State of New Mexico
Oil Conservation Division

Incident ID	nAPP2216152113
District RP	
Facility ID	
Application ID	

Remediation Plan

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

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

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

- ☒ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- ☒ Extents of contamination must be fully delineated.
- ☒ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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

Printed Name: Garrett Green Title: Environmental Coordinator

Signature: Garrett Green Date: 08/26/2022

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

OCD Only

Received by: Jocelyn Harimon Date: 08/26/2022

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

Signature: Robert Hamlet Date: 11/30/2022

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	NAPP2216152113
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 32.37987 Longitude -103.88675
(NAD 83 in decimal degrees to 5 decimal places)

Site Name James Ranch Unit DI 1A	Site Type Tank Battery
Date Release Discovered 05/30/2022	API# *(if applicable)*

Unit Letter	Section	Township	Range	County
F	21	22S	30E	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) .02	Volume Recovered (bbls) 0.00
	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)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release LO responded to alarm to find flames on the pumps. Fire department was notified and operators extinguished the fire. A third-party contractor has been retained for remediation purposes.

Form C-141
Page 2

State of New Mexico
Oil Conservation Division

Incident ID	
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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? Fire at facility.

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?
Yes, by Melanie Collins to ocd.enviro@state.nm.us; Hamlet, Robert, EMNRD; mike.bratcher@state.nm.us on Tuesday, May 31, 2022 1:02 PM via email.

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: 06/10/2022
email: garret.green@exxonmobil.com
Telephone: 575-200-0729

OCD Only

Received by: Jocelyn Harimon
Date: 06/10/2022

Location:	James Ranch Unit DI 1A Battery	
Spill Date:	5/30/2022	
Area 1		
Approximate Area =	251.00	sq. ft.
Average Saturation (or depth) of spill =	0.15	inches
Average Porosity Factor =	0.03	
VOLUME OF LEAK		
Total Crude Oil =	0.00	bbls
Total Produced Water =	0.02	bbls
TOTAL VOLUME OF LEAK		
Total Crude Oil =	**0.00**	**bbls**
Total Produced Water =	**0.02**	**bbls**
TOTAL VOLUME RECOVERED		
Total Crude Oil =	**0.00**	**bbls**
Total Produced Water =	**0.00**	**bbls**

State of New Mexico
Oil Conservation Division

Incident ID	nAPP2216152113
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	nAPP2216152113
District RP	
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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: ____08/26/2022_____

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

OCD Only

Received by: Jocelyn Harimon Date: 08/26/2022

State of New Mexico
Oil Conservation Division

Incident ID	nAPP2216152113
District RP	
Facility ID	
Application ID	

Remediation Plan

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

- ☐ Detailed description of proposed remediation technique
- ☐ Scaled sitemap with GPS coordinates showing delineation points
- ☐ Estimated volume of material to be remediated
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- ☐ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

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

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

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Printed Name: Garrett Green Title: Environmental Coordinator

Signature: Garrett Green Date: 08/26/2022

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

OCD Only

Received by: Jocelyn Harimon Date: 08/26/2022

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

Signature: Date:

ENSOLUM

August 26, 2022

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

Re: Deferral Request
James Ranch Unit DI 1A
Incident Number nAPP2216152113
Eddy County, New Mexico

To Whom It May Concern:

Ensolum, LLC (Ensolum), on behalf of XTO Energy, Inc. (XTO), has prepared this Deferral Request to document site assessment and soil sampling activities at the James Ranch Unit DI 1A (Site). The purpose of the site assessment and soil sampling activities was to assess for the presence or absence of impacts to soil following a release of produced water due to a fire within a lined pump containment at the Site. Based on field observations, field screening activities, and soil sample laboratory analytical results, XTO is submitting this Deferral Request, describing site assessment and delineation activities that have occurred and requesting deferral of final remediation for Incident Number nAPP2216152113 until the Site is reconstructed, and/or the well pad is abandoned.

SITE DESCRIPTION AND RELEASE SUMMARY

The Site is located in Unit F, Section 21, Township 22 South, Range 30 East, in Eddy County, New Mexico (32.37987° N, 103.88675° 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 30, 2022, a fire on the pump equipment resulted in the release of approximately 0.2 barrels (bbls) of produced water into the lined tank battery containment. The fire department was contacted and the fire was extinguished. No fluids were recovