of staining observed during initial site assessment, facing east.

Photograph 2 Date: 05/16/2022

Description: View of staining observed during initial site assessment, facing south.

Photograph 3 Date: 08/11/2022

Description: Northwest view of final excavation.

Photograph 4 Date: 08/11/2022

Description: North view of final excavation.

ENSOLUM

APPENDIX C

Laboratory Analytical Reports &

Chain of Custody Documentation

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Carlsbad
1089 N Canal St.
Carlsbad, NM 88220
Tel: (575)988-3199

Laboratory Job ID: 890-2493-1
Laboratory Sample Delivery Group: 03E1558066
Client Project/Site: PLU 18 Twin Wells 155H

For:
Ensolum
705 W. Wadley
Suite 210
Midland, Texas 79701

Attn: Tacoma Morrissey

JKramer

Authorized for release by:
7/13/2022 3:12:59 PM

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

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Client: Ensolum
Project/Site: PLU 18 Twin Wells 155H

Laboratory Job ID: 890-2493-1
SDG: 03E1558066

Table of Contents

Definitions/Glossary

Client: Ensolum Job ID: 890-2493-1
Project/Site: PLU 18 Twin Wells 155H SDG: 03E1558066

Qualifiers

GC VOA

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

GC Semi VOA

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

HPLC/IC

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

Glossary

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

Case Narrative

Client: Ensolum
Project/Site: PLU 18 Twin Wells 155H

Job ID: 890-2493-1
SDG: 03E1558066

Job ID: 890-2493-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-2493-1

Receipt
The samples were received on 7/1/2022 9:06 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.6°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 method blank for preparation batch 880-28993 and analytical batch 880-29112 contained Gasoline Range Organics (GRO)-C6-C10 and Total TPH above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

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

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

Client Sample Results

Client: Ensolum
Project/Site: PLU 18 Twin Wells 155H

Job ID: 890-2493-1
SDG: 03E1558066

Client Sample ID: SS01

Lab Sample ID: 890-2493-1
Matrix: Solid
Date Collected: 06/30/22 10:00
Date Received: 07/01/22 09:06
Sample Depth: 0.5

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.0205**		0.0200		mg/Kg		07/12/22 14:57	07/13/22 13:09	10
Toluene	<0.0998	U	0.0998		mg/Kg		07/11/22 11:47	07/12/22 15:03	50
Ethylbenzene	<0.0998	U	0.0998		mg/Kg		07/11/22 11:47	07/12/22 15:03	50
m-Xylene & p-Xylene	<0.0401	U	0.0401		mg/Kg		07/12/22 14:57	07/13/22 13:09	10
o-Xylene	**4.40**		0.0998		mg/Kg		07/11/22 11:47	07/12/22 15:03	50
Xylenes, Total	**4.40**		0.200		mg/Kg		07/11/22 11:47	07/12/22 15:03	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*	*07/11/22 11:47*	*07/12/22 15:03*	*50*
1,4-Difluorobenzene (Surr)	*71*		*70 - 130*	*07/11/22 11:47*	*07/12/22 15:03*	*50*

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	**4.42**		0.0998		mg/Kg			07/12/22 15:02	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**3680**		49.8	14.9	mg/Kg			07/07/22 09:01	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	**62.4**	**B**	49.8	14.9	mg/Kg		07/05/22 08:59	07/07/22 07:17	1
Diesel Range Organics (Over C10-C28)	**1010**		49.8	14.9	mg/Kg		07/05/22 08:59	07/07/22 07:17	1
Oil Range Organics (Over C28-C36)	**2610**		49.8	14.9	mg/Kg		07/05/22 08:59	07/07/22 07:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*96*		*70 - 130*	*07/05/22 08:59*	*07/07/22 07:17*	*1*
o-Terphenyl	*87*		*70 - 130*	*07/05/22 08:59*	*07/07/22 07:17*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**343**		4.95		mg/Kg			07/08/22 11:48	1

Client Sample ID: SS02

Lab Sample ID: 890-2493-2
Matrix: Solid
Date Collected: 06/30/22 10:05
Date Received: 07/01/22 09:06
Sample Depth: 0.5

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.0202	U	0.0202		mg/Kg		07/12/22 14:57	07/13/22 13:29	10
Toluene	<0.0202	U	0.0202		mg/Kg		07/12/22 14:57	07/13/22 13:29	10
Ethylbenzene	<0.0202	U	0.0202		mg/Kg		07/12/22 14:57	07/13/22 13:29	10
m-Xylene & p-Xylene	<0.0404	U	0.0404		mg/Kg		07/12/22 14:57	07/13/22 13:29	10
o-Xylene	<0.0202	U	0.0202		mg/Kg		07/12/22 14:57	07/13/22 13:29	10
Xylenes, Total	<0.0404	U	0.0404		mg/Kg		07/12/22 14:57	07/13/22 13:29	10

Client Sample Results

Client: Ensolum
Project/Site: PLU 18 Twin Wells 155H

Job ID: 890-2493-1
SDG: 03E1558066

Client Sample ID: SS02

Date Collected: 06/30/22 10:05
Date Received: 07/01/22 09:06
Sample Depth: 0.5

Lab Sample ID: 890-2493-2

Matrix: Solid

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*	*07/12/22 14:57*	*07/13/22 13:29*	*10*
1,4-Difluorobenzene (Surr)	*94*		*70 - 130*	*07/12/22 14:57*	*07/13/22 13:29*	*10*

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.0404	U	0.0404		mg/Kg			07/12/22 15:02	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**5250**		49.9	15.0	mg/Kg			07/07/22 09:01	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	**121**	**B**	49.9	15.0	mg/Kg		07/05/22 08:59	07/07/22 07:37	1
Diesel Range Organics (Over C10-C28)	**787**		49.9	15.0	mg/Kg		07/05/22 08:59	07/07/22 07:37	1
Oil Range Organics (Over C28-C36)	**4340**		49.9	15.0	mg/Kg		07/05/22 08:59	07/07/22 07:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	*98*		*70 - 130*	*07/05/22 08:59*	*07/07/22 07:37*	*1*
o-Terphenyl	*97*		*70 - 130*	*07/05/22 08:59*	*07/07/22 07:37*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**3240**		25.0		mg/Kg			07/08/22 11:57	5

Client Sample ID: SS03

Date Collected: 06/30/22 10:10
Date Received: 07/01/22 09:06
Sample Depth: 0.5

Lab Sample ID: 890-2493-3

Matrix: Solid

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/11/22 11:47	07/12/22 10:51	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/11/22 11:47	07/12/22 10:51	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/11/22 11:47	07/12/22 10:51	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		07/11/22 11:47	07/12/22 10:51	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/11/22 11:47	07/12/22 10:51	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		07/11/22 11:47	07/12/22 10:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*124*		*70 - 130*	*07/11/22 11:47*	*07/12/22 10:51*	*1*
1,4-Difluorobenzene (Surr)	*77*		*70 - 130*	*07/11/22 11:47*	*07/12/22 10:51*	*1*

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00400	U	0.00400		mg/Kg			07/12/22 15:02	1

Client Sample Results

Client: Ensolum
Project/Site: PLU 18 Twin Wells 155H

Job ID: 890-2493-1
SDG: 03E1558066

Client Sample ID: SS03

Date Collected: 06/30/22 10:10
Date Received: 07/01/22 09:06
Sample Depth: 0.5

Lab Sample ID: 890-2493-3

Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	230		50.0	15.0	mg/Kg			07/07/22 09:01	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	119	B	50.0	15.0	mg/Kg		07/05/22 08:59	07/06/22 17:15	1
Diesel Range Organics (Over C10-C28)	22.8	J	50.0	15.0	mg/Kg		07/05/22 08:59	07/06/22 17:15	1
Oil Range Organics (Over C28-C36)	88.5		50.0	15.0	mg/Kg		07/05/22 08:59	07/06/22 17:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*104*		*70 - 130*	*07/05/22 08:59*	*07/06/22 17:15*	*1*
o-Terphenyl	*111*		*70 - 130*	*07/05/22 08:59*	*07/06/22 17:15*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1410		25.2		mg/Kg			07/08/22 12:06	5

Surrogate Summary

Client: Ensolum
Project/Site: PLU 18 Twin Wells 155H

Job ID: 890-2493-1
SDG: 03E1558066

Method: 8021B - Volatile Organic Compounds (GC)

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

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	BFB1 (70-130)	DFBZ1 (70-130)
880-16527-A-1-D MS	Matrix Spike	97	95
880-16527-A-1-E MSD	Matrix Spike Duplicate	111	94
890-2491-A-3-E MS	Matrix Spike	121	84
890-2491-A-3-F MSD	Matrix Spike Duplicate	114	82
890-2493-1	SS01	103	71
890-2493-2	SS02	96	94
890-2493-3	SS03	124	77
LCS 880-29434/1-A	Lab Control Sample	120	89
LCS 880-29558/1-A	Lab Control Sample	100	100
LCSD 880-29434/2-A	Lab Control Sample Dup	125	85
LCSD 880-29558/2-A	Lab Control Sample Dup	99	101
MB 880-29368/5-A	Method Blank	81	80
MB 880-29434/5-A	Method Blank	86	79
MB 880-29558/5-A	Method Blank	96	99

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DFBZ = 1,4-Difluorobenzene (Surr)

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

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

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	1CO1 (70-130)	OTPH1 (70-130)
890-2489-A-1-A MS	Matrix Spike	120	110
890-2489-A-1-A MSD	Matrix Spike Duplicate	122	114
890-2493-1	SS01	96	87
890-2493-2	SS02	98	97
890-2493-3	SS03	104	111
LCS 880-28993/2-A	Lab Control Sample	103	100
LCSD 880-28993/3-A	Lab Control Sample Dup	107	102
MB 880-28993/1-A	Method Blank	113	130

Surrogate Legend

1CO = 1-Chlorooctane

OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 Twin Wells 155H

Job ID: 890-2493-1
SDG: 03E1558066

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-29368/5-A
Matrix: Solid
Analysis Batch: 29380

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 29368

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/10/22 14:09	07/11/22 11:51	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/10/22 14:09	07/11/22 11:51	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/10/22 14:09	07/11/22 11:51	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		07/10/22 14:09	07/11/22 11:51	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/10/22 14:09	07/11/22 11:51	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		07/10/22 14:09	07/11/22 11:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*81*		*70 - 130*	*07/10/22 14:09*	*07/11/22 11:51*	*1*
1,4-Difluorobenzene (Surr)	*80*		*70 - 130*	*07/10/22 14:09*	*07/11/22 11:51*	*1*

Lab Sample ID: MB 880-29434/5-A
Matrix: Solid
Analysis Batch: 29380

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 29434

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/11/22 11:47	07/12/22 03:37	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/11/22 11:47	07/12/22 03:37	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/11/22 11:47	07/12/22 03:37	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		07/11/22 11:47	07/12/22 03:37	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/11/22 11:47	07/12/22 03:37	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		07/11/22 11:47	07/12/22 03:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*70 - 130*	*07/11/22 11:47*	*07/12/22 03:37*	*1*
1,4-Difluorobenzene (Surr)	*79*		*70 - 130*	*07/11/22 11:47*	*07/12/22 03:37*	*1*

Lab Sample ID: LCS 880-29434/1-A
Matrix: Solid
Analysis Batch: 29380

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 29434

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.08859		mg/Kg		89	70 - 130		
Toluene			0.100	0.09338		mg/Kg		93	70 - 130		
Ethylbenzene			0.100	0.09925		mg/Kg		99	70 - 130		
m-Xylene & p-Xylene			0.200	0.1974		mg/Kg		99	70 - 130		
o-Xylene			0.100	0.1160		mg/Kg		116	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*120*		*70 - 130*
1,4-Difluorobenzene (Surr)	*89*		*70 - 130*

Lab Sample ID: LCSD 880-29434/2-A
Matrix: Solid
Analysis Batch: 29380

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 29434

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.08556		mg/Kg		86	70 - 130	3	35

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 Twin Wells 155H

Job ID: 890-2493-1
SDG: 03E1558066

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

Lab Sample ID: LCSD 880-29434/2-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 29380 — **Prep Batch: 29434**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Toluene			0.100	0.09204		mg/Kg		92	70 - 130	1	35
Ethylbenzene			0.100	0.09312		mg/Kg		93	70 - 130	6	35
m-Xylene & p-Xylene			0.200	0.1907		mg/Kg		95	70 - 130	3	35
o-Xylene			0.100	0.1058		mg/Kg		106	70 - 130	9	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*125*		*70 - 130*
1,4-Difluorobenzene (Surr)	*85*		*70 - 130*

Lab Sample ID: 890-2491-A-3-E MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 29380 — **Prep Batch: 29434**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	<0.00200	U	0.101	0.08093		mg/Kg		80	70 - 130
Toluene	<0.00200	U	0.101	0.08986		mg/Kg		89	70 - 130
Ethylbenzene	<0.00200	U	0.101	0.09249		mg/Kg		92	70 - 130
m-Xylene & p-Xylene	<0.00399	U	0.202	0.1874		mg/Kg		93	70 - 130
o-Xylene	<0.00200	U	0.101	0.1022		mg/Kg		101	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*121*		*70 - 130*
1,4-Difluorobenzene (Surr)	*84*		*70 - 130*

Lab Sample ID: 890-2491-A-3-F MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 29380 — **Prep Batch: 29434**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00200	U	0.100	0.08202		mg/Kg		82	70 - 130	1	35
Toluene	<0.00200	U	0.100	0.08618		mg/Kg		86	70 - 130	4	35
Ethylbenzene	<0.00200	U	0.100	0.09013		mg/Kg		90	70 - 130	3	35
m-Xylene & p-Xylene	<0.00399	U	0.200	0.1843		mg/Kg		92	70 - 130	2	35
o-Xylene	<0.00200	U	0.100	0.09839		mg/Kg		98	70 - 130	4	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*114*		*70 - 130*
1,4-Difluorobenzene (Surr)	*82*		*70 - 130*

Lab Sample ID: MB 880-29558/5-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 29611 — **Prep Batch: 29558**

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/12/22 14:57	07/13/22 10:58	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/12/22 14:57	07/13/22 10:58	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/12/22 14:57	07/13/22 10:58	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		07/12/22 14:57	07/13/22 10:58	1

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 Twin Wells 155H

Job ID: 890-2493-1
SDG: 03E1558066

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

Lab Sample ID: MB 880-29558/5-A
Matrix: Solid
Analysis Batch: 29611

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 29558

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/12/22 14:57	07/13/22 10:58	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		07/12/22 14:57	07/13/22 10:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*	*07/12/22 14:57*	*07/13/22 10:58*	*1*
1,4-Difluorobenzene (Surr)	*99*		*70 - 130*	*07/12/22 14:57*	*07/13/22 10:58*	*1*

Lab Sample ID: LCS 880-29558/1-A
Matrix: Solid
Analysis Batch: 29611

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 29558

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.09533		mg/Kg		95	70 - 130		
Toluene			0.100	0.09379		mg/Kg		94	70 - 130		
Ethylbenzene			0.100	0.09457		mg/Kg		95	70 - 130		
m-Xylene & p-Xylene			0.200	0.1987		mg/Kg		99	70 - 130		
o-Xylene			0.100	0.1053		mg/Kg		105	70 - 130		

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

Lab Sample ID: LCSD 880-29558/2-A
Matrix: Solid
Analysis Batch: 29611

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 29558

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.09955		mg/Kg		100	70 - 130	4	35
Toluene			0.100	0.09280		mg/Kg		93	70 - 130	1	35
Ethylbenzene			0.100	0.09166		mg/Kg		92	70 - 130	3	35
m-Xylene & p-Xylene			0.200	0.1919		mg/Kg		96	70 - 130	3	35
o-Xylene			0.100	0.1019		mg/Kg		102	70 - 130	3	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*
1,4-Difluorobenzene (Surr)	*101*		*70 - 130*

Lab Sample ID: 880-16527-A-1-D MS
Matrix: Solid
Analysis Batch: 29611

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 29558

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00199	U	0.0998	0.09311		mg/Kg		93	70 - 130		
Toluene	<0.00199	U	0.0998	0.09834		mg/Kg		97	70 - 130		
Ethylbenzene	<0.00199	U	0.0998	0.09857		mg/Kg		99	70 - 130		
m-Xylene & p-Xylene	0.0129		0.200	0.2078		mg/Kg		98	70 - 130		
o-Xylene	0.00546		0.0998	0.1077		mg/Kg		102	70 - 130		

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 Twin Wells 155H

Job ID: 890-2493-1
SDG: 03E1558066

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

Lab Sample ID: 880-16527-A-1-D MS
Matrix: Solid
Analysis Batch: 29611

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 29558

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*

Lab Sample ID: 880-16527-A-1-E MSD
Matrix: Solid
Analysis Batch: 29611

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 29558

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00199	U	0.100	0.09270		mg/Kg		92	70 - 130	0	35
Toluene	<0.00199	U	0.100	0.1017		mg/Kg		100	70 - 130	3	35
Ethylbenzene	<0.00199	U	0.100	0.1036		mg/Kg		103	70 - 130	5	35
m-Xylene & p-Xylene	0.0129		0.201	0.2212		mg/Kg		104	70 - 130	6	35
o-Xylene	0.00546		0.100	0.1174		mg/Kg		111	70 - 130	9	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*111*		*70 - 130*
1,4-Difluorobenzene (Surr)	*94*		*70 - 130*

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

Lab Sample ID: MB 880-28993/1-A
Matrix: Solid
Analysis Batch: 29112

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 28993

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	34.41	J	50.0	15.0	mg/Kg		07/05/22 08:59	07/06/22 10:39	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	15.0	mg/Kg		07/05/22 08:59	07/06/22 10:39	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0	15.0	mg/Kg		07/05/22 08:59	07/06/22 10:39	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	*113*		*70 - 130*	*07/05/22 08:59*	*07/06/22 10:39*	*1*
o-Terphenyl	*130*		*70 - 130*	*07/05/22 08:59*	*07/06/22 10:39*	*1*

Lab Sample ID: LCS 880-28993/2-A
Matrix: Solid
Analysis Batch: 29112

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 28993

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	919.7		mg/Kg		92	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	1066		mg/Kg		107	70 - 130		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1-Chlorooctane	*103*		*70 - 130*
o-Terphenyl	*100*		*70 - 130*

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 Twin Wells 155H

Job ID: 890-2493-1
SDG: 03E1558066

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

Lab Sample ID: LCSD 880-28993/3-A
Matrix: Solid
Analysis Batch: 29112

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 28993

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	955.0		mg/Kg		95	70 - 130	4	20
Diesel Range Organics (Over C10-C28)			1000	1048		mg/Kg		105	70 - 130	2	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1-Chlorooctane	*107*		*70 - 130*
o-Terphenyl	*102*		*70 - 130*

Lab Sample ID: 890-2489-A-1-A MS
Matrix: Solid
Analysis Batch: 29112

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 28993

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*120*		*70 - 130*
o-Terphenyl	*110*		*70 - 130*

Lab Sample ID: 890-2489-A-1-A MSD
Matrix: Solid
Analysis Batch: 29112

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 28993

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*122*		*70 - 130*
o-Terphenyl	*114*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-28997/1-A
Matrix: Solid
Analysis Batch: 29213

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			07/08/22 07:48	1

Lab Sample ID: LCS 880-28997/2-A
Matrix: Solid
Analysis Batch: 29213

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	243.8		mg/Kg		98	90 - 110		

Lab Sample ID: LCSD 880-28997/3-A
Matrix: Solid
Analysis Batch: 29213

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	244.3		mg/Kg		98	90 - 110	0	20

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 Twin Wells 155H

Job ID: 890-2493-1
SDG: 03E1558066

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 890-2491-A-4-F MS
Matrix: Solid
Analysis Batch: 29213

Client Sample ID: Matrix Spike
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	35.6		253	314.4		mg/Kg		110	90 - 110

Lab Sample ID: 890-2491-A-4-G MSD
Matrix: Solid
Analysis Batch: 29213

Client Sample ID: Matrix Spike Duplicate
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	35.6		253	304.1		mg/Kg		106	90 - 110	3	20

QC Association Summary

Client: Ensolum
Project/Site: PLU 18 Twin Wells 155H

Job ID: 890-2493-1
SDG: 03E1558066

GC VOA

Prep Batch: 29368

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-29368/5-A	Method Blank	Total/NA	Solid	5035	

Analysis Batch: 29380

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2493-1	SS01	Total/NA	Solid	8021B	29434
890-2493-3	SS03	Total/NA	Solid	8021B	29434
MB 880-29368/5-A	Method Blank	Total/NA	Solid	8021B	29368
MB 880-29434/5-A	Method Blank	Total/NA	Solid	8021B	29434
LCS 880-29434/1-A	Lab Control Sample	Total/NA	Solid	8021B	29434
LCSD 880-29434/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	29434
890-2491-A-3-E MS	Matrix Spike	Total/NA	Solid	8021B	29434
890-2491-A-3-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	29434

Prep Batch: 29434

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2493-1	SS01	Total/NA	Solid	5035	
890-2493-3	SS03	Total/NA	Solid	5035	
MB 880-29434/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-29434/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-29434/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-2491-A-3-E MS	Matrix Spike	Total/NA	Solid	5035	
890-2491-A-3-F MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Prep Batch: 29558

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2493-1	SS01	Total/NA	Solid	5035	
890-2493-2	SS02	Total/NA	Solid	5035	
MB 880-29558/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-29558/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-29558/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-16527-A-1-D MS	Matrix Spike	Total/NA	Solid	5035	
880-16527-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 29560

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2493-1	SS01	Total/NA	Solid	Total BTEX	
890-2493-2	SS02	Total/NA	Solid	Total BTEX	
890-2493-3	SS03	Total/NA	Solid	Total BTEX	

Analysis Batch: 29611

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2493-1	SS01	Total/NA	Solid	8021B	29558
890-2493-2	SS02	Total/NA	Solid	8021B	29558
MB 880-29558/5-A	Method Blank	Total/NA	Solid	8021B	29558
LCS 880-29558/1-A	Lab Control Sample	Total/NA	Solid	8021B	29558
LCSD 880-29558/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	29558
880-16527-A-1-D MS	Matrix Spike	Total/NA	Solid	8021B	29558
880-16527-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	29558

QC Association Summary

Client: Ensolum
Project/Site: PLU 18 Twin Wells 155H

Job ID: 890-2493-1
SDG: 03E1558066

GC Semi VOA

Prep Batch: 28993

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2493-1	SS01	Total/NA	Solid	8015NM Prep	
890-2493-2	SS02	Total/NA	Solid	8015NM Prep	
890-2493-3	SS03	Total/NA	Solid	8015NM Prep	
MB 880-28993/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-28993/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-28993/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-2489-A-1-A MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-2489-A-1-A MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 29112

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2493-1	SS01	Total/NA	Solid	8015B NM	28993
890-2493-2	SS02	Total/NA	Solid	8015B NM	28993
890-2493-3	SS03	Total/NA	Solid	8015B NM	28993
MB 880-28993/1-A	Method Blank	Total/NA	Solid	8015B NM	28993
LCS 880-28993/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	28993
LCSD 880-28993/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	28993
890-2489-A-1-A MS	Matrix Spike	Total/NA	Solid	8015B NM	28993
890-2489-A-1-A MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	28993

Analysis Batch: 29177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2493-1	SS01	Total/NA	Solid	8015 NM	
890-2493-2	SS02	Total/NA	Solid	8015 NM	
890-2493-3	SS03	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 28997

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2493-1	SS01	Soluble	Solid	DI Leach	
890-2493-2	SS02	Soluble	Solid	DI Leach	
890-2493-3	SS03	Soluble	Solid	DI Leach	
MB 880-28997/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-28997/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-28997/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-2491-A-4-F MS	Matrix Spike	Soluble	Solid	DI Leach	
890-2491-A-4-G MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 29213

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2493-1	SS01	Soluble	Solid	300.0	28997
890-2493-2	SS02	Soluble	Solid	300.0	28997
890-2493-3	SS03	Soluble	Solid	300.0	28997
MB 880-28997/1-A	Method Blank	Soluble	Solid	300.0	28997
LCS 880-28997/2-A	Lab Control Sample	Soluble	Solid	300.0	28997
LCSD 880-28997/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	28997
890-2491-A-4-F MS	Matrix Spike	Soluble	Solid	300.0	28997
890-2491-A-4-G MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	28997

Lab Chronicle

Client: Ensolum
Project/Site: PLU 18 Twin Wells 155H

Job ID: 890-2493-1
SDG: 03E1558066

Client Sample ID: SS01

Date Collected: 06/30/22 10:00
Date Received: 07/01/22 09:06

Lab Sample ID: 890-2493-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.99 g	5 mL	29558	07/12/22 14:57	MR	XEN MID
Total/NA	Analysis	8021B		10	5 mL	5 mL	29611	07/13/22 13:09	MR	XEN MID
Total/NA	Prep	5035			5.01 g	5 mL	29434	07/11/22 11:47	EL	XEN MID
Total/NA	Analysis	8021B		50			29380	07/12/22 15:03	MR	XEN MID
Total/NA	Analysis	Total BTEX		1			29560	07/12/22 15:02	SM	XEN MID
Total/NA	Analysis	8015 NM		1			29177	07/07/22 09:01	SM	XEN MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	28993	07/05/22 08:59	AM	XEN MID
Total/NA	Analysis	8015B NM		1			29112	07/07/22 07:17	SM	XEN MID
Soluble	Leach	DI Leach			5.05 g	50 mL	28997	07/05/22 09:12	CH	XEN MID
Soluble	Analysis	300.0		1			29213	07/08/22 11:48	CH	XEN MID

Client Sample ID: SS02

Date Collected: 06/30/22 10:05
Date Received: 07/01/22 09:06

Lab Sample ID: 890-2493-2

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.95 g	5 mL	29558	07/12/22 14:57	MR	XEN MID
Total/NA	Analysis	8021B		10	5 mL	5 mL	29611	07/13/22 13:29	MR	XEN MID
Total/NA	Analysis	Total BTEX		1			29560	07/12/22 15:02	SM	XEN MID
Total/NA	Analysis	8015 NM		1			29177	07/07/22 09:01	SM	XEN MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	28993	07/05/22 08:59	AM	XEN MID
Total/NA	Analysis	8015B NM		1			29112	07/07/22 07:37	SM	XEN MID
Soluble	Leach	DI Leach			5 g	50 mL	28997	07/05/22 09:12	CH	XEN MID
Soluble	Analysis	300.0		5			29213	07/08/22 11:57	CH	XEN MID

Client Sample ID: SS03

Date Collected: 06/30/22 10:10
Date Received: 07/01/22 09:06

Lab Sample ID: 890-2493-3

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.00 g	5 mL	29434	07/11/22 11:47	EL	XEN MID
Total/NA	Analysis	8021B		1			29380	07/12/22 10:51	MR	XEN MID
Total/NA	Analysis	Total BTEX		1			29560	07/12/22 15:02	SM	XEN MID
Total/NA	Analysis	8015 NM		1			29177	07/07/22 09:01	SM	XEN MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	28993	07/05/22 08:59	AM	XEN MID
Total/NA	Analysis	8015B NM		1			29112	07/06/22 17:15	SM	XEN MID
Soluble	Leach	DI Leach			4.96 g	50 mL	28997	07/05/22 09:12	CH	XEN MID
Soluble	Analysis	300.0		5			29213	07/08/22 12:06	CH	XEN MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: PLU 18 Twin Wells 155H

Job ID: 890-2493-1
SDG: 03E1558066

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	T104704400-22-24	06-30-23

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

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

Method Summary

Client: Ensolum
Project/Site: PLU 18 Twin Wells 155H

Job ID: 890-2493-1
SDG: 03E1558066

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

Protocol References:

ASTM = ASTM International

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

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:

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

Sample Summary

Client: Ensolum
Project/Site: PLU 18 Twin Wells 155H

Job ID: 890-2493-1
SDG: 03E1558066

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-2493-1	SS01	Solid	06/30/22 10:00	07/01/22 09:06	0.5
890-2493-2	SS02	Solid	06/30/22 10:05	07/01/22 09:06	0.5
890-2493-3	SS03	Solid	06/30/22 10:10	07/01/22 09:06	0.5

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Chain of Custody

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

Work Order No: ______

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Project Manager:	Tacoma Morrissey	Bill to: (if different)	
Company Name:	Ensolum	Company Name:	
Address:	3122 Natl. Parks Hwy	Address:	
City, State ZIP:	Carlsbad NM 88220	City, State ZIP:	
Phone:	3372578307	Email:	tmorrissey@ensolum.com

Work Order Comments

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

State of Project:

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

Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	PLU 18 Twin Wells 155H	Turn Around	
Project Number:	03E1558006	☑ Routine	☐ Rush
Project Location:	Eddy County NM	Due Date:	
Sampler's Name:	Liz Cheu	TAT starts the day received by the lab, if received by 4:30pm	
PO #:	N/A		

SAMPLE RECEIPT			
Temp Blank:	(Yes) No	Wet Ice:	(Yes) No
Samples Received Intact:	(Yes) No	Thermometer ID:	TAM-007
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	-0.2
Sample Custody Seals:	Yes No (N/A)	Temperature Reading:	5.8
Total Containers:		Corrected Temperature:	5.6

ANALYSIS REQUEST — Pres. Code; Parameters

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/Comp	# of Cont	btex	tPH	Chloride	Sample Comments
SS01	S	6/30	1000	0.5	G	1	↓	↓	↓	
SS02	S	6/30	1005	0.5	G	1	↓	↓	↓	
SS03	S	6/30	1010	0.5	G	1	↓	↓	↓	

890-2493 Chain of Custody

Preservative Codes

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

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO_2 Na Sr Tl Sn U V Zn

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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1 Kyla Howl	Amanda Stef	7/1/22 900			
3			4		
5			6		

Revised Date: 08/25/2020 Rev. 2020.2

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

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Kramer Jessica	Carrier Tracking No(s):	COC No: 890-827 1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Jessica Kramer@et.eurofinsus com	State of Origin: New Mexico	Page: Page 1 of 1
Company: Eurofins Environment Testing South Centr		Accreditations Required (See note): NELAP - Louisiana NELAP - Texas		Job #: 890-2493-1
Address: 1211 W Florida Ave,	Due Date Requested: 7/8/2022			
City: Midland	TAT Requested (days):			
State, Zip: TX 79701				
Phone: 432-704-5440(Tel)	PO #:			
Email	WO #:			
Project Name: plu 18 twin wells 155h	Project #: 88000022			
Site	SSOW#:			

Analysis Requested

Preservation Codes

A HCL, B NaOH, C Zn Acetate, D Nitric Acid, E NaHSO4, F MeOH, G Amchlor, H Ascorbic Acid, I Ice, J DI Water, K EDTA, L EDA, M Hexane, N None, O AsNaO2, P Na2O4S, Q Na2SO3, R Na2S2O3, S H2SO4, T TSP Dodecahydrate, U Acetone, V MCAA, W pH 4-5, Y Trizma, Z other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water S=solid O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8015MOD_NM/8015NM_S_Prep (MOD) Full TPH	300_ORGFM_28D/DI_LEACH Chloride	8021B/5035FP_Calc BTEX	Total_BTEX_GCV	8015MOD_Calc	Total Number of containers	Special Instructions/Note
			Preservation Code:										
ss01 (890-2493-1)	6/30/22	10 00 Mountain		Solid			X	X	X	X	X	4	
ss02 (890-2493-2)	6/30/22	10 05 Mountain		Solid			X	X	X	X	X	4	
ss03 (890-2493-3)	6/30/22	10 10 Mountain		Solid			X	X	X	X	X	4	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing South Central LLC places the ownership of method analyte & accreditation compliance upon out subcontract laboratories This sample shipment is forwarded under chain-of-custody If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed the samples must be shipped back to the Eurofins Environment Testing South Central LLC laboratory or other instructions will be provided Any changes to accreditation status should be brought to Eurofins Environment Testing South Central, LLC attention immediately If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Environment Testing South Central LLC

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested I II III IV Other (specify) Primary Deliverable Rank 2	Special Instructions/QC Requirements

Empty Kit Relinquished by	Date	Time	Method of Shipment

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Clay			Kramer	7/7/22 900	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time	Company	Received by:	Date/Time	Company

Custody Seals Intact	Custody Seal No	Cooler Temperature(s) °C and Other Remarks
Δ Yes Δ No		3.9/3.6

Ver: 06/08/2021

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2493-1
SDG Number: 03E1558066

Login Number: 2493
List Number: 1
Creator: Clifton, Cloe

List Source: Eurofins Carlsbad

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

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2493-1
SDG Number: 03E1558066

Login Number: 2493
List Number: 2
Creator: Kramer, Jessica

List Source: Eurofins Midland
List Creation: 07/05/22 09:17 AM

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

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ANALYTICAL REPORT

Eurofins Carlsbad
1089 N Canal St.
Carlsbad, NM 88220
Tel: (575)988-3199

Laboratory Job ID: 890-2624-1
Laboratory Sample Delivery Group: 03E1558066
Client Project/Site: PLU 18 TWIN WELLS 155H

For:
Ensolum
705 W. Wadley
Suite 210
Midland, Texas 79701

Attn: Tacoma Morrissey

JKramer

Authorized for release by:
8/2/2022 1:08:07 PM

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

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Laboratory Job ID: 890-2624-1
SDG: 03E1558066

Table of Contents

Definitions/Glossary

Client: Ensolum Job ID: 890-2624-1
Project/Site: PLU 18 TWIN WELLS 155H SDG: 03E1558066

Qualifiers

GC VOA

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

GC Semi VOA

Qualifier	Qualifier Description
*1	LCS/LCSD RPD exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

HPLC/IC

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

Glossary

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

Case Narrative

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

Job ID: 890-2624-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-2624-1

Receipt
The samples were received on 7/22/2022 9:08 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.0°C

GC VOA
Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 880-30914 and analytical batch 880-31149 was outside control limits. Sample matrix interference is suspected.

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 RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 880-30765 and analytical batch 880-30743 recovered outside control limits for the following analytes: Diesel Range Organics (Over C10-C28).

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

HPLC/IC
Method 300_ORGFM_28D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-30601 and analytical batch 880-30721 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method 300_ORGFM_28D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-30601 and analytical batch 880-30721 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery 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: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

Client Sample ID: FS01

Lab Sample ID: 890-2624-1
Matrix: Solid
Date Collected: 07/21/22 14:45
Date Received: 07/22/22 09:08
Sample Depth: 1.5

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/28/22 10:44	08/02/22 03:33	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/28/22 10:44	08/02/22 03:33	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/28/22 10:44	08/02/22 03:33	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		07/28/22 10:44	08/02/22 03:33	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/28/22 10:44	08/02/22 03:33	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		07/28/22 10:44	08/02/22 03:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*	*07/28/22 10:44*	*08/02/22 03:33*	*1*
1,4-Difluorobenzene (Surr)	*119*		*70 - 130*	*07/28/22 10:44*	*08/02/22 03:33*	*1*

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00399	U	0.00399		mg/Kg			08/02/22 12:18	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**173**		49.9		mg/Kg			07/28/22 09:08	1

Method: 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		07/27/22 08:40	07/27/22 16:51	1
Diesel Range Organics (Over C10-C28)	<49.9	U *1	49.9		mg/Kg		07/27/22 08:40	07/27/22 16:51	1
Oil Range Organics (Over C28-C36)	**173**		49.9		mg/Kg		07/27/22 08:40	07/27/22 16:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*83*		*70 - 130*	*07/27/22 08:40*	*07/27/22 16:51*	*1*
o-Terphenyl	*82*		*70 - 130*	*07/27/22 08:40*	*07/27/22 16:51*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**11.0**		5.00		mg/Kg			07/27/22 14:31	1

Client Sample ID: FS02

Lab Sample ID: 890-2624-2
Matrix: Solid
Date Collected: 07/21/22 14:50
Date Received: 07/22/22 09:08
Sample Depth: 1.5

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00198	U	0.00198		mg/Kg		07/28/22 10:44	08/02/22 03:54	1
Toluene	<0.00198	U	0.00198		mg/Kg		07/28/22 10:44	08/02/22 03:54	1
Ethylbenzene	<0.00198	U	0.00198		mg/Kg		07/28/22 10:44	08/02/22 03:54	1
m-Xylene & p-Xylene	<0.00397	U	0.00397		mg/Kg		07/28/22 10:44	08/02/22 03:54	1
o-Xylene	<0.00198	U	0.00198		mg/Kg		07/28/22 10:44	08/02/22 03:54	1
Xylenes, Total	<0.00397	U	0.00397		mg/Kg		07/28/22 10:44	08/02/22 03:54	1

Client Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

Client Sample ID: FS02

Date Collected: 07/21/22 14:50
Date Received: 07/22/22 09:08
Sample Depth: 1.5

Lab Sample ID: 890-2624-2

Matrix: Solid

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*	*07/28/22 10:44*	*08/02/22 03:54*	*1*
1,4-Difluorobenzene (Surr)	*118*		*70 - 130*	*07/28/22 10:44*	*08/02/22 03:54*	*1*

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00397	U	0.00397		mg/Kg			08/02/22 12:18	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**144**		49.9		mg/Kg			07/28/22 09:08	1

Method: 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		07/27/22 08:40	07/27/22 17:12	1
Diesel Range Organics (Over C10-C28)	<49.9	U *1	49.9		mg/Kg		07/27/22 08:40	07/27/22 17:12	1
Oil Range Organics (Over C28-C36)	**144**		49.9		mg/Kg		07/27/22 08:40	07/27/22 17:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	*91*		*70 - 130*	*07/27/22 08:40*	*07/27/22 17:12*	*1*
o-Terphenyl	*89*		*70 - 130*	*07/27/22 08:40*	*07/27/22 17:12*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**34.0**		5.01		mg/Kg			07/27/22 14:38	1

Client Sample ID: FS03

Date Collected: 07/21/22 14:55
Date Received: 07/22/22 09:08
Sample Depth: 1.5

Lab Sample ID: 890-2624-3

Matrix: Solid

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		07/28/22 10:44	08/02/22 04:14	1
Toluene	<0.00199	U	0.00199		mg/Kg		07/28/22 10:44	08/02/22 04:14	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		07/28/22 10:44	08/02/22 04:14	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		07/28/22 10:44	08/02/22 04:14	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		07/28/22 10:44	08/02/22 04:14	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		07/28/22 10:44	08/02/22 04:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*	*07/28/22 10:44*	*08/02/22 04:14*	*1*
1,4-Difluorobenzene (Surr)	*114*		*70 - 130*	*07/28/22 10:44*	*08/02/22 04:14*	*1*

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398		mg/Kg			08/02/22 12:18	1

Client Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

Client Sample ID: FS03

Lab Sample ID: 890-2624-3
Matrix: Solid
Date Collected: 07/21/22 14:55
Date Received: 07/22/22 09:08
Sample Depth: 1.5

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**123**		50.0		mg/Kg			07/28/22 09:08	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		07/27/22 08:40	07/27/22 17:33	1
Diesel Range Organics (Over C10-C28)	<50.0	U *1	50.0		mg/Kg		07/27/22 08:40	07/27/22 17:33	1
Oil Range Organics (Over C28-C36)	**123**		50.0		mg/Kg		07/27/22 08:40	07/27/22 17:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*94*		*70 - 130*	*07/27/22 08:40*	*07/27/22 17:33*	*1*
o-Terphenyl	*99*		*70 - 130*	*07/27/22 08:40*	*07/27/22 17:33*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**15.8**		4.98		mg/Kg			07/27/22 14:46	1

Client Sample ID: FS04

Lab Sample ID: 890-2624-4
Matrix: Solid
Date Collected: 07/21/22 15:00
Date Received: 07/22/22 09:08
Sample Depth: 1.5

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		07/28/22 10:44	08/02/22 04:35	1
Toluene	<0.00199	U	0.00199		mg/Kg		07/28/22 10:44	08/02/22 04:35	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		07/28/22 10:44	08/02/22 04:35	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		07/28/22 10:44	08/02/22 04:35	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		07/28/22 10:44	08/02/22 04:35	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		07/28/22 10:44	08/02/22 04:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*	*07/28/22 10:44*	*08/02/22 04:35*	*1*
1,4-Difluorobenzene (Surr)	*119*		*70 - 130*	*07/28/22 10:44*	*08/02/22 04:35*	*1*

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398		mg/Kg			08/02/22 12:18	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**106**		50.0		mg/Kg			07/28/22 09:08	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		07/27/22 08:40	07/27/22 17:54	1
Diesel Range Organics (Over C10-C28)	<50.0	U *1	50.0		mg/Kg		07/27/22 08:40	07/27/22 17:54	1

Client Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

Client Sample ID: FS04

Lab Sample ID: 890-2624-4
Matrix: Solid
Date Collected: 07/21/22 15:00
Date Received: 07/22/22 09:08
Sample Depth: 1.5

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Oll Range Organics (Over C28-C36)	**106**		50.0		mg/Kg		07/27/22 08:40	07/27/22 17:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*93*		*70 - 130*	*07/27/22 08:40*	*07/27/22 17:54*	*1*
o-Terphenyl	*91*		*70 - 130*	*07/27/22 08:40*	*07/27/22 17:54*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**30.3**		5.00		mg/Kg			07/27/22 14:54	1

Client Sample ID: FS05

Lab Sample ID: 890-2624-5
Matrix: Solid
Date Collected: 07/21/22 15:05
Date Received: 07/22/22 09:08
Sample Depth: 1.5

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/28/22 10:44	08/02/22 04:56	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/28/22 10:44	08/02/22 04:56	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/28/22 10:44	08/02/22 04:56	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		07/28/22 10:44	08/02/22 04:56	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/28/22 10:44	08/02/22 04:56	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		07/28/22 10:44	08/02/22 04:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*	*07/28/22 10:44*	*08/02/22 04:56*	*1*
1,4-Difluorobenzene (Surr)	*117*		*70 - 130*	*07/28/22 10:44*	*08/02/22 04:56*	*1*

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00399	U	0.00399		mg/Kg			08/02/22 12:18	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**92.3**		50.0		mg/Kg			07/28/22 09:08	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		07/27/22 08:40	07/27/22 18:16	1
Diesel Range Organics (Over C10-C28)	<50.0	U *1	50.0		mg/Kg		07/27/22 08:40	07/27/22 18:16	1
Oll Range Organics (Over C28-C36)	**92.3**		50.0		mg/Kg		07/27/22 08:40	07/27/22 18:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*85*		*70 - 130*	*07/27/22 08:40*	*07/27/22 18:16*	*1*
o-Terphenyl	*84*		*70 - 130*	*07/27/22 08:40*	*07/27/22 18:16*	*1*

Client Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

Client Sample ID: FS05
Date Collected: 07/21/22 15:05
Date Received: 07/22/22 09:08
Sample Depth: 1.5

Lab Sample ID: 890-2624-5
Matrix: Solid

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	38.0		4.95		mg/Kg			07/27/22 15:02	1

Surrogate Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

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)
880-17204-A-219-D MS	Matrix Spike	84	114
880-17204-A-219-E MSD	Matrix Spike Duplicate	79	113
890-2624-1	FS01	101	119
890-2624-2	FS02	97	118
890-2624-3	FS03	98	114
890-2624-4	FS04	103	119
890-2624-5	FS05	96	117
LCS 880-30914/1-A	Lab Control Sample	83	112
LCSD 880-30914/2-A	Lab Control Sample Dup	83	113
MB 880-30914/5-A	Method Blank	88	107
MB 880-31025/5-A	Method Blank	84	107

Surrogate Legend

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

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

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

		Percent Surrogate Recovery (Acceptance Limits)	
		1CO1	OTPH1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
880-17301-A-1-E MS	Matrix Spike	99	88
880-17301-A-1-F MSD	Matrix Spike Duplicate	99	89
890-2624-1	FS01	83	82
890-2624-2	FS02	91	89
890-2624-3	FS03	94	99
890-2624-4	FS04	93	91
890-2624-5	FS05	85	84
LCS 880-30765/2-A	Lab Control Sample	89	82
LCSD 880-30765/3-A	Lab Control Sample Dup	107	108
MB 880-30765/1-A	Method Blank	82	83

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-30914/5-A
Matrix: Solid
Analysis Batch: 31149

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30914

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/28/22 10:44	08/01/22 22:02	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/28/22 10:44	08/01/22 22:02	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/28/22 10:44	08/01/22 22:02	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		07/28/22 10:44	08/01/22 22:02	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/28/22 10:44	08/01/22 22:02	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		07/28/22 10:44	08/01/22 22:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*70 - 130*	*07/28/22 10:44*	*08/01/22 22:02*	*1*
1,4-Difluorobenzene (Surr)	*107*		*70 - 130*	*07/28/22 10:44*	*08/01/22 22:02*	*1*

Lab Sample ID: LCS 880-30914/1-A
Matrix: Solid
Analysis Batch: 31149

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30914

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.1036		mg/Kg		104	70 - 130		
Toluene			0.100	0.09141		mg/Kg		91	70 - 130		
Ethylbenzene			0.100	0.08864		mg/Kg		89	70 - 130		
m-Xylene & p-Xylene			0.200	0.1728		mg/Kg		86	70 - 130		
o-Xylene			0.100	0.08598		mg/Kg		86	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*83*		*70 - 130*
1,4-Difluorobenzene (Surr)	*112*		*70 - 130*

Lab Sample ID: LCSD 880-30914/2-A
Matrix: Solid
Analysis Batch: 31149

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30914

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.1144		mg/Kg		114	70 - 130	10	35
Toluene			0.100	0.09687		mg/Kg		97	70 - 130	6	35
Ethylbenzene			0.100	0.09273		mg/Kg		93	70 - 130	5	35
m-Xylene & p-Xylene			0.200	0.1810		mg/Kg		91	70 - 130	5	35
o-Xylene			0.100	0.08961		mg/Kg		90	70 - 130	4	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*83*		*70 - 130*
1,4-Difluorobenzene (Surr)	*113*		*70 - 130*

Lab Sample ID: 880-17204-A-219-D MS
Matrix: Solid
Analysis Batch: 31149

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 30914

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00201	U	0.101	0.09553		mg/Kg		94	70 - 130		
Toluene	0.00294		0.101	0.08456		mg/Kg		81	70 - 130		

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

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

Lab Sample ID: 880-17204-A-219-D MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 31149 — **Prep Batch: 30914**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00201	U	0.101	0.07943		mg/Kg		78	70 - 130
m-Xylene & p-Xylene	<0.00402	U	0.201	0.1536		mg/Kg		75	70 - 130
o-Xylene	<0.00201	U F1	0.101	0.07431		mg/Kg		73	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*84*		*70 - 130*
1,4-Difluorobenzene (Surr)	*114*		*70 - 130*

Lab Sample ID: 880-17204-A-219-E MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 31149 — **Prep Batch: 30914**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00201	U	0.0990	0.09528		mg/Kg		95	70 - 130	0	35
Toluene	0.00294		0.0990	0.08036		mg/Kg		78	70 - 130	5	35
Ethylbenzene	<0.00201	U	0.0990	0.07361		mg/Kg		73	70 - 130	8	35
m-Xylene & p-Xylene	<0.00402	U	0.198	0.1413		mg/Kg		70	70 - 130	8	35
o-Xylene	<0.00201	U F1	0.0990	0.06848	F1	mg/Kg		69	70 - 130	8	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*79*		*70 - 130*
1,4-Difluorobenzene (Surr)	*113*		*70 - 130*

Lab Sample ID: MB 880-31025/5-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 31149 — **Prep Batch: 31025**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		07/29/22 15:19	08/01/22 11:15	1
Toluene	<0.00200	U	0.00200	mg/Kg		07/29/22 15:19	08/01/22 11:15	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		07/29/22 15:19	08/01/22 11:15	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		07/29/22 15:19	08/01/22 11:15	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		07/29/22 15:19	08/01/22 11:15	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		07/29/22 15:19	08/01/22 11:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*70 - 130*	*07/29/22 15:19*	*08/01/22 11:15*	*1*
1,4-Difluorobenzene (Surr)	*107*		*70 - 130*	*07/29/22 15:19*	*08/01/22 11:15*	*1*

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

Lab Sample ID: MB 880-30765/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 30743 — **Prep Batch: 30765**

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		07/27/22 08:40	07/27/22 09:41	1

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

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

Lab Sample ID: MB 880-30765/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 30743 — **Prep Batch: 30765**

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/27/22 08:40	07/27/22 09:41	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/27/22 08:40	07/27/22 09:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*82*		*70 - 130*	*07/27/22 08:40*	*07/27/22 09:41*	*1*
o-Terphenyl	*83*		*70 - 130*	*07/27/22 08:40*	*07/27/22 09:41*	*1*

Lab Sample ID: LCS 880-30765/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 30743 — **Prep Batch: 30765**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	1071		mg/Kg		107	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	848.8		mg/Kg		85	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*89*		*70 - 130*
o-Terphenyl	*82*		*70 - 130*

Lab Sample ID: LCSD 880-30765/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 30743 — **Prep Batch: 30765**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	1037		mg/Kg		104	70 - 130	3	20
Diesel Range Organics (Over C10-C28)			1000	1108	*1	mg/Kg		111	70 - 130	26	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1-Chlorooctane	*107*		*70 - 130*
o-Terphenyl	*108*		*70 - 130*

Lab Sample ID: 880-17301-A-1-E MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 30743 — **Prep Batch: 30765**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	1000	1100		mg/Kg		106	70 - 130		
Diesel Range Organics (Over C10-C28)	<50.0	U *1	1000	760.4		mg/Kg		76	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*99*		*70 - 130*
o-Terphenyl	*88*		*70 - 130*

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

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

Lab Sample ID: 880-17301-A-1-F MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 30743 — **Prep Batch: 30765**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	999	1099		mg/Kg		106	70 - 130	0	20
Diesel Range Organics (Over C10-C28)	<50.0	U *1	999	782.1		mg/Kg		78	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*99*		*70 - 130*
o-Terphenyl	*89*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-30601/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30721

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			07/27/22 09:44	1

Lab Sample ID: LCS 880-30601/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30721

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	262.2		mg/Kg		105	90 - 110		

Lab Sample ID: LCSD 880-30601/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30721

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	262.4		mg/Kg		105	90 - 110	0	20

Lab Sample ID: 880-17254-A-1-B MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30721

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	<99.0	U	4950	4828		mg/Kg		96	90 - 110		

Lab Sample ID: 880-17254-A-1-C MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30721

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	<99.0	U	4950	4817		mg/Kg		96	90 - 110	0	20

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 880-17301-A-3-F MS
Matrix: Solid
Analysis Batch: 30721

Client Sample ID: Matrix Spike
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	9.76	F1	250	555.7	F1	mg/Kg		218	90 - 110		

Lab Sample ID: 880-17301-A-3-G MSD
Matrix: Solid
Analysis Batch: 30721

Client Sample ID: Matrix Spike Duplicate
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	9.76	F1	250	555.5	F1	mg/Kg		218	90 - 110	0	20

QC Association Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

GC VOA

Prep Batch: 30914

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2624-1	FS01	Total/NA	Solid	5035	
890-2624-2	FS02	Total/NA	Solid	5035	
890-2624-3	FS03	Total/NA	Solid	5035	
890-2624-4	FS04	Total/NA	Solid	5035	
890-2624-5	FS05	Total/NA	Solid	5035	
MB 880-30914/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-30914/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-30914/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-17204-A-219-D MS	Matrix Spike	Total/NA	Solid	5035	
880-17204-A-219-E MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Prep Batch: 31025

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-31025/5-A	Method Blank	Total/NA	Solid	5035	

Analysis Batch: 31149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2624-1	FS01	Total/NA	Solid	8021B	30914
890-2624-2	FS02	Total/NA	Solid	8021B	30914
890-2624-3	FS03	Total/NA	Solid	8021B	30914
890-2624-4	FS04	Total/NA	Solid	8021B	30914
890-2624-5	FS05	Total/NA	Solid	8021B	30914
MB 880-30914/5-A	Method Blank	Total/NA	Solid	8021B	30914
MB 880-31025/5-A	Method Blank	Total/NA	Solid	8021B	31025
LCS 880-30914/1-A	Lab Control Sample	Total/NA	Solid	8021B	30914
LCSD 880-30914/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	30914
880-17204-A-219-D MS	Matrix Spike	Total/NA	Solid	8021B	30914
880-17204-A-219-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	30914

Analysis Batch: 31314

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2624-1	FS01	Total/NA	Solid	Total BTEX	
890-2624-2	FS02	Total/NA	Solid	Total BTEX	
890-2624-3	FS03	Total/NA	Solid	Total BTEX	
890-2624-4	FS04	Total/NA	Solid	Total BTEX	
890-2624-5	FS05	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 30743

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2624-1	FS01	Total/NA	Solid	8015B NM	30765
890-2624-2	FS02	Total/NA	Solid	8015B NM	30765
890-2624-3	FS03	Total/NA	Solid	8015B NM	30765
890-2624-4	FS04	Total/NA	Solid	8015B NM	30765
890-2624-5	FS05	Total/NA	Solid	8015B NM	30765
MB 880-30765/1-A	Method Blank	Total/NA	Solid	8015B NM	30765
LCS 880-30765/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	30765
LCSD 880-30765/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	30765
880-17301-A-1-E MS	Matrix Spike	Total/NA	Solid	8015B NM	30765
880-17301-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	30765

QC Association Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

GC Semi VOA

Prep Batch: 30765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2624-1	FS01	Total/NA	Solid	8015NM Prep	
890-2624-2	FS02	Total/NA	Solid	8015NM Prep	
890-2624-3	FS03	Total/NA	Solid	8015NM Prep	
890-2624-4	FS04	Total/NA	Solid	8015NM Prep	
890-2624-5	FS05	Total/NA	Solid	8015NM Prep	
MB 880-30765/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-30765/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-30765/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
880-17301-A-1-E MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
880-17301-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 30869

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2624-1	FS01	Total/NA	Solid	8015 NM	
890-2624-2	FS02	Total/NA	Solid	8015 NM	
890-2624-3	FS03	Total/NA	Solid	8015 NM	
890-2624-4	FS04	Total/NA	Solid	8015 NM	
890-2624-5	FS05	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 30601

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2624-1	FS01	Soluble	Solid	DI Leach	
890-2624-2	FS02	Soluble	Solid	DI Leach	
890-2624-3	FS03	Soluble	Solid	DI Leach	
890-2624-4	FS04	Soluble	Solid	DI Leach	
890-2624-5	FS05	Soluble	Solid	DI Leach	
MB 880-30601/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-30601/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-30601/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
880-17254-A-1-B MS	Matrix Spike	Soluble	Solid	DI Leach	
880-17254-A-1-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	
880-17301-A-3-F MS	Matrix Spike	Soluble	Solid	DI Leach	
880-17301-A-3-G MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 30721

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2624-1	FS01	Soluble	Solid	300.0	30601
890-2624-2	FS02	Soluble	Solid	300.0	30601
890-2624-3	FS03	Soluble	Solid	300.0	30601
890-2624-4	FS04	Soluble	Solid	300.0	30601
890-2624-5	FS05	Soluble	Solid	300.0	30601
MB 880-30601/1-A	Method Blank	Soluble	Solid	300.0	30601
LCS 880-30601/2-A	Lab Control Sample	Soluble	Solid	300.0	30601
LCSD 880-30601/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	30601
880-17254-A-1-B MS	Matrix Spike	Soluble	Solid	300.0	30601
880-17254-A-1-C MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	30601
880-17301-A-3-F MS	Matrix Spike	Soluble	Solid	300.0	30601
880-17301-A-3-G MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	30601

Lab Chronicle

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

Client Sample ID: FS01

Date Collected: 07/21/22 14:45
Date Received: 07/22/22 09:08

Lab Sample ID: 890-2624-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.01 g	5 mL	30914	07/28/22 10:44	MR	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	31149	08/02/22 03:33	MR	XEN MID
Total/NA	Analysis	Total BTEX		1			31314	08/02/22 12:18	SM	XEN MID
Total/NA	Analysis	8015 NM		1			30869	07/28/22 09:08	SM	XEN MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	30765	07/27/22 08:40	DM	XEN MID
Total/NA	Analysis	8015B NM		1			30743	07/27/22 16:51	SM	XEN MID
Soluble	Leach	DI Leach			5 g	50 mL	30601	07/25/22 15:31	KS	XEN MID
Soluble	Analysis	300.0		1			30721	07/27/22 14:31	CH	XEN MID

Client Sample ID: FS02

Date Collected: 07/21/22 14:50
Date Received: 07/22/22 09:08

Lab Sample ID: 890-2624-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.04 g	5 mL	30914	07/28/22 10:44	MR	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	31149	08/02/22 03:54	MR	XEN MID
Total/NA	Analysis	Total BTEX		1			31314	08/02/22 12:18	SM	XEN MID
Total/NA	Analysis	8015 NM		1			30869	07/28/22 09:08	SM	XEN MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	30765	07/27/22 08:40	DM	XEN MID
Total/NA	Analysis	8015B NM		1			30743	07/27/22 17:12	SM	XEN MID
Soluble	Leach	DI Leach			4.99 g	50 mL	30601	07/25/22 15:31	KS	XEN MID
Soluble	Analysis	300.0		1			30721	07/27/22 14:38	CH	XEN MID

Client Sample ID: FS03

Date Collected: 07/21/22 14:55
Date Received: 07/22/22 09:08

Lab Sample ID: 890-2624-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	30914	07/28/22 10:44	MR	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	31149	08/02/22 04:14	MR	XEN MID
Total/NA	Analysis	Total BTEX		1			31314	08/02/22 12:18	SM	XEN MID
Total/NA	Analysis	8015 NM		1			30869	07/28/22 09:08	SM	XEN MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	30765	07/27/22 08:40	DM	XEN MID
Total/NA	Analysis	8015B NM		1			30743	07/27/22 17:33	SM	XEN MID
Soluble	Leach	DI Leach			5.02 g	50 mL	30601	07/25/22 15:31	KS	XEN MID
Soluble	Analysis	300.0		1			30721	07/27/22 14:46	CH	XEN MID

Client Sample ID: FS04

Date Collected: 07/21/22 15:00
Date Received: 07/22/22 09:08

Lab Sample ID: 890-2624-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.03 g	5 mL	30914	07/28/22 10:44	MR	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	31149	08/02/22 04:35	MR	XEN MID
Total/NA	Analysis	Total BTEX		1			31314	08/02/22 12:18	SM	XEN MID

Lab Chronicle

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

Client Sample ID: FS04

Date Collected: 07/21/22 15:00
Date Received: 07/22/22 09:08

Lab Sample ID: 890-2624-4

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8015 NM		1			30869	07/28/22 09:08	SM	XEN MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	30765	07/27/22 08:40	DM	XEN MID
Total/NA	Analysis	8015B NM		1			30743	07/27/22 17:54	SM	XEN MID
Soluble	Leach	DI Leach			5 g	50 mL	30601	07/25/22 15:31	KS	XEN MID
Soluble	Analysis	300.0		1			30721	07/27/22 14:54	CH	XEN MID

Client Sample ID: FS05

Date Collected: 07/21/22 15:05
Date Received: 07/22/22 09:08

Lab Sample ID: 890-2624-5

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.01 g	5 mL	30914	07/28/22 10:44	MR	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	31149	08/02/22 04:56	MR	XEN MID
Total/NA	Analysis	Total BTEX		1			31314	08/02/22 12:18	SM	XEN MID
Total/NA	Analysis	8015 NM		1			30869	07/28/22 09:08	SM	XEN MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	30765	07/27/22 08:40	DM	XEN MID
Total/NA	Analysis	8015B NM		1			30743	07/27/22 18:16	SM	XEN MID
Soluble	Leach	DI Leach			5.05 g	50 mL	30601	07/25/22 15:31	KS	XEN MID
Soluble	Analysis	300.0		1			30721	07/27/22 15:02	CH	XEN MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

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	T104704400-22-24	06-30-23

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

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

Method Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

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

Protocol References:

ASTM = ASTM International

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

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:

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

Sample Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2624-1
SDG: 03E1558066

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-2624-1	FS01	Solid	07/21/22 14:45	07/22/22 09:08	1.5
890-2624-2	FS02	Solid	07/21/22 14:50	07/22/22 09:08	1.5
890-2624-3	FS03	Solid	07/21/22 14:55	07/22/22 09:08	1.5
890-2624-4	FS04	Solid	07/21/22 15:00	07/22/22 09:08	1.5
890-2624-5	FS05	Solid	07/21/22 15:05	07/22/22 09:08	1.5

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Chain of Custody

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

Work Order No: _____

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Project Manager:	Tacoma Morrissey	Bill to: (if different)	Garrett Green
Company Name:	Ensolum	Company Name:	XTO
Address:	3122 National Parks Hwy	Address:	
City, State ZIP:	Carlsbad, NM 88220	City, State ZIP:	
Phone:	337-257-8307 Email:		garrett.green@exxonmobil.com

Work Order Comments

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

Project Name:	PLU 18 Twin Wells 15SH	Turn Around	☑ Routine ☐ Rush
Project Number:	03E155606	Due Date:	
Project Location:	32.2046, -103.5149	TAT starts the day received by the lab, if received by 4:30pm	
Sampler's Name:	Kyse Parker		
PO #:			

SAMPLE RECEIPT				
Temp Blank:	Yes No	Wet Ice:	Yes No	
Samples Received Intact:	Yes No	Thermometer ID:	NM-007	
Cooler Custody Seals:	Yes No N/A	Correction Factor:	-0.2	
Sample Custody Seals:	Yes No N/A	Temperature Reading:	5.2	
Total Containers:		Corrected Temperature:	5.0	

Preservative Codes

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

ANALYSIS REQUEST

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	BTEX	TPH	Chlorides	Sample Comments
FS01	S	7/21/22	1445	1.5'				X	X	X	cc:1665991001
FS02			1450								Incident #:
FS03			1455								nAPP2214735696
FS04			1500								tmorrissey@ensolum.com
FS05	↓	↓	1605	↓				↓	↓	↓	

890-2624 Chain of Custody

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

	Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1			7.22.22 909			
3				4		
5				6		

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2624-1
SDG Number: 03E1558066

Login Number: 2624
List Number: 1
Creator: Clifton, Cloe

List Source: Eurofins Carlsbad

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

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2624-1
SDG Number: 03E1558066

Login Number: 2624
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 07/25/22 09:19 AM

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

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ANALYTICAL REPORT

Eurofins Carlsbad
1089 N Canal St.
Carlsbad, NM 88220
Tel: (575)988-3199

Laboratory Job ID: 890-2625-1
Laboratory Sample Delivery Group: 03E1558066
Client Project/Site: PLU 18 TWIN WELLS 155H

For:
Ensolum
705 W. Wadley
Suite 210
Midland, Texas 79701

Attn: Tacoma Morrissey

JKramer

Authorized for release by:
7/31/2022 10:18:26 AM

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

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Laboratory Job ID: 890-2625-1
SDG: 03E1558066

Table of Contents

Definitions/Glossary

Client: Ensolum Job ID: 890-2625-1
Project/Site: PLU 18 TWIN WELLS 155H SDG: 03E1558066

Qualifiers

GC VOA

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

GC Semi VOA

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

HPLC/IC

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

Glossary

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

Case Narrative

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2625-1
SDG: 03E1558066

Job ID: 890-2625-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-2625-1

Receipt
The sample was received on 7/22/2022 9:08 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.0°C

GC VOA
Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-30687 and analytical batch 880-31048 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-30703 and analytical batch 880-31048 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was 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 matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-30667 and analytical batch 880-30645 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

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

HPLC/IC
Method 300_ORGFM_28D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-30601 and analytical batch 880-30721 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method 300_ORGFM_28D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-30601 and analytical batch 880-30721 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery 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: PLU 18 TWIN WELLS 155H

Job ID: 890-2625-1
SDG: 03E1558066

Client Sample ID: SS04
Date Collected: 07/21/22 15:20
Date Received: 07/22/22 09:08
Sample Depth: 0.5

Lab Sample ID: 890-2625-1
Matrix: Solid

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/26/22 11:38	07/30/22 21:16	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/26/22 11:38	07/30/22 21:16	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/26/22 11:38	07/30/22 21:16	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		07/26/22 11:38	07/30/22 21:16	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/26/22 11:38	07/30/22 21:16	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		07/26/22 11:38	07/30/22 21:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*	*07/26/22 11:38*	*07/30/22 21:16*	*1*
1,4-Difluorobenzene (Surr)	*115*		*70 - 130*	*07/26/22 11:38*	*07/30/22 21:16*	*1*

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00399	U	0.00399		mg/Kg			07/31/22 10:51	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.8	U	49.8		mg/Kg			07/27/22 08:23	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8		mg/Kg		07/26/22 10:45	07/27/22 04:43	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8		mg/Kg		07/26/22 10:45	07/27/22 04:43	1
OII Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		07/26/22 10:45	07/27/22 04:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*99*		*70 - 130*	*07/26/22 10:45*	*07/27/22 04:43*	*1*
o-Terphenyl	*111*		*70 - 130*	*07/26/22 10:45*	*07/27/22 04:43*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**79.4**		4.96		mg/Kg			07/27/22 15:10	1

Surrogate Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2625-1
SDG: 03E1558066

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)										
880-17204-A-99-C MS	Matrix Spike	110	94										
880-17204-A-99-D MSD	Matrix Spike Duplicate	107	93										
890-2623-A-1-G MS	Matrix Spike	108	98										
890-2623-A-1-H MSD	Matrix Spike Duplicate	99	100										
890-2625-1	SS04	104	115										
LCS 880-30687/1-A	Lab Control Sample	109	101										
LCS 880-30703/1-A	Lab Control Sample	101	90										
LCSD 880-30687/2-A	Lab Control Sample Dup	57 S1-	94										
LCSD 880-30703/2-A	Lab Control Sample Dup	97	94										
MB 880-30687/5-A	Method Blank	95	101										
MB 880-30703/5-A	Method Blank	93	96										

Surrogate Legend

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

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

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

		Percent Surrogate Recovery (Acceptance Limits)											
		1CO1	OTPH1										
Lab Sample ID	Client Sample ID	(70-130)	(70-130)										
890-2623-A-1-E MS	Matrix Spike	83	88										
890-2623-A-1-F MSD	Matrix Spike Duplicate	85	91										
890-2625-1	SS04	99	111										
LCS 880-30667/2-A	Lab Control Sample	115	116										
LCSD 880-30667/3-A	Lab Control Sample Dup	91	102										
MB 880-30667/1-A	Method Blank	87	102										

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2625-1
SDG: 03E1558066

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-30687/5-A
Matrix: Solid
Analysis Batch: 31048

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30687

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/26/22 11:38	07/30/22 13:28	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/26/22 11:38	07/30/22 13:28	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/26/22 11:38	07/30/22 13:28	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		07/26/22 11:38	07/30/22 13:28	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/26/22 11:38	07/30/22 13:28	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		07/26/22 11:38	07/30/22 13:28	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*	*07/26/22 11:38*	*07/30/22 13:28*	*1*
1,4-Difluorobenzene (Surr)	*101*		*70 - 130*	*07/26/22 11:38*	*07/30/22 13:28*	*1*

Lab Sample ID: LCS 880-30687/1-A
Matrix: Solid
Analysis Batch: 31048

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30687

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.09746		mg/Kg		97	70 - 130		
Toluene			0.100	0.1112		mg/Kg		111	70 - 130		
Ethylbenzene			0.100	0.09449		mg/Kg		94	70 - 130		
m-Xylene & p-Xylene			0.200	0.1906		mg/Kg		95	70 - 130		
o-Xylene			0.100	0.1111		mg/Kg		111	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*109*		*70 - 130*
1,4-Difluorobenzene (Surr)	*101*		*70 - 130*

Lab Sample ID: LCSD 880-30687/2-A
Matrix: Solid
Analysis Batch: 31048

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30687

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.08535		mg/Kg		85	70 - 130	13	35
Toluene			0.100	0.1067		mg/Kg		107	70 - 130	4	35
Ethylbenzene			0.100	0.09872		mg/Kg		99	70 - 130	4	35
m-Xylene & p-Xylene			0.200	0.2048		mg/Kg		102	70 - 130	7	35
o-Xylene			0.100	0.1208		mg/Kg		121	70 - 130	8	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*57*	*S1-*	*70 - 130*
1,4-Difluorobenzene (Surr)	*94*		*70 - 130*

Lab Sample ID: 890-2623-A-1-G MS
Matrix: Solid
Analysis Batch: 31048

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 30687

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00199	U F1	0.100	0.07238		mg/Kg		72	70 - 130		
Toluene	<0.00199	U F1	0.100	0.06879	F1	mg/Kg		68	70 - 130		

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2625-1
SDG: 03E1558066

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

Lab Sample ID: 890-2623-A-1-G MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 31048 — **Prep Batch: 30687**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00199	U F1	0.100	0.04505	F1	mg/Kg		43	70 - 130
m-Xylene & p-Xylene	<0.00398	U F1	0.201	0.09057	F1	mg/Kg		43	70 - 130
o-Xylene	<0.00199	U F1	0.100	0.05193	F1	mg/Kg		50	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*108*		*70 - 130*
1,4-Difluorobenzene (Surr)	*98*		*70 - 130*

Lab Sample ID: 890-2623-A-1-H MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 31048 — **Prep Batch: 30687**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00199	U F1	0.0992	0.06858	F1	mg/Kg		69	70 - 130	5	35
Toluene	<0.00199	U F1	0.0992	0.06605	F1	mg/Kg		66	70 - 130	4	35
Ethylbenzene	<0.00199	U F1	0.0992	0.04301	F1	mg/Kg		42	70 - 130	5	35
m-Xylene & p-Xylene	<0.00398	U F1	0.198	0.08435	F1	mg/Kg		41	70 - 130	7	35
o-Xylene	<0.00199	U F1	0.0992	0.04861	F1	mg/Kg		47	70 - 130	7	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*
1,4-Difluorobenzene (Surr)	*100*		*70 - 130*

Lab Sample ID: MB 880-30703/5-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 31048 — **Prep Batch: 30703**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		07/26/22 13:48	07/31/22 01:06	1
Toluene	<0.00200	U	0.00200	mg/Kg		07/26/22 13:48	07/31/22 01:06	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		07/26/22 13:48	07/31/22 01:06	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		07/26/22 13:48	07/31/22 01:06	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		07/26/22 13:48	07/31/22 01:06	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		07/26/22 13:48	07/31/22 01:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*	*07/26/22 13:48*	*07/31/22 01:06*	*1*
1,4-Difluorobenzene (Surr)	*96*		*70 - 130*	*07/26/22 13:48*	*07/31/22 01:06*	*1*

Lab Sample ID: LCS 880-30703/1-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 31048 — **Prep Batch: 30703**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.07529		mg/Kg		75	70 - 130
Toluene	0.100	0.09547		mg/Kg		95	70 - 130
Ethylbenzene	0.100	0.08300		mg/Kg		83	70 - 130
m-Xylene & p-Xylene	0.200	0.1680		mg/Kg		84	70 - 130

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QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2625-1
SDG: 03E1558066

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

Lab Sample ID: LCS 880-30703/1-A
Matrix: Solid
Analysis Batch: 31048

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30703

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
o-Xylene			0.100	0.09893		mg/Kg		99	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*
1,4-Difluorobenzene (Surr)	*90*		*70 - 130*

Lab Sample ID: LCSD 880-30703/2-A
Matrix: Solid
Analysis Batch: 31048

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30703

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.07473		mg/Kg		75	70 - 130	1	35
Toluene			0.100	0.09089		mg/Kg		91	70 - 130	5	35
Ethylbenzene			0.100	0.07880		mg/Kg		79	70 - 130	5	35
m-Xylene & p-Xylene			0.200	0.1596		mg/Kg		80	70 - 130	5	35
o-Xylene			0.100	0.09473		mg/Kg		95	70 - 130	4	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*
1,4-Difluorobenzene (Surr)	*94*		*70 - 130*

Lab Sample ID: 880-17204-A-99-C MS
Matrix: Solid
Analysis Batch: 31048

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 30703

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00201	U F1	0.100	0.05327	F1	mg/Kg		53	70 - 130		
Toluene	<0.00201	U F1	0.100	0.06370	F1	mg/Kg		64	70 - 130		
Ethylbenzene	<0.00201	U F1	0.100	0.05143	F1	mg/Kg		51	70 - 130		
m-Xylene & p-Xylene	<0.00402	U F1	0.200	0.1050	F1	mg/Kg		52	70 - 130		
o-Xylene	<0.00201	U F1	0.100	0.06058	F1	mg/Kg		60	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*110*		*70 - 130*
1,4-Difluorobenzene (Surr)	*94*		*70 - 130*

Lab Sample ID: 880-17204-A-99-D MSD
Matrix: Solid
Analysis Batch: 31048

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 30703

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00201	U F1	0.0996	0.05952	F1	mg/Kg		60	70 - 130	11	35
Toluene	<0.00201	U F1	0.0996	0.06786	F1	mg/Kg		68	70 - 130	6	35
Ethylbenzene	<0.00201	U F1	0.0996	0.05352	F1	mg/Kg		53	70 - 130	4	35
m-Xylene & p-Xylene	<0.00402	U F1	0.199	0.1059	F1	mg/Kg		52	70 - 130	1	35
o-Xylene	<0.00201	U F1	0.0996	0.05896	F1	mg/Kg		59	70 - 130	3	35

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2625-1
SDG: 03E1558066

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

Lab Sample ID: 880-17204-A-99-D MSD
Matrix: Solid
Analysis Batch: 31048

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 30703

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

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

Lab Sample ID: MB 880-30667/1-A
Matrix: Solid
Analysis Batch: 30645

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30667

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		07/26/22 10:45	07/26/22 20:25	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/26/22 10:45	07/26/22 20:25	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/26/22 10:45	07/26/22 20:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	87		70 - 130	07/26/22 10:45	07/26/22 20:25	1
o-Terphenyl	102		70 - 130	07/26/22 10:45	07/26/22 20:25	1

Lab Sample ID: LCS 880-30667/2-A
Matrix: Solid
Analysis Batch: 30645

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30667

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	1069		mg/Kg		107	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	921.7		mg/Kg		92	70 - 130		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1-Chlorooctane	115		70 - 130
o-Terphenyl	116		70 - 130

Lab Sample ID: LCSD 880-30667/3-A
Matrix: Solid
Analysis Batch: 30645

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30667

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	1061		mg/Kg		106	70 - 130	1	20
Diesel Range Organics (Over C10-C28)			1000	847.4		mg/Kg		85	70 - 130	8	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1-Chlorooctane	91		70 - 130
o-Terphenyl	102		70 - 130

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2625-1
SDG: 03E1558066

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

Lab Sample ID: 890-2623-A-1-E MS
Matrix: Solid
Analysis Batch: 30645

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 30667

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	80.8		1000	1129		mg/Kg		105	70 - 130
Diesel Range Organics (Over C10-C28)	1420	F1	1000	1866	F1	mg/Kg		45	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*83*		*70 - 130*
o-Terphenyl	*88*		*70 - 130*

Lab Sample ID: 890-2623-A-1-F MSD
Matrix: Solid
Analysis Batch: 30645

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 30667

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	80.8		999	1107		mg/Kg		103	70 - 130	2	20
Diesel Range Organics (Over C10-C28)	1420	F1	999	1976	F1	mg/Kg		56	70 - 130	6	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*85*		*70 - 130*
o-Terphenyl	*91*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-30601/1-A
Matrix: Solid
Analysis Batch: 30721

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			07/27/22 09:44	1

Lab Sample ID: LCS 880-30601/2-A
Matrix: Solid
Analysis Batch: 30721

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride			250	262.2		mg/Kg		105	90 - 110

Lab Sample ID: LCSD 880-30601/3-A
Matrix: Solid
Analysis Batch: 30721

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	262.4		mg/Kg		105	90 - 110	0	20

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2625-1
SDG: 03E1558066

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 880-17254-A-1-B MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30721

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	<99.0	U	4950	4828		mg/Kg		96	90 - 110

Lab Sample ID: 880-17254-A-1-C MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30721

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	<99.0	U	4950	4817		mg/Kg		96	90 - 110	0	20

Lab Sample ID: 880-17301-A-3-F MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30721

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	9.76	F1	250	555.7	F1	mg/Kg		218	90 - 110

Lab Sample ID: 880-17301-A-3-G MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30721

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	9.76	F1	250	555.5	F1	mg/Kg		218	90 - 110	0	20

QC Association Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2625-1
SDG: 03E1558066

GC VOA

Prep Batch: 30687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2625-1	SS04	Total/NA	Solid	5035	
MB 880-30687/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-30687/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-30687/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-2623-A-1-G MS	Matrix Spike	Total/NA	Solid	5035	
890-2623-A-1-H MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Prep Batch: 30703

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-30703/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-30703/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-30703/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-17204-A-99-C MS	Matrix Spike	Total/NA	Solid	5035	
880-17204-A-99-D MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 31048

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2625-1	SS04	Total/NA	Solid	8021B	30687
MB 880-30687/5-A	Method Blank	Total/NA	Solid	8021B	30687
MB 880-30703/5-A	Method Blank	Total/NA	Solid	8021B	30703
LCS 880-30687/1-A	Lab Control Sample	Total/NA	Solid	8021B	30687
LCS 880-30703/1-A	Lab Control Sample	Total/NA	Solid	8021B	30703
LCSD 880-30687/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	30687
LCSD 880-30703/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	30703
880-17204-A-99-C MS	Matrix Spike	Total/NA	Solid	8021B	30703
880-17204-A-99-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	30703
890-2623-A-1-G MS	Matrix Spike	Total/NA	Solid	8021B	30687
890-2623-A-1-H MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	30687

Analysis Batch: 31127

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2625-1	SS04	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 30645

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2625-1	SS04	Total/NA	Solid	8015B NM	30667
MB 880-30667/1-A	Method Blank	Total/NA	Solid	8015B NM	30667
LCS 880-30667/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	30667
LCSD 880-30667/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	30667
890-2623-A-1-E MS	Matrix Spike	Total/NA	Solid	8015B NM	30667
890-2623-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	30667

Prep Batch: 30667

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2625-1	SS04	Total/NA	Solid	8015NM Prep	
MB 880-30667/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-30667/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-30667/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-2623-A-1-E MS	Matrix Spike	Total/NA	Solid	8015NM Prep	

QC Association Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2625-1
SDG: 03E1558066

GC Semi VOA (Continued)

Prep Batch: 30667 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2623-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 30761

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2625-1	SS04	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 30601

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2625-1	SS04	Soluble	Solid	DI Leach	
MB 880-30601/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-30601/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-30601/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
880-17254-A-1-B MS	Matrix Spike	Soluble	Solid	DI Leach	
880-17254-A-1-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	
880-17301-A-3-F MS	Matrix Spike	Soluble	Solid	DI Leach	
880-17301-A-3-G MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 30721

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2625-1	SS04	Soluble	Solid	300.0	30601
MB 880-30601/1-A	Method Blank	Soluble	Solid	300.0	30601
LCS 880-30601/2-A	Lab Control Sample	Soluble	Solid	300.0	30601
LCSD 880-30601/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	30601
880-17254-A-1-B MS	Matrix Spike	Soluble	Solid	300.0	30601
880-17254-A-1-C MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	30601
880-17301-A-3-F MS	Matrix Spike	Soluble	Solid	300.0	30601
880-17301-A-3-G MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	30601

Lab Chronicle

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2625-1
SDG: 03E1558066

Client Sample ID: SS04

Date Collected: 07/21/22 15:20
Date Received: 07/22/22 09:08

Lab Sample ID: 890-2625-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.01 g	5 mL	30687	07/26/22 11:38	MR	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	31048	07/30/22 21:16	AJ	XEN MID
Total/NA	Analysis	Total BTEX		1			31127	07/31/22 10:51	AJ	XEN MID
Total/NA	Analysis	8015 NM		1			30761	07/27/22 08:23	AJ	XEN MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	30667	07/26/22 10:45	DM	XEN MID
Total/NA	Analysis	8015B NM		1			30645	07/27/22 04:43	AJ	XEN MID
Soluble	Leach	DI Leach			5.04 g	50 mL	30601	07/25/22 15:31	KS	XEN MID
Soluble	Analysis	300.0		1			30721	07/27/22 15:10	CH	XEN MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2625-1
SDG: 03E1558066

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	T104704400-22-24	06-30-23

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

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

Method Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2625-1
SDG: 03E1558066

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

Protocol References:

ASTM = ASTM International

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

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:

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

Sample Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2625-1
SDG: 03E1558066

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-2625-1	SS04	Solid	07/21/22 15:20	07/22/22 09:08	0.5

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Chain of Custody

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

Work Order No: _____

www.xenco.com Page 1 of 1

Project Manager:	Tacoma Morrissey	Bill to: (if different)	Garrett Green
Company Name:	Ensolum	Company Name:	XTO
Address:	3122 National Parks Highway	Address:	
City, State ZIP:	Carlsbad, NM 88220	City, State ZIP:	
Phone:	337-257-8307	Email:	garrett.green@exxonmobile.com

Work Order Comments

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

Project Name:	PLU 18 Twin Wells 155H	Turn Around	☑ Routine ☐ Rush
Project Number:	03E1558066	Due Date:	
Project Location:	(32.2096, -103.8149)	TAT starts the day received by the lab, if received by 4:30pm	
Sampler's Name:	Kase Parker		
PO #:			

SAMPLE RECEIPT				
Temp Blank:	Yes No	Wet Ice:	Yes No	
Samples Received Intact:	Yes No	Thermometer ID:	TMM-005	
Cooler Custody Seals:	Yes No N/A	Correction Factor:	-0.2	
Sample Custody Seals:	Yes No N/A	Temperature Reading:	5.2	
Total Containers:		Corrected Temperature:	5.0	

ANALYSIS REQUEST

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	BTEX	TPH	Chlorides
SS04	S	7/21/22	1520	0.5'	X	X		X	X	X

Parameters

890-2625 Chain of Custody

Preservative Codes

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

Sample Comments

CC; 166599001
nAPP2214735696;
Incident #
PM email:
tmorrissey@ensolum.com

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO_2 Na Sr Tl Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010 : 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U Hg: 1631 / 245.1 / 7470 / 7471

	Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1			7-22-22 908			
3				4		
5				6		

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2625-1
SDG Number: 03E1558066

Login Number: 2625
List Number: 1
Creator: Clifton, Cloe

List Source: Eurofins Carlsbad

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

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2625-1
SDG Number: 03E1558066

Login Number: 2625
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 07/25/22 09:19 AM

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

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ANALYTICAL REPORT

Eurofins Carlsbad
1089 N Canal St.
Carlsbad, NM 88220
Tel: (575)988-3199

Laboratory Job ID: 890-2626-1
Laboratory Sample Delivery Group: 03E1558066
Client Project/Site: PLU 18 TWIN WELLS 155H

For:
Ensolum
705 W. Wadley
Suite 210
Midland, Texas 79701

Attn: Tacoma Morrissey

JKramer

Authorized for release by:
7/31/2022 10:18:36 AM

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

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Laboratory Job ID: 890-2626-1
SDG: 03E1558066

Table of Contents

Definitions/Glossary

Client: Ensolum Job ID: 890-2626-1
Project/Site: PLU 18 TWIN WELLS 155H SDG: 03E1558066

Qualifiers

GC VOA

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

GC Semi VOA

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

HPLC/IC

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

Glossary

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

Case Narrative

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2626-1
SDG: 03E1558066

Job ID: 890-2626-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-2626-1

Receipt
The sample was received on 7/22/2022 9:08 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.0°C

GC VOA
Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-30687 and analytical batch 880-31048 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-30703 and analytical batch 880-31048 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was 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 matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-30667 and analytical batch 880-30645 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

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

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

Client Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2626-1
SDG: 03E1558066

Client Sample ID: SS05
Date Collected: 07/21/22 15:25
Date Received: 07/22/22 09:08
Sample Depth: 0.5

Lab Sample ID: 890-2626-1
Matrix: Solid

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		07/26/22 11:38	07/30/22 21:36	1
Toluene	<0.00199	U	0.00199		mg/Kg		07/26/22 11:38	07/30/22 21:36	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		07/26/22 11:38	07/30/22 21:36	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		07/26/22 11:38	07/30/22 21:36	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		07/26/22 11:38	07/30/22 21:36	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		07/26/22 11:38	07/30/22 21:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*	*07/26/22 11:38*	*07/30/22 21:36*	*1*
1,4-Difluorobenzene (Surr)	*104*		*70 - 130*	*07/26/22 11:38*	*07/30/22 21:36*	*1*

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398	U	0.00398		mg/Kg			07/31/22 10:51	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			07/27/22 08:23	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		07/26/22 10:45	07/27/22 05:04	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/26/22 10:45	07/27/22 05:04	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/26/22 10:45	07/27/22 05:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*100*		*70 - 130*	*07/26/22 10:45*	*07/27/22 05:04*	*1*
o-Terphenyl	*115*		*70 - 130*	*07/26/22 10:45*	*07/27/22 05:04*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**179**		5.03		mg/Kg			07/27/22 08:38	1

Surrogate Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2626-1
SDG: 03E1558066

Method: 8021B - Volatile Organic Compounds (GC)

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

		Percent Surrogate Recovery (Acceptance Limits)											
Lab Sample ID	Client Sample ID	BFB1 (70-130)	DFBZ1 (70-130)										
880-17204-A-99-C MS	Matrix Spike	110	94										
880-17204-A-99-D MSD	Matrix Spike Duplicate	107	93										
890-2623-A-1-G MS	Matrix Spike	108	98										
890-2623-A-1-H MSD	Matrix Spike Duplicate	99	100										
890-2626-1	SS05	103	104										
LCS 880-30687/1-A	Lab Control Sample	109	101										
LCS 880-30703/1-A	Lab Control Sample	101	90										
LCSD 880-30687/2-A	Lab Control Sample Dup	57 S1-	94										
LCSD 880-30703/2-A	Lab Control Sample Dup	97	94										
MB 880-30687/5-A	Method Blank	95	101										
MB 880-30703/5-A	Method Blank	93	96										

Surrogate Legend

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

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

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

		Percent Surrogate Recovery (Acceptance Limits)											
Lab Sample ID	Client Sample ID	1CO1 (70-130)	OTPH1 (70-130)										
890-2623-A-1-E MS	Matrix Spike	83	88										
890-2623-A-1-F MSD	Matrix Spike Duplicate	85	91										
890-2626-1	SS05	100	115										
LCS 880-30667/2-A	Lab Control Sample	115	116										
LCSD 880-30667/3-A	Lab Control Sample Dup	91	102										
MB 880-30667/1-A	Method Blank	87	102										

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2626-1
SDG: 03E1558066

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-30687/5-A
Matrix: Solid
Analysis Batch: 31048

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30687

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/26/22 11:38	07/30/22 13:28	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/26/22 11:38	07/30/22 13:28	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/26/22 11:38	07/30/22 13:28	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		07/26/22 11:38	07/30/22 13:28	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/26/22 11:38	07/30/22 13:28	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		07/26/22 11:38	07/30/22 13:28	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*	*07/26/22 11:38*	*07/30/22 13:28*	*1*
1,4-Difluorobenzene (Surr)	*101*		*70 - 130*	*07/26/22 11:38*	*07/30/22 13:28*	*1*

Lab Sample ID: LCS 880-30687/1-A
Matrix: Solid
Analysis Batch: 31048

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30687

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.09746		mg/Kg		97	70 - 130		
Toluene			0.100	0.1112		mg/Kg		111	70 - 130		
Ethylbenzene			0.100	0.09449		mg/Kg		94	70 - 130		
m-Xylene & p-Xylene			0.200	0.1906		mg/Kg		95	70 - 130		
o-Xylene			0.100	0.1111		mg/Kg		111	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*109*		*70 - 130*
1,4-Difluorobenzene (Surr)	*101*		*70 - 130*

Lab Sample ID: LCSD 880-30687/2-A
Matrix: Solid
Analysis Batch: 31048

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30687

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.08535		mg/Kg		85	70 - 130	13	35
Toluene			0.100	0.1067		mg/Kg		107	70 - 130	4	35
Ethylbenzene			0.100	0.09872		mg/Kg		99	70 - 130	4	35
m-Xylene & p-Xylene			0.200	0.2048		mg/Kg		102	70 - 130	7	35
o-Xylene			0.100	0.1208		mg/Kg		121	70 - 130	8	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*57*	*S1-*	*70 - 130*
1,4-Difluorobenzene (Surr)	*94*		*70 - 130*

Lab Sample ID: 890-2623-A-1-G MS
Matrix: Solid
Analysis Batch: 31048

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 30687

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00199	U F1	0.100	0.07238		mg/Kg		72	70 - 130		
Toluene	<0.00199	U F1	0.100	0.06879	F1	mg/Kg		68	70 - 130		

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2626-1
SDG: 03E1558066

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

Lab Sample ID: 890-2623-A-1-G MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 31048 — **Prep Batch: 30687**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00199	U F1	0.100	0.04505	F1	mg/Kg		43	70 - 130
m-Xylene & p-Xylene	<0.00398	U F1	0.201	0.09057	F1	mg/Kg		43	70 - 130
o-Xylene	<0.00199	U F1	0.100	0.05193	F1	mg/Kg		50	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*108*		*70 - 130*
1,4-Difluorobenzene (Surr)	*98*		*70 - 130*

Lab Sample ID: 890-2623-A-1-H MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 31048 — **Prep Batch: 30687**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00199	U F1	0.0992	0.06858	F1	mg/Kg		69	70 - 130	5	35
Toluene	<0.00199	U F1	0.0992	0.06605	F1	mg/Kg		66	70 - 130	4	35
Ethylbenzene	<0.00199	U F1	0.0992	0.04301	F1	mg/Kg		42	70 - 130	5	35
m-Xylene & p-Xylene	<0.00398	U F1	0.198	0.08435	F1	mg/Kg		41	70 - 130	7	35
o-Xylene	<0.00199	U F1	0.0992	0.04861	F1	mg/Kg		47	70 - 130	7	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*
1,4-Difluorobenzene (Surr)	*100*		*70 - 130*

Lab Sample ID: MB 880-30703/5-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 31048 — **Prep Batch: 30703**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		07/26/22 13:48	07/31/22 01:06	1
Toluene	<0.00200	U	0.00200	mg/Kg		07/26/22 13:48	07/31/22 01:06	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		07/26/22 13:48	07/31/22 01:06	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		07/26/22 13:48	07/31/22 01:06	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		07/26/22 13:48	07/31/22 01:06	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		07/26/22 13:48	07/31/22 01:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*	*07/26/22 13:48*	*07/31/22 01:06*	*1*
1,4-Difluorobenzene (Surr)	*96*		*70 - 130*	*07/26/22 13:48*	*07/31/22 01:06*	*1*

Lab Sample ID: LCS 880-30703/1-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 31048 — **Prep Batch: 30703**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.07529		mg/Kg		75	70 - 130
Toluene	0.100	0.09547		mg/Kg		95	70 - 130
Ethylbenzene	0.100	0.08300		mg/Kg		83	70 - 130
m-Xylene & p-Xylene	0.200	0.1680		mg/Kg		84	70 - 130

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2626-1
SDG: 03E1558066

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

Lab Sample ID: LCS 880-30703/1-A
Matrix: Solid
Analysis Batch: 31048

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30703

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
o-Xylene			0.100	0.09893		mg/Kg		99	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*
1,4-Difluorobenzene (Surr)	*90*		*70 - 130*

Lab Sample ID: LCSD 880-30703/2-A
Matrix: Solid
Analysis Batch: 31048

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30703

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.07473		mg/Kg		75	70 - 130	1	35
Toluene			0.100	0.09089		mg/Kg		91	70 - 130	5	35
Ethylbenzene			0.100	0.07880		mg/Kg		79	70 - 130	5	35
m-Xylene & p-Xylene			0.200	0.1596		mg/Kg		80	70 - 130	5	35
o-Xylene			0.100	0.09473		mg/Kg		95	70 - 130	4	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*
1,4-Difluorobenzene (Surr)	*94*		*70 - 130*

Lab Sample ID: 880-17204-A-99-C MS
Matrix: Solid
Analysis Batch: 31048

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 30703

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00201	U F1	0.100	0.05327	F1	mg/Kg		53	70 - 130		
Toluene	<0.00201	U F1	0.100	0.06370	F1	mg/Kg		64	70 - 130		
Ethylbenzene	<0.00201	U F1	0.100	0.05143	F1	mg/Kg		51	70 - 130		
m-Xylene & p-Xylene	<0.00402	U F1	0.200	0.1050	F1	mg/Kg		52	70 - 130		
o-Xylene	<0.00201	U F1	0.100	0.06058	F1	mg/Kg		60	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*110*		*70 - 130*
1,4-Difluorobenzene (Surr)	*94*		*70 - 130*

Lab Sample ID: 880-17204-A-99-D MSD
Matrix: Solid
Analysis Batch: 31048

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 30703

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00201	U F1	0.0996	0.05952	F1	mg/Kg		60	70 - 130	11	35
Toluene	<0.00201	U F1	0.0996	0.06786	F1	mg/Kg		68	70 - 130	6	35
Ethylbenzene	<0.00201	U F1	0.0996	0.05352	F1	mg/Kg		53	70 - 130	4	35
m-Xylene & p-Xylene	<0.00402	U F1	0.199	0.1059	F1	mg/Kg		52	70 - 130	1	35
o-Xylene	<0.00201	U F1	0.0996	0.05896	F1	mg/Kg		59	70 - 130	3	35

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2626-1
SDG: 03E1558066

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

Lab Sample ID: 880-17204-A-99-D MSD
Matrix: Solid
Analysis Batch: 31048

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 30703

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

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

Lab Sample ID: MB 880-30667/1-A
Matrix: Solid
Analysis Batch: 30645

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30667

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		07/26/22 10:45	07/26/22 20:25	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/26/22 10:45	07/26/22 20:25	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/26/22 10:45	07/26/22 20:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	87		70 - 130	07/26/22 10:45	07/26/22 20:25	1
o-Terphenyl	102		70 - 130	07/26/22 10:45	07/26/22 20:25	1

Lab Sample ID: LCS 880-30667/2-A
Matrix: Solid
Analysis Batch: 30645

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30667

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	1069		mg/Kg		107	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	921.7		mg/Kg		92	70 - 130		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1-Chlorooctane	115		70 - 130
o-Terphenyl	116		70 - 130

Lab Sample ID: LCSD 880-30667/3-A
Matrix: Solid
Analysis Batch: 30645

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30667

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	1061		mg/Kg		106	70 - 130	1	20
Diesel Range Organics (Over C10-C28)			1000	847.4		mg/Kg		85	70 - 130	8	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1-Chlorooctane	91		70 - 130
o-Terphenyl	102		70 - 130

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2626-1
SDG: 03E1558066

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

Lab Sample ID: 890-2623-A-1-E MS
Matrix: Solid
Analysis Batch: 30645

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 30667

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	80.8		1000	1129		mg/Kg		105	70 - 130
Diesel Range Organics (Over C10-C28)	1420	F1	1000	1866	F1	mg/Kg		45	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*83*		*70 - 130*
o-Terphenyl	*88*		*70 - 130*

Lab Sample ID: 890-2623-A-1-F MSD
Matrix: Solid
Analysis Batch: 30645

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 30667

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	80.8		999	1107		mg/Kg		103	70 - 130	2	20
Diesel Range Organics (Over C10-C28)	1420	F1	999	1976	F1	mg/Kg		56	70 - 130	6	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*85*		*70 - 130*
o-Terphenyl	*91*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-30625/1-A
Matrix: Solid
Analysis Batch: 30693

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			07/27/22 04:59	1

Lab Sample ID: LCS 880-30625/2-A
Matrix: Solid
Analysis Batch: 30693

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride			250	261.5		mg/Kg		105	90 - 110

Lab Sample ID: LCSD 880-30625/3-A
Matrix: Solid
Analysis Batch: 30693

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	262.3		mg/Kg		105	90 - 110	0	20

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2626-1
SDG: 03E1558066

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 890-2623-A-11-E MS
Matrix: Solid
Analysis Batch: 30693

Client Sample ID: Matrix Spike
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	1640		2520	4348		mg/Kg		107	90 - 110

Lab Sample ID: 890-2623-A-11-F MSD
Matrix: Solid
Analysis Batch: 30693

Client Sample ID: Matrix Spike Duplicate
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	1640		2520	4346		mg/Kg		107	90 - 110	0	20

QC Association Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2626-1
SDG: 03E1558066

GC VOA

Prep Batch: 30687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2626-1	SS05	Total/NA	Solid	5035	
MB 880-30687/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-30687/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-30687/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-2623-A-1-G MS	Matrix Spike	Total/NA	Solid	5035	
890-2623-A-1-H MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Prep Batch: 30703

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-30703/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-30703/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-30703/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-17204-A-99-C MS	Matrix Spike	Total/NA	Solid	5035	
880-17204-A-99-D MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 31048

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2626-1	SS05	Total/NA	Solid	8021B	30687
MB 880-30687/5-A	Method Blank	Total/NA	Solid	8021B	30687
MB 880-30703/5-A	Method Blank	Total/NA	Solid	8021B	30703
LCS 880-30687/1-A	Lab Control Sample	Total/NA	Solid	8021B	30687
LCS 880-30703/1-A	Lab Control Sample	Total/NA	Solid	8021B	30703
LCSD 880-30687/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	30687
LCSD 880-30703/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	30703
880-17204-A-99-C MS	Matrix Spike	Total/NA	Solid	8021B	30703
880-17204-A-99-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	30703
890-2623-A-1-G MS	Matrix Spike	Total/NA	Solid	8021B	30687
890-2623-A-1-H MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	30687

Analysis Batch: 31128

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2626-1	SS05	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 30645

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2626-1	SS05	Total/NA	Solid	8015B NM	30667
MB 880-30667/1-A	Method Blank	Total/NA	Solid	8015B NM	30667
LCS 880-30667/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	30667
LCSD 880-30667/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	30667
890-2623-A-1-E MS	Matrix Spike	Total/NA	Solid	8015B NM	30667
890-2623-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	30667

Prep Batch: 30667

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2626-1	SS05	Total/NA	Solid	8015NM Prep	
MB 880-30667/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-30667/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-30667/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-2623-A-1-E MS	Matrix Spike	Total/NA	Solid	8015NM Prep	

QC Association Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2626-1
SDG: 03E1558066

GC Semi VOA (Continued)

Prep Batch: 30667 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2623-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 30762

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2626-1	SS05	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 30625

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2626-1	SS05	Soluble	Solid	DI Leach	
MB 880-30625/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-30625/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-30625/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-2623-A-11-E MS	Matrix Spike	Soluble	Solid	DI Leach	
890-2623-A-11-F MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 30693

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2626-1	SS05	Soluble	Solid	300.0	30625
MB 880-30625/1-A	Method Blank	Soluble	Solid	300.0	30625
LCS 880-30625/2-A	Lab Control Sample	Soluble	Solid	300.0	30625
LCSD 880-30625/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	30625
890-2623-A-11-E MS	Matrix Spike	Soluble	Solid	300.0	30625
890-2623-A-11-F MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	30625

Lab Chronicle

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2626-1
SDG: 03E1558066

Client Sample ID: SS05

Date Collected: 07/21/22 15:25
Date Received: 07/22/22 09:08

Lab Sample ID: 890-2626-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.03 g	5 mL	30687	07/26/22 11:38	MR	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	31048	07/30/22 21:36	AJ	XEN MID
Total/NA	Analysis	Total BTEX		1			31128	07/31/22 10:51	AJ	XEN MID
Total/NA	Analysis	8015 NM		1			30762	07/27/22 08:23	AJ	XEN MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	30667	07/26/22 10:45	DM	XEN MID
Total/NA	Analysis	8015B NM		1			30645	07/27/22 05:04	AJ	XEN MID
Soluble	Leach	DI Leach			4.97 g	50 mL	30625	07/25/22 16:31	KS	XEN MID
Soluble	Analysis	300.0		1			30693	07/27/22 08:38	CH	XEN MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2626-1
SDG: 03E1558066

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	T104704400-22-24	06-30-23

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

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

Method Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2626-1
SDG: 03E1558066

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

Protocol References:

ASTM = ASTM International

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

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:

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

Sample Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2626-1
SDG: 03E1558066

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-2626-1	SS05	Solid	07/21/22 15:25	07/22/22 09:08	0.5

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Chain of Custody

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

Work Order No: _____

www.xenco.com Page 1 of 1

Project Manager:	Tacoma Morrissey	Bill to: (if different)	Garrett Green
Company Name:	Ensolum	Company Name:	XTO
Address:	3122 National Parks Highway	Address:	
City, State ZIP:	Carlsbad, NM 88220	City, State ZIP:	
Phone:	337-257-8307	Email:	garrett.green@exxonmobile.com

Work Order Comments

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

Project Name:	PLU 18 Twin Wells 155H	Turn Around	☑ Routine ☐ Rush
Project Number:	03E1558066	Due Date:	
Project Location:	(32.2096, -103.8149)	TAT starts the day received by the lab, if received by 4:30pm	
Sampler's Name:	Kaic Parker		
PO #:			

SAMPLE RECEIPT			
Temp Blank:	Yes No	Wet Ice:	Yes No
Samples Received Intact:	Yes No	Thermometer ID:	TMH-007
Cooler Custody Seals:	Yes No N/A	Correction Factor:	-0.2
Sample Custody Seals:	Yes No N/A	Temperature Reading:	5.2
Total Containers:		Corrected Temperature:	5.0

Preservative Codes

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

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	BTEX	TPH	Chlorides
SS05	S	7/21/22	1525	0.5'				X	X	X

890-2626 Chain of Custody

Sample Comments

CC; 1665991001
Incident #;
nAPP2214735696
tmorrissey@ensolum.com

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO_2 Na Sr Tl Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010 : 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U Hg: 1631 / 245.1 / 7470 / 7471

	Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1			7-22-22 908			
3				4		
5				6		

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2626-1
SDG Number: 03E1558066

Login Number: 2626
List Number: 1
Creator: Clifton, Cloe

List Source: Eurofins Carlsbad

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

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2626-1
SDG Number: 03E1558066

Login Number: 2626
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 07/25/22 09:19 AM

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

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ANALYTICAL REPORT

Eurofins Carlsbad
1089 N Canal St.
Carlsbad, NM 88220
Tel: (575)988-3199

Laboratory Job ID: 890-2627-1
Laboratory Sample Delivery Group: 03E1558066
Client Project/Site: PLU TWIN WELLS 155H

For:
Ensolum
705 W. Wadley
Suite 210
Midland, Texas 79701

Attn: Tacoma Morrissey

JKramer

Authorized for release by:
7/29/2022 10:57:59 AM

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

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Client: Ensolum
Project/Site: PLU TWIN WELLS 155H

Laboratory Job ID: 890-2627-1
SDG: 03E1558066

Table of Contents

Definitions/Glossary

Client: Ensolum Job ID: 890-2627-1
Project/Site: PLU TWIN WELLS 155H SDG: 03E1558066

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

GC Semi VOA

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

HPLC/IC

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

Glossary

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

Case Narrative

Client: Ensolum
Project/Site: PLU TWIN WELLS 155H

Job ID: 890-2627-1
SDG: 03E1558066

Job ID: 890-2627-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-2627-1

Receipt
The sample was received on 7/22/2022 9:08 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.0°C

GC VOA
Method 8021B: The matrix spike / matrix spike duplicate / sample duplicate (MS/MSD/DUP) precision for preparation batch 880-30589 and analytical batch 880-30859 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 8021B: The surrogate recovery for the blank associated with preparation batch 880-30669 and analytical batch 880-30859 was outside the upper control limits.

Method 8021B: Surrogate recovery for the following sample was outside control limits: (890-2641-A-1-D). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: Surrogate recovery for the following sample was outside control limits: SS06 (890-2627-1). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: Surrogate recovery for the following samples were outside control limits: (LCSD 880-30589/2-A) and (880-17202-A-1-D MS). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: The surrogate recovery for the blank associated with preparation batch 880-30589 and analytical batch 880-30859 was outside the upper control limits.

Method 8021B: Surrogate recovery for the following sample was outside control limits: (880-17202-A-1-F). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: The laboratory control sample (LCS) associated with preparation batch 880-30669 and analytical batch 880-30859 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 matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-30667 and analytical batch 880-30645 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

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

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

Client Sample Results

Client: Ensolum
Project/Site: PLU TWIN WELLS 155H

Job ID: 890-2627-1
SDG: 03E1558066

Client Sample ID: SS06

Date Collected: 07/21/22 15:30
Date Received: 07/22/22 09:08
Sample Depth: 0.5

Lab Sample ID: 890-2627-1

Matrix: Solid

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00202	U	0.00202		mg/Kg		07/26/22 10:50	07/28/22 20:22	1
Toluene	<0.00202	U	0.00202		mg/Kg		07/26/22 10:50	07/28/22 20:22	1
Ethylbenzene	<0.00202	U	0.00202		mg/Kg		07/26/22 10:50	07/28/22 20:22	1
m-Xylene & p-Xylene	<0.00404	U	0.00404		mg/Kg		07/26/22 10:50	07/28/22 20:22	1
o-Xylene	<0.00202	U *+	0.00202		mg/Kg		07/26/22 10:50	07/28/22 20:22	1
Xylenes, Total	<0.00404	U	0.00404		mg/Kg		07/26/22 10:50	07/28/22 20:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*135*	*S1+*	*70 - 130*	*07/26/22 10:50*	*07/28/22 20:22*	*1*
1,4-Difluorobenzene (Surr)	*96*		*70 - 130*	*07/26/22 10:50*	*07/28/22 20:22*	*1*

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00404	U	0.00404		mg/Kg			07/29/22 09:30	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.0	U	50.0		mg/Kg			07/27/22 08:23	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		07/26/22 10:45	07/27/22 05:26	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/26/22 10:45	07/27/22 05:26	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/26/22 10:45	07/27/22 05:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*93*		*70 - 130*	*07/26/22 10:45*	*07/27/22 05:26*	*1*
o-Terphenyl	*104*		*70 - 130*	*07/26/22 10:45*	*07/27/22 05:26*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**55.5**		5.02		mg/Kg			07/27/22 08:46	1

Surrogate Summary

Client: Ensolum
Project/Site: PLU TWIN WELLS 155H

Job ID: 890-2627-1
SDG: 03E1558066

Method: 8021B - Volatile Organic Compounds (GC)

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

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	BFB1 (70-130)	DFBZ1 (70-130)
880-17202-A-1-D MS	Matrix Spike	352 S1+	298 S1+
880-17202-A-1-E MSD	Matrix Spike Duplicate	129	107
890-2627-1	SS06	135 S1+	96
890-2641-A-1-B MS	Matrix Spike	123	98
890-2641-A-1-C MSD	Matrix Spike Duplicate	130	106
LCS 880-30589/1-A	Lab Control Sample	123	101
LCS 880-30669/1-A	Lab Control Sample	118	98
LCSD 880-30589/2-A	Lab Control Sample Dup	131 S1+	113
LCSD 880-30669/2-A	Lab Control Sample Dup	116	106
MB 880-30589/5-A	Method Blank	107	62 S1-
MB 880-30669/5-A	Method Blank	91	63 S1-

Surrogate Legend

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

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

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

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	1CO1 (70-130)	OTPH1 (70-130)
890-2623-A-1-E MS	Matrix Spike	83	88
890-2623-A-1-F MSD	Matrix Spike Duplicate	85	91
890-2627-1	SS06	93	104
LCS 880-30667/2-A	Lab Control Sample	115	116
LCSD 880-30667/3-A	Lab Control Sample Dup	91	102
MB 880-30667/1-A	Method Blank	87	102

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: PLU TWIN WELLS 155H

Job ID: 890-2627-1
SDG: 03E1558066

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-30589/5-A
Matrix: Solid
Analysis Batch: 30859

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30589

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.000400	U	0.000400		mg/Kg		07/25/22 12:06	07/29/22 02:31	1
Toluene	<0.000400	U	0.000400		mg/Kg		07/25/22 12:06	07/29/22 02:31	1
Ethylbenzene	<0.000400	U	0.000400		mg/Kg		07/25/22 12:06	07/29/22 02:31	1
m-Xylene & p-Xylene	<0.000800	U	0.000800		mg/Kg		07/25/22 12:06	07/29/22 02:31	1
o-Xylene	<0.000400	U	0.000400		mg/Kg		07/25/22 12:06	07/29/22 02:31	1
Xylenes, Total	<0.000800	U	0.000800		mg/Kg		07/25/22 12:06	07/29/22 02:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*70 - 130*	*07/25/22 12:06*	*07/29/22 02:31*	*1*
1,4-Difluorobenzene (Surr)	*62*	*S1-*	*70 - 130*	*07/25/22 12:06*	*07/29/22 02:31*	*1*

Lab Sample ID: LCS 880-30589/1-A
Matrix: Solid
Analysis Batch: 30859

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30589

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.1106		mg/Kg		111	70 - 130		
Toluene			0.100	0.1060		mg/Kg		106	70 - 130		
Ethylbenzene			0.100	0.1050		mg/Kg		105	70 - 130		
m-Xylene & p-Xylene			0.200	0.2101		mg/Kg		105	70 - 130		
o-Xylene			0.100	0.1245		mg/Kg		125	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*123*		*70 - 130*
1,4-Difluorobenzene (Surr)	*101*		*70 - 130*

Lab Sample ID: LCSD 880-30589/2-A
Matrix: Solid
Analysis Batch: 30859

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30589

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.1160		mg/Kg		116	70 - 130	5	35
Toluene			0.100	0.1083		mg/Kg		108	70 - 130	2	35
Ethylbenzene			0.100	0.1026		mg/Kg		103	70 - 130	2	35
m-Xylene & p-Xylene			0.200	0.2112		mg/Kg		106	70 - 130	1	35
o-Xylene			0.100	0.1264		mg/Kg		126	70 - 130	1	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*131*	*S1+*	*70 - 130*
1,4-Difluorobenzene (Surr)	*113*		*70 - 130*

Lab Sample ID: 880-17202-A-1-D MS
Matrix: Solid
Analysis Batch: 30859

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 30589

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00201	U	0.101	0.09818		mg/Kg		98	70 - 130		
Toluene	<0.00201	U	0.101	0.09360		mg/Kg		93	70 - 130		

QC Sample Results

Client: Ensolum
Project/Site: PLU TWIN WELLS 155H

Job ID: 890-2627-1
SDG: 03E1558066

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

Lab Sample ID: 880-17202-A-1-D MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 30859 — **Prep Batch: 30589**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00201	U F1	0.101	0.07292		mg/Kg		72	70 - 130
m-Xylene & p-Xylene	<0.00402	U F1	0.201	0.1277	F1	mg/Kg		63	70 - 130
o-Xylene	<0.00201	U F1	0.101	0.1418	F1	mg/Kg		141	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*352*	*S1+*	*70 - 130*
1,4-Difluorobenzene (Surr)	*298*	*S1+*	*70 - 130*

Lab Sample ID: 880-17202-A-1-E MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 30859 — **Prep Batch: 30589**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00201	U	0.100	0.09685		mg/Kg		97	70 - 130	1	35
Toluene	<0.00201	U	0.100	0.07927		mg/Kg		79	70 - 130	17	35
Ethylbenzene	<0.00201	U F1	0.100	0.06937	F1	mg/Kg		69	70 - 130	5	35
m-Xylene & p-Xylene	<0.00402	U F1	0.200	0.1122	F1	mg/Kg		56	70 - 130	13	35
o-Xylene	<0.00201	U F1	0.100	0.1004		mg/Kg		100	70 - 130	34	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*129*		*70 - 130*
1,4-Difluorobenzene (Surr)	*107*		*70 - 130*

Lab Sample ID: MB 880-30669/5-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 30859 — **Prep Batch: 30669**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		07/26/22 10:50	07/28/22 12:54	1
Toluene	<0.00200	U	0.00200	mg/Kg		07/26/22 10:50	07/28/22 12:54	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		07/26/22 10:50	07/28/22 12:54	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		07/26/22 10:50	07/28/22 12:54	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		07/26/22 10:50	07/28/22 12:54	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		07/26/22 10:50	07/28/22 12:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*	*07/26/22 10:50*	*07/28/22 12:54*	*1*
1,4-Difluorobenzene (Surr)	*63*	*S1-*	*70 - 130*	*07/26/22 10:50*	*07/28/22 12:54*	*1*

Lab Sample ID: LCS 880-30669/1-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 30859 — **Prep Batch: 30669**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.1289		mg/Kg		129	70 - 130
Toluene	0.100	0.1149		mg/Kg		115	70 - 130
Ethylbenzene	0.100	0.1145		mg/Kg		115	70 - 130
m-Xylene & p-Xylene	0.200	0.2274		mg/Kg		114	70 - 130

QC Sample Results

Client: Ensolum
Project/Site: PLU TWIN WELLS 155H

Job ID: 890-2627-1
SDG: 03E1558066

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

Lab Sample ID: LCS 880-30669/1-A
Matrix: Solid
Analysis Batch: 30859

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30669

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
o-Xylene			0.100	0.1307	*+	mg/Kg		131	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*118*		*70 - 130*
1,4-Difluorobenzene (Surr)	*98*		*70 - 130*

Lab Sample ID: LCSD 880-30669/2-A
Matrix: Solid
Analysis Batch: 30859

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30669

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.1141		mg/Kg		114	70 - 130	12	35
Toluene			0.100	0.1064		mg/Kg		106	70 - 130	8	35
Ethylbenzene			0.100	0.1061		mg/Kg		106	70 - 130	8	35
m-Xylene & p-Xylene			0.200	0.2107		mg/Kg		105	70 - 130	8	35
o-Xylene			0.100	0.1219		mg/Kg		122	70 - 130	7	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*116*		*70 - 130*
1,4-Difluorobenzene (Surr)	*106*		*70 - 130*

Lab Sample ID: 890-2641-A-1-B MS
Matrix: Solid
Analysis Batch: 30859

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 30669

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00202	U	0.0998	0.07226		mg/Kg		72	70 - 130		
Toluene	<0.00202	U	0.0998	0.07101		mg/Kg		71	70 - 130		
Ethylbenzene	<0.00202	U	0.0998	0.07062		mg/Kg		71	70 - 130		
m-Xylene & p-Xylene	<0.00403	U	0.200	0.1424		mg/Kg		71	70 - 130		
o-Xylene	<0.00202	U *+	0.0998	0.08584		mg/Kg		86	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*123*		*70 - 130*
1,4-Difluorobenzene (Surr)	*98*		*70 - 130*

Lab Sample ID: 890-2641-A-1-C MSD
Matrix: Solid
Analysis Batch: 30859

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 30669

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00202	U	0.101	0.07981		mg/Kg		79	70 - 130	10	35
Toluene	<0.00202	U	0.101	0.08154		mg/Kg		81	70 - 130	14	35
Ethylbenzene	<0.00202	U	0.101	0.08365		mg/Kg		83	70 - 130	17	35
m-Xylene & p-Xylene	<0.00403	U	0.202	0.1671		mg/Kg		83	70 - 130	16	35
o-Xylene	<0.00202	U *+	0.101	0.09998		mg/Kg		99	70 - 130	15	35

QC Sample Results

Client: Ensolum
Project/Site: PLU TWIN WELLS 155H

Job ID: 890-2627-1
SDG: 03E1558066

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

Lab Sample ID: 890-2641-A-1-C MSD
Matrix: Solid
Analysis Batch: 30859

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 30669

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

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

Lab Sample ID: MB 880-30667/1-A
Matrix: Solid
Analysis Batch: 30645

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30667

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		07/26/22 10:45	07/26/22 20:25	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/26/22 10:45	07/26/22 20:25	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/26/22 10:45	07/26/22 20:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	87		70 - 130	07/26/22 10:45	07/26/22 20:25	1
o-Terphenyl	102		70 - 130	07/26/22 10:45	07/26/22 20:25	1

Lab Sample ID: LCS 880-30667/2-A
Matrix: Solid
Analysis Batch: 30645

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30667

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	1069		mg/Kg		107	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	921.7		mg/Kg		92	70 - 130		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1-Chlorooctane	115		70 - 130
o-Terphenyl	116		70 - 130

Lab Sample ID: LCSD 880-30667/3-A
Matrix: Solid
Analysis Batch: 30645

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30667

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	1061		mg/Kg		106	70 - 130	1	20
Diesel Range Organics (Over C10-C28)			1000	847.4		mg/Kg		85	70 - 130	8	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1-Chlorooctane	91		70 - 130
o-Terphenyl	102		70 - 130

QC Sample Results

Client: Ensolum
Project/Site: PLU TWIN WELLS 155H

Job ID: 890-2627-1
SDG: 03E1558066

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

Lab Sample ID: 890-2623-A-1-E MS
Matrix: Solid
Analysis Batch: 30645

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 30667

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	80.8		1000	1129		mg/Kg		105	70 - 130
Diesel Range Organics (Over C10-C28)	1420	F1	1000	1866	F1	mg/Kg		45	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*83*		*70 - 130*
o-Terphenyl	*88*		*70 - 130*

Lab Sample ID: 890-2623-A-1-F MSD
Matrix: Solid
Analysis Batch: 30645

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 30667

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	80.8		999	1107		mg/Kg		103	70 - 130	2	20
Diesel Range Organics (Over C10-C28)	1420	F1	999	1976	F1	mg/Kg		56	70 - 130	6	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*85*		*70 - 130*
o-Terphenyl	*91*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-30625/1-A
Matrix: Solid
Analysis Batch: 30693

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			07/27/22 04:59	1

Lab Sample ID: LCS 880-30625/2-A
Matrix: Solid
Analysis Batch: 30693

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride			250	261.5		mg/Kg		105	90 - 110

Lab Sample ID: LCSD 880-30625/3-A
Matrix: Solid
Analysis Batch: 30693

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	262.3		mg/Kg		105	90 - 110	0	20

QC Sample Results

Client: Ensolum
Project/Site: PLU TWIN WELLS 155H

Job ID: 890-2627-1
SDG: 03E1558066

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 890-2623-A-11-E MS
Matrix: Solid
Analysis Batch: 30693

Client Sample ID: Matrix Spike
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	1640		2520	4348		mg/Kg		107	90 - 110		

Lab Sample ID: 890-2623-A-11-F MSD
Matrix: Solid
Analysis Batch: 30693

Client Sample ID: Matrix Spike Duplicate
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	1640		2520	4346		mg/Kg		107	90 - 110	0	20

QC Association Summary

Client: Ensolum
Project/Site: PLU TWIN WELLS 155H

Job ID: 890-2627-1
SDG: 03E1558066

GC VOA

Prep Batch: 30589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-30589/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-30589/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-30589/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-17202-A-1-D MS	Matrix Spike	Total/NA	Solid	5035	
880-17202-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Prep Batch: 30669

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2627-1	SS06	Total/NA	Solid	5035	
MB 880-30669/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-30669/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-30669/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-2641-A-1-B MS	Matrix Spike	Total/NA	Solid	5035	
890-2641-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 30859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2627-1	SS06	Total/NA	Solid	8021B	30669
MB 880-30589/5-A	Method Blank	Total/NA	Solid	8021B	30589
MB 880-30669/5-A	Method Blank	Total/NA	Solid	8021B	30669
LCS 880-30589/1-A	Lab Control Sample	Total/NA	Solid	8021B	30589
LCS 880-30669/1-A	Lab Control Sample	Total/NA	Solid	8021B	30669
LCSD 880-30589/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	30589
LCSD 880-30669/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	30669
880-17202-A-1-D MS	Matrix Spike	Total/NA	Solid	8021B	30589
880-17202-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	30589
890-2641-A-1-B MS	Matrix Spike	Total/NA	Solid	8021B	30669
890-2641-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	30669

Analysis Batch: 30969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2627-1	SS06	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 30645

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2627-1	SS06	Total/NA	Solid	8015B NM	30667
MB 880-30667/1-A	Method Blank	Total/NA	Solid	8015B NM	30667
LCS 880-30667/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	30667
LCSD 880-30667/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	30667
890-2623-A-1-E MS	Matrix Spike	Total/NA	Solid	8015B NM	30667
890-2623-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	30667

Prep Batch: 30667

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2627-1	SS06	Total/NA	Solid	8015NM Prep	
MB 880-30667/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-30667/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-30667/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-2623-A-1-E MS	Matrix Spike	Total/NA	Solid	8015NM Prep	

QC Association Summary

Client: Ensolum
Project/Site: PLU TWIN WELLS 155H

Job ID: 890-2627-1
SDG: 03E1558066

GC Semi VOA (Continued)

Prep Batch: 30667 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2623-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 30763

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2627-1	SS06	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 30625

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2627-1	SS06	Soluble	Solid	DI Leach	
MB 880-30625/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-30625/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-30625/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-2623-A-11-E MS	Matrix Spike	Soluble	Solid	DI Leach	
890-2623-A-11-F MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 30693

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2627-1	SS06	Soluble	Solid	300.0	30625
MB 880-30625/1-A	Method Blank	Soluble	Solid	300.0	30625
LCS 880-30625/2-A	Lab Control Sample	Soluble	Solid	300.0	30625
LCSD 880-30625/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	30625
890-2623-A-11-E MS	Matrix Spike	Soluble	Solid	300.0	30625
890-2623-A-11-F MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	30625

Lab Chronicle

Client: Ensolum
Project/Site: PLU TWIN WELLS 155H

Job ID: 890-2627-1
SDG: 03E1558066

Client Sample ID: SS06

Date Collected: 07/21/22 15:30
Date Received: 07/22/22 09:08

Lab Sample ID: 890-2627-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.95 g	5 mL	30669	07/26/22 10:50	MR	XEN MID
Total/NA	Analysis	8021B		1			30859	07/28/22 20:22	MR	XEN MID
Total/NA	Analysis	Total BTEX		1			30969	07/29/22 09:30	SM	XEN MID
Total/NA	Analysis	8015 NM		1			30763	07/27/22 08:23	AJ	XEN MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	30667	07/26/22 10:45	DM	XEN MID
Total/NA	Analysis	8015B NM		1			30645	07/27/22 05:26	AJ	XEN MID
Soluble	Leach	DI Leach			4.98 g	50 mL	30625	07/25/22 16:31	KS	XEN MID
Soluble	Analysis	300.0		1			30693	07/27/22 08:46	CH	XEN MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: PLU TWIN WELLS 155H

Job ID: 890-2627-1
SDG: 03E1558066

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	T104704400-22-24	06-30-23

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

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

Method Summary

Client: Ensolum
Project/Site: PLU TWIN WELLS 155H

Job ID: 890-2627-1
SDG: 03E1558066

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

Protocol References:

ASTM = ASTM International

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

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:

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

Sample Summary

Client: Ensolum
Project/Site: PLU TWIN WELLS 155H

Job ID: 890-2627-1
SDG: 03E1558066

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-2627-1	SS06	Solid	07/21/22 15:30	07/22/22 09:08	0.5

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Chain of Custody

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

Work Order No: _____

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Project Manager:	Tacoma Morrissey	Bill to: (if different)	Garrett Green
Company Name:	Ensolum	Company Name:	XTO
Address:	3122 National Parks Highway	Address:	
City, State ZIP:	Carlsbad, NM 88220	City, State ZIP:	
Phone:	337-257-8307	Email:	garrett.green@exxonmobile.com

Work Order Comments

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

Project Name:	PLU 18 Twin Wells 155H	Turn Around	☑ Routine ☐ Rush
Project Number:	03E1558066	Due Date:	
Project Location:	(32.2096, -103.8149)	TAT starts the day received by the lab, if received by 4:30pm	
Sampler's Name:	Kase Parker		
PO #:			

SAMPLE RECEIPT			
Temp Blank:	(Yes) No	Wet Ice:	(Yes) No
Samples Received Intact:	(Yes) No	Thermometer ID:	TNM-007
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	-0.2
Sample Custody Seals:	Yes No (N/A)	Temperature Reading:	5.2
Total Containers:		Corrected Temperature:	5.6

Preservative Codes

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

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	BTEX	TPH	Chlorides	Sample Comments
SS06	S	7/21/22	1530	0.5'				X	X	X	CC;1665991001
											Incident #; nAPP2214735696
											tmorrissey@ensolum.com

890-2627 Chain of Custody

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO_2 Na Sr Tl Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010 : 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U Hg: 1631 / 245.1 / 7470 / 7471

	Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1			7.22.22			
3				4		
5				6		

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2627-1
SDG Number: 03E1558066

Login Number: 2627
List Number: 1
Creator: Clifton, Cloe

List Source: Eurofins Carlsbad

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

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2627-1
SDG Number: 03E1558066

Login Number: 2627
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 07/25/22 09:19 AM

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

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ANALYTICAL REPORT

Eurofins Carlsbad
1089 N Canal St.
Carlsbad, NM 88220
Tel: (575)988-3199

Laboratory Job ID: 890-2628-1
Laboratory Sample Delivery Group: 03E1558066
Client Project/Site: PLU 18 TWIN WELLS 155H

For:
Ensolum
705 W. Wadley
Suite 210
Midland, Texas 79701

Attn: Tacoma Morrissey

JKramer

Authorized for release by:
7/29/2022 10:57:58 AM

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

LINKS

Review your project results through my EOL

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Laboratory Job ID: 890-2628-1
SDG: 03E1558066

Table of Contents

Definitions/Glossary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2628-1
SDG: 03E1558066

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

HPLC/IC

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

Glossary

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

Case Narrative

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2628-1
SDG: 03E1558066

Job ID: 890-2628-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-2628-1

Receipt
The sample was received on 7/22/2022 9:08 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.0°C

GC VOA
Method 8021B: The matrix spike / matrix spike duplicate / sample duplicate (MS/MSD/DUP) precision for preparation batch 880-30589 and analytical batch 880-30859 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 8021B: The surrogate recovery for the blank associated with preparation batch 880-30669 and analytical batch 880-30859 was outside the upper control limits.

Method 8021B: Surrogate recovery for the following sample was outside control limits: (890-2641-A-1-D). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: Surrogate recovery for the following samples were outside control limits: (LCSD 880-30589/2-A) and (880-17202-A-1-D MS). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: The surrogate recovery for the blank associated with preparation batch 880-30589 and analytical batch 880-30859 was outside the upper control limits.

Method 8021B: Surrogate recovery for the following sample was outside control limits: (880-17202-A-1-F). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: The laboratory control sample (LCS) associated with preparation batch 880-30669 and analytical batch 880-30859 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 RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 880-30765 and analytical batch 880-30743 recovered outside control limits for the following analytes: Diesel Range Organics (Over C10-C28).

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

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

Client Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2628-1
SDG: 03E1558066

Client Sample ID: SS07

Date Collected: 07/21/22 15:35
Date Received: 07/22/22 09:08
Sample Depth: 0.5

Lab Sample ID: 890-2628-1

Matrix: Solid

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/26/22 10:50	07/28/22 20:48	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/26/22 10:50	07/28/22 20:48	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/26/22 10:50	07/28/22 20:48	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		07/26/22 10:50	07/28/22 20:48	1
o-Xylene	<0.00200	U *+	0.00200		mg/Kg		07/26/22 10:50	07/28/22 20:48	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		07/26/22 10:50	07/28/22 20:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*112*		*70 - 130*	*07/26/22 10:50*	*07/28/22 20:48*	*1*
1,4-Difluorobenzene (Surr)	*108*		*70 - 130*	*07/26/22 10:50*	*07/28/22 20:48*	*1*

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00399	U	0.00399		mg/Kg			07/29/22 09:30	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**84.0**		49.9		mg/Kg			07/28/22 09:08	1

Method: 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		07/27/22 08:40	07/27/22 18:37	1
Diesel Range Organics (Over C10-C28)	<49.9	U *1	49.9		mg/Kg		07/27/22 08:40	07/27/22 18:37	1
Oil Range Organics (Over C28-C36)	**84.0**		49.9		mg/Kg		07/27/22 08:40	07/27/22 18:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*90*		*70 - 130*	*07/27/22 08:40*	*07/27/22 18:37*	*1*
o-Terphenyl	*95*		*70 - 130*	*07/27/22 08:40*	*07/27/22 18:37*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**167**		4.99		mg/Kg			07/27/22 08:54	1

Surrogate Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2628-1
SDG: 03E1558066

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)
880-17202-A-1-D MS	Matrix Spike	352 S1+	298 S1+
880-17202-A-1-E MSD	Matrix Spike Duplicate	129	107
890-2628-1	SS07	112	108
890-2641-A-1-B MS	Matrix Spike	123	98
890-2641-A-1-C MSD	Matrix Spike Duplicate	130	106
LCS 880-30589/1-A	Lab Control Sample	123	101
LCS 880-30669/1-A	Lab Control Sample	118	98
LCSD 880-30589/2-A	Lab Control Sample Dup	131 S1+	113
LCSD 880-30669/2-A	Lab Control Sample Dup	116	106
MB 880-30589/5-A	Method Blank	107	62 S1-
MB 880-30669/5-A	Method Blank	91	63 S1-

Surrogate Legend

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

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

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

		Percent Surrogate Recovery (Acceptance Limits)	
		1CO1	OTPH1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
880-17301-A-1-E MS	Matrix Spike	99	88
880-17301-A-1-F MSD	Matrix Spike Duplicate	99	89
890-2628-1	SS07	90	95
LCS 880-30765/2-A	Lab Control Sample	89	82
LCSD 880-30765/3-A	Lab Control Sample Dup	107	108
MB 880-30765/1-A	Method Blank	82	83

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2628-1
SDG: 03E1558066

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-30589/5-A
Matrix: Solid
Analysis Batch: 30859

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30589

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.000400	U	0.000400		mg/Kg		07/25/22 12:06	07/29/22 02:31	1
Toluene	<0.000400	U	0.000400		mg/Kg		07/25/22 12:06	07/29/22 02:31	1
Ethylbenzene	<0.000400	U	0.000400		mg/Kg		07/25/22 12:06	07/29/22 02:31	1
m-Xylene & p-Xylene	<0.000800	U	0.000800		mg/Kg		07/25/22 12:06	07/29/22 02:31	1
o-Xylene	<0.000400	U	0.000400		mg/Kg		07/25/22 12:06	07/29/22 02:31	1
Xylenes, Total	<0.000800	U	0.000800		mg/Kg		07/25/22 12:06	07/29/22 02:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*70 - 130*	*07/25/22 12:06*	*07/29/22 02:31*	*1*
1,4-Difluorobenzene (Surr)	*62*	*S1-*	*70 - 130*	*07/25/22 12:06*	*07/29/22 02:31*	*1*

Lab Sample ID: LCS 880-30589/1-A
Matrix: Solid
Analysis Batch: 30859

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30589

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.1106		mg/Kg		111	70 - 130		
Toluene			0.100	0.1060		mg/Kg		106	70 - 130		
Ethylbenzene			0.100	0.1050		mg/Kg		105	70 - 130		
m-Xylene & p-Xylene			0.200	0.2101		mg/Kg		105	70 - 130		
o-Xylene			0.100	0.1245		mg/Kg		125	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*123*		*70 - 130*
1,4-Difluorobenzene (Surr)	*101*		*70 - 130*

Lab Sample ID: LCSD 880-30589/2-A
Matrix: Solid
Analysis Batch: 30859

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30589

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.1160		mg/Kg		116	70 - 130	5	35
Toluene			0.100	0.1083		mg/Kg		108	70 - 130	2	35
Ethylbenzene			0.100	0.1026		mg/Kg		103	70 - 130	2	35
m-Xylene & p-Xylene			0.200	0.2112		mg/Kg		106	70 - 130	1	35
o-Xylene			0.100	0.1264		mg/Kg		126	70 - 130	1	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*131*	*S1+*	*70 - 130*
1,4-Difluorobenzene (Surr)	*113*		*70 - 130*

Lab Sample ID: 880-17202-A-1-D MS
Matrix: Solid
Analysis Batch: 30859

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 30589

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00201	U	0.101	0.09818		mg/Kg		98	70 - 130		
Toluene	<0.00201	U	0.101	0.09360		mg/Kg		93	70 - 130		

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2628-1
SDG: 03E1558066

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

Lab Sample ID: 880-17202-A-1-D MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 30859 — **Prep Batch: 30589**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00201	U F1	0.101	0.07292		mg/Kg		72	70 - 130
m-Xylene & p-Xylene	<0.00402	U F1	0.201	0.1277	F1	mg/Kg		63	70 - 130
o-Xylene	<0.00201	U F1	0.101	0.1418	F1	mg/Kg		141	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*352*	*S1+*	*70 - 130*
1,4-Difluorobenzene (Surr)	*298*	*S1+*	*70 - 130*

Lab Sample ID: 880-17202-A-1-E MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 30859 — **Prep Batch: 30589**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00201	U	0.100	0.09685		mg/Kg		97	70 - 130	1	35
Toluene	<0.00201	U	0.100	0.07927		mg/Kg		79	70 - 130	17	35
Ethylbenzene	<0.00201	U F1	0.100	0.06937	F1	mg/Kg		69	70 - 130	5	35
m-Xylene & p-Xylene	<0.00402	U F1	0.200	0.1122	F1	mg/Kg		56	70 - 130	13	35
o-Xylene	<0.00201	U F1	0.100	0.1004		mg/Kg		100	70 - 130	34	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*129*		*70 - 130*
1,4-Difluorobenzene (Surr)	*107*		*70 - 130*

Lab Sample ID: MB 880-30669/5-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 30859 — **Prep Batch: 30669**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		07/26/22 10:50	07/28/22 12:54	1
Toluene	<0.00200	U	0.00200	mg/Kg		07/26/22 10:50	07/28/22 12:54	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		07/26/22 10:50	07/28/22 12:54	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		07/26/22 10:50	07/28/22 12:54	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		07/26/22 10:50	07/28/22 12:54	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		07/26/22 10:50	07/28/22 12:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*	*07/26/22 10:50*	*07/28/22 12:54*	*1*
1,4-Difluorobenzene (Surr)	*63*	*S1-*	*70 - 130*	*07/26/22 10:50*	*07/28/22 12:54*	*1*

Lab Sample ID: LCS 880-30669/1-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 30859 — **Prep Batch: 30669**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.1289		mg/Kg		129	70 - 130
Toluene	0.100	0.1149		mg/Kg		115	70 - 130
Ethylbenzene	0.100	0.1145		mg/Kg		115	70 - 130
m-Xylene & p-Xylene	0.200	0.2274		mg/Kg		114	70 - 130

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2628-1
SDG: 03E1558066

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

Lab Sample ID: LCS 880-30669/1-A
Matrix: Solid
Analysis Batch: 30859

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30669

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
o-Xylene			0.100	0.1307	*+	mg/Kg		131	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*118*		*70 - 130*
1,4-Difluorobenzene (Surr)	*98*		*70 - 130*

Lab Sample ID: LCSD 880-30669/2-A
Matrix: Solid
Analysis Batch: 30859

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30669

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.1141		mg/Kg		114	70 - 130	12	35
Toluene			0.100	0.1064		mg/Kg		106	70 - 130	8	35
Ethylbenzene			0.100	0.1061		mg/Kg		106	70 - 130	8	35
m-Xylene & p-Xylene			0.200	0.2107		mg/Kg		105	70 - 130	8	35
o-Xylene			0.100	0.1219		mg/Kg		122	70 - 130	7	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*116*		*70 - 130*
1,4-Difluorobenzene (Surr)	*106*		*70 - 130*

Lab Sample ID: 890-2641-A-1-B MS
Matrix: Solid
Analysis Batch: 30859

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 30669

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00202	U	0.0998	0.07226		mg/Kg		72	70 - 130		
Toluene	<0.00202	U	0.0998	0.07101		mg/Kg		71	70 - 130		
Ethylbenzene	<0.00202	U	0.0998	0.07062		mg/Kg		71	70 - 130		
m-Xylene & p-Xylene	<0.00403	U	0.200	0.1424		mg/Kg		71	70 - 130		
o-Xylene	<0.00202	U *+	0.0998	0.08584		mg/Kg		86	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*123*		*70 - 130*
1,4-Difluorobenzene (Surr)	*98*		*70 - 130*

Lab Sample ID: 890-2641-A-1-C MSD
Matrix: Solid
Analysis Batch: 30859

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 30669

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00202	U	0.101	0.07981		mg/Kg		79	70 - 130	10	35
Toluene	<0.00202	U	0.101	0.08154		mg/Kg		81	70 - 130	14	35
Ethylbenzene	<0.00202	U	0.101	0.08365		mg/Kg		83	70 - 130	17	35
m-Xylene & p-Xylene	<0.00403	U	0.202	0.1671		mg/Kg		83	70 - 130	16	35
o-Xylene	<0.00202	U *+	0.101	0.09998		mg/Kg		99	70 - 130	15	35

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2628-1
SDG: 03E1558066

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

Lab Sample ID: 890-2641-A-1-C MSD
Matrix: Solid
Analysis Batch: 30859

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 30669

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

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

Lab Sample ID: MB 880-30765/1-A
Matrix: Solid
Analysis Batch: 30743

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30765

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		07/27/22 08:40	07/27/22 09:41	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/27/22 08:40	07/27/22 09:41	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/27/22 08:40	07/27/22 09:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	82		70 - 130	07/27/22 08:40	07/27/22 09:41	1
o-Terphenyl	83		70 - 130	07/27/22 08:40	07/27/22 09:41	1

Lab Sample ID: LCS 880-30765/2-A
Matrix: Solid
Analysis Batch: 30743

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30765

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	1071		mg/Kg		107	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	848.8		mg/Kg		85	70 - 130		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1-Chlorooctane	89		70 - 130
o-Terphenyl	82		70 - 130

Lab Sample ID: LCSD 880-30765/3-A
Matrix: Solid
Analysis Batch: 30743

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30765

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	1037		mg/Kg		104	70 - 130	3	20
Diesel Range Organics (Over C10-C28)			1000	1108	*1	mg/Kg		111	70 - 130	26	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1-Chlorooctane	107		70 - 130
o-Terphenyl	108		70 - 130

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2628-1
SDG: 03E1558066

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

Lab Sample ID: 880-17301-A-1-E MS
Matrix: Solid
Analysis Batch: 30743

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 30765

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	1000	1100		mg/Kg		106	70 - 130
Diesel Range Organics (Over C10-C28)	<50.0	U *1	1000	760.4		mg/Kg		76	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*99*		*70 - 130*
o-Terphenyl	*88*		*70 - 130*

Lab Sample ID: 880-17301-A-1-F MSD
Matrix: Solid
Analysis Batch: 30743

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 30765

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	999	1099		mg/Kg		106	70 - 130	0	20
Diesel Range Organics (Over C10-C28)	<50.0	U *1	999	782.1		mg/Kg		78	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*99*		*70 - 130*
o-Terphenyl	*89*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-30625/1-A
Matrix: Solid
Analysis Batch: 30693

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			07/27/22 04:59	1

Lab Sample ID: LCS 880-30625/2-A
Matrix: Solid
Analysis Batch: 30693

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride			250	261.5		mg/Kg		105	90 - 110

Lab Sample ID: LCSD 880-30625/3-A
Matrix: Solid
Analysis Batch: 30693

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	262.3		mg/Kg		105	90 - 110	0	20

QC Sample Results

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2628-1
SDG: 03E1558066

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 890-2623-A-11-E MS
Matrix: Solid
Analysis Batch: 30693

Client Sample ID: Matrix Spike
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	1640		2520	4348		mg/Kg		107	90 - 110

Lab Sample ID: 890-2623-A-11-F MSD
Matrix: Solid
Analysis Batch: 30693

Client Sample ID: Matrix Spike Duplicate
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	1640		2520	4346		mg/Kg		107	90 - 110	0	20

QC Association Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2628-1
SDG: 03E1558066

GC VOA

Prep Batch: 30589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-30589/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-30589/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-30589/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-17202-A-1-D MS	Matrix Spike	Total/NA	Solid	5035	
880-17202-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Prep Batch: 30669

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2628-1	SS07	Total/NA	Solid	5035	
MB 880-30669/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-30669/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-30669/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-2641-A-1-B MS	Matrix Spike	Total/NA	Solid	5035	
890-2641-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 30859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2628-1	SS07	Total/NA	Solid	8021B	30669
MB 880-30589/5-A	Method Blank	Total/NA	Solid	8021B	30589
MB 880-30669/5-A	Method Blank	Total/NA	Solid	8021B	30669
LCS 880-30589/1-A	Lab Control Sample	Total/NA	Solid	8021B	30589
LCS 880-30669/1-A	Lab Control Sample	Total/NA	Solid	8021B	30669
LCSD 880-30589/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	30589
LCSD 880-30669/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	30669
880-17202-A-1-D MS	Matrix Spike	Total/NA	Solid	8021B	30589
880-17202-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	30589
890-2641-A-1-B MS	Matrix Spike	Total/NA	Solid	8021B	30669
890-2641-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	30669

Analysis Batch: 30970

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2628-1	SS07	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 30743

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2628-1	SS07	Total/NA	Solid	8015B NM	30765
MB 880-30765/1-A	Method Blank	Total/NA	Solid	8015B NM	30765
LCS 880-30765/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	30765
LCSD 880-30765/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	30765
880-17301-A-1-E MS	Matrix Spike	Total/NA	Solid	8015B NM	30765
880-17301-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	30765

Prep Batch: 30765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2628-1	SS07	Total/NA	Solid	8015NM Prep	
MB 880-30765/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-30765/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-30765/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
880-17301-A-1-E MS	Matrix Spike	Total/NA	Solid	8015NM Prep	

QC Association Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2628-1
SDG: 03E1558066

GC Semi VOA (Continued)

Prep Batch: 30765 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-17301-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 30870

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2628-1	SS07	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 30625

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2628-1	SS07	Soluble	Solid	DI Leach	
MB 880-30625/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-30625/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-30625/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-2623-A-11-E MS	Matrix Spike	Soluble	Solid	DI Leach	
890-2623-A-11-F MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 30693

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2628-1	SS07	Soluble	Solid	300.0	30625
MB 880-30625/1-A	Method Blank	Soluble	Solid	300.0	30625
LCS 880-30625/2-A	Lab Control Sample	Soluble	Solid	300.0	30625
LCSD 880-30625/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	30625
890-2623-A-11-E MS	Matrix Spike	Soluble	Solid	300.0	30625
890-2623-A-11-F MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	30625

Lab Chronicle

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2628-1
SDG: 03E1558066

Client Sample ID: SS07

Date Collected: 07/21/22 15:35
Date Received: 07/22/22 09:08

Lab Sample ID: 890-2628-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.01 g	5 mL	30669	07/26/22 10:50	MR	XEN MID
Total/NA	Analysis	8021B		1			30859	07/28/22 20:48	MR	XEN MID
Total/NA	Analysis	Total BTEX		1			30970	07/29/22 09:30	SM	XEN MID
Total/NA	Analysis	8015 NM		1			30870	07/28/22 09:08	SM	XEN MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	30765	07/27/22 08:40	DM	XEN MID
Total/NA	Analysis	8015B NM		1			30743	07/27/22 18:37	SM	XEN MID
Soluble	Leach	DI Leach			5.01 g	50 mL	30625	07/25/22 16:31	KS	XEN MID
Soluble	Analysis	300.0		1			30693	07/27/22 08:54	CH	XEN MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2628-1
SDG: 03E1558066

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	T104704400-22-24	06-30-23

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

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

Method Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2628-1
SDG: 03E1558066

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

Protocol References:

ASTM = ASTM International

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

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:

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

Sample Summary

Client: Ensolum
Project/Site: PLU 18 TWIN WELLS 155H

Job ID: 890-2628-1
SDG: 03E1558066

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-2628-1	SS07	Solid	07/21/22 15:35	07/22/22 09:08	0.5

eurofins | Environment Testing Xenco

Chain of Custody

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

Work Order No: _____

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Project Manager:	Tacoma Morrissey	Bill to: (if different)	Garrett Green
Company Name:	Ensolum	Company Name:	XTO
Address:	3122 National Parks Highway	Address:	
City, State ZIP:	Carlsbad, NM 88220	City, State ZIP:	
Phone:	337-257-8307 Email:		garrett.green@exxonmobile.com

Work Order Comments

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

Project Name:	PLH 18 Twin Wells 155H	Turn Around	☑ Routine ☐ Rush
Project Number:	03E1558066	Due Date:	
Project Location:	(32.2096, -103.8149	TAT starts the day received by the lab, if received by 4:30pm	
Sampler's Name:	Kase Parker		
PO #:			

SAMPLE RECEIPT			
Temp Blank:	Yes No	Wet Ice:	Yes No
Samples Received Intact:	Yes No	Thermometer ID:	NM-007
Cooler Custody Seals:	Yes No N/A	Correction Factor:	-0.2
Sample Custody Seals:	Yes No N/A	Temperature Reading:	5.2
Total Containers:		Corrected Temperature:	5.0

ANALYSIS REQUEST

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	BTEX	TPH	Chlorides
SS07	S	7/21/22	1535	0.5'				X	X	X

890-2628 Chain of Custody

Preservative Codes

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

Sample Comments

CC;1665991001
Incident #;
nAPP2214735676
tmorrissey@ensolum.com

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO_2 Na Sr Tl Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010 : 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U Hg: 1631 / 245.1 / 7470 / 7471

	Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1			7.22.2208			
3				4		
5				6		

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2628-1
SDG Number: 03E1558066

Login Number: 2628
List Number: 1
Creator: Clifton, Cloe

List Source: Eurofins Carlsbad

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

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2628-1
SDG Number: 03E1558066

Login Number: 2628
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 07/25/22 09:19 AM

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

ENSOLUM

APPENDIX D

NMOCD Notifications

From: Green, Garrett J
To: ocd.enviro@state.nm.us; Bratcher, Mike, EMNRD; Hamlet, Robert, EMNRD
Cc: Tacoma Morrissey; DelawareSpills /SM
Subject: XTO - Sampling Notification (week of 7/18/22 - 7/22/22)
Date: Friday, July 15, 2022 2:22:18 PM

[**EXTERNAL EMAIL**]

All,

XTO plans to complete final sampling activities at the following sites the week of July 18, 2022.

Tuesday
- BEU 5E Han Solo 114H/ nAPP2209041753
- BEU 5E Han Solo 105H/ nAPP2209731445

Wednesday
- BEU 5E Han Solo 114H/ nAPP2209041753
- BEU 5E Han Solo 105H/ nAPP2209731445

Thursday
- PLU 18 TWR 155H/ nAPP2214735696
- JRU DI 1 Liner Delineation/ nAPP2216152113

Friday
- PLU 18 TWR 155H/ nAPP2214735696

Thank you,

Garrett Green
Environmental Coordinator
Delaware Business Unit
(575) 200-0729
Garrett.Green@ExxonMobil.com

XTO Energy, Inc.
3104 E. Greene Street | Carlsbad, NM 88220 | M: (575)200-0729

ENSOLUM

APPENDIX E

Safety Data Sheet for Friction Reducer

PFP INDUSTRIES

SAFETY DATA SHEET

Issuing Date 01-Aug-2019 **Revision Date** 01-Aug-2019 **Revision Number** 1

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name POLYglide Xcel-200

Other means of identification

Product Code(s) 10497

Synonyms None

Recommended use of the chemical and restrictions on use

Recommended Use No information available

Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier Address
PfP Industries
29738 Goynes Rd.
Katy, TX 77493

Manufacturer Address
PfP Industries
29738 Goynes Rd.
Katy, TX 77493

Emergency telephone number

Company Phone Number 281-371-2000

Emergency Telephone Chemtrec 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 4

Hazards not otherwise classified (HNOC)
Not applicable

Label elements

Warning

Combustible liquid

Appearance Opaque **Physical state** Liquid **Odor** Mineral Oil

Precautionary Statements - Prevention
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
Wear protective gloves/protective clothing/eye protection/face protection

Precautionary Statements - Response

In case of fire: Use CO2, dry chemical, or foam for extinction

Precautionary Statements - Storage
Store in a well-ventilated place. Keep cool

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other Information
May be harmful in contact with skin
Harmful to aquatic life

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Chemical name	CAS No	Weight-%	Trade secret
Petroleum distillates, hydrotreated light	64742-47-8	40 - 70	

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of first aid measures

Inhalation Remove to fresh air.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.

Ingestion Clean mouth with water and drink afterwards plenty of water.

Self-protection of the first aider Remove all sources of ignition. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Wear personal protective clothing (see section 8).

Most important symptoms and effects, both acute and delayed

Symptoms No information available.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media Dry chemical. Carbon dioxide (CO2). Water spray. Alcohol resistant foam.

Unsuitable extinguishing media CAUTION: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical Keep product and empty container away from heat and sources of ignition. In the event of fire, cool tanks with water spray.

Explosion data
Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Special protective equipment for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Evacuate personnel to safe areas. Use personal protective equipment as required. See section 8 for more information. Take precautionary measures against static discharges. Do not touch or walk through spilled material.

Environmental precautions

Environmental precautions Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Do not touch or walk through spilled material. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up Take precautionary measures against static discharges. Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Use personal protection equipment. Do not breathe vapor or mist. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharges. Use with local exhaust ventilation.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep in properly labeled containers. Store in accordance with the particular national regulations. Store in accordance with local regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limits The following ingredients are the only ingredients of the product above the cut-off level (or level that contributes to the hazard classification of the mixture) which have an exposure limit applicable in the region for which this safety data sheet is intended or other recommended limit. At this time, the other relevant constituents have no known exposure limits from the sources listed here.

Appropriate engineering controls

Engineering controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection Tight sealing safety goggles.

Skin and body protection No special protective equipment required.

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

General hygiene considerations Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Opaque
Color	Milky white to yellow
Odor	Mineral Oil
Odor threshold	No information available

Property	Values	Remarks • Method
pH	No data available	None known
Melting point / freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash point	>= 67 °C / 153 °F	
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability limit:	No data available	
Lower flammability limit:	No data available	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Relative density	0.97 - 1.03	
Water solubility	Miscible in water	
Solubility in other solvents	No data available	None known
Partition coefficient	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	≥150 mm²/s	
Dynamic viscosity	No data available	None known
Explosive properties	No information available	
Oxidizing properties	No information available	

Other Information

Softening point	No information available
Molecular weight	No information available
VOC Content (%)	No information available
Liquid Density	No information available
Bulk density	No information available

10. STABILITY AND REACTIVITY

Reactivity	No information available.
Chemical stability	Stable under normal conditions.
Possibility of hazardous reactions	None under normal processing.
Conditions to avoid	Heat, flames and sparks.
Incompatible materials	None known based on information supplied.
Hazardous decomposition products	None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation	Specific test data for the substance or mixture is not available.
Eye contact	Specific test data for the substance or mixture is not available.
Skin contact	Specific test data for the substance or mixture is not available.
Ingestion	Specific test data for the substance or mixture is not available.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms No information available.

Numerical measures of toxicity

Acute toxicity

The following values are calculated based on chapter 3.1 of the GHS document.

ATEmix (oral)	5,005.00 mg/kg
ATEmix (dermal)	2,002.00 mg/kg
ATEmix (inhalation-dust/mist)	5.20 mg/l

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Petroleum distillates, hydrotreated light 64742-47-8	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.2 mg/L (Rat) 4 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation No information available.

Serious eye damage/eye irritation No information available.

Respiratory or skin sensitization No information available.

Germ cell mutagenicity No information available.

Carcinogenicity No information available.

Reproductive toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Aspiration hazard No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Petroleum distillates, hydrotreated light 64742-47-8	-	2.4: 96 h Oncorhynchus mykiss mg/L LC50 static 45: 96 h Pimephales promelas mg/L LC50 flow-through 2.2: 96 h Lepomis macrochirus mg/L LC50 static	-	4720: 96 h Den-dronereides heteropoda mg/L LC50

Persistence and degradability No information available.

Bioaccumulation There is no data for this product.

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

14. TRANSPORT INFORMATION

DOT Not regulated. Product does not sustain combustion (49 CFR 173.120(b)(3))

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Does not comply
IECSC	Complies
KECL	Complies

PICCS	Complies
AICS	Complies

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute health hazard	No
Chronic Health Hazard	No
Fire hazard	Yes
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

US State Regulations This product does not contain any substances regulated by state right-to-know regulations

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

NFPA	Health hazards	2	Flammability	2	Instability	0	Physical and chemical properties -
HMIS	Health hazards	2	Flammability	2	Physical hazards	0	Personal protection X

Issuing Date	01-Aug-2019
Revision Date	01-Aug-2019
Revision Note	No information available.

Disclaimer

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End of Safety Data Sheet

ENSOLUM

APPENDIX B

Lithologic / Soil Sampling Log

ENSOLUM

	Sample Name: BH01	Date: 8/07/2023
	Site Name: PLU 18 TWR SAT BATTERY	
	Incident Number: nAPP2230551957	
	Job Number: 03C1558144	
LITHOLOGIC / SOIL SAMPLING LOG	Logged By: M. O'Dell	Method: Air Rotary Rig
Coordinates: 32.207892, -103.817942	Hole Diameter: 5"	Total Depth: 110'

Comments: No field screening or sampling was conducted at the site.

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
						0		
						10	SP	0-10'. Sand w/ trace caliche. Reddish brown, very fine to fine grained, subrounded to subangular, poorly graded, dry.
						20	CCHE	10-40'.Caliche w/ sand. Light brown to tan, very fine to fine grained, subrounded to subangular, poorly graded, dry.
						30		
						40	SP	40-100'. Sand w/ trace caliche. Reddish brown, very fine to fine grained, subrounded to subangular grains, poorly graded, dry.
						50		50': Injecting/adding water & soap at 50'
						60		
						70		
						80		
						90		
						100	SP/SC	100-110'. Clayey sand, reddish orange very fine to fine grained, poorly graded, dry.
						110		110': stopped drilling and set casing at 110'.

TD @ 110' bgs.

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 267800

CONDITIONS

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 267800
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
scott.rodgers	Remediation Closure approved. All areas not reasonably needed for production or subsequent drilling operations will need to be reclaimed and revegetated as soon as practical. Areas reasonably needed for production or subsequent drilling operations will need to be reclaimed and revegetated as soon as they are no longer reasonably needed.	2/23/2024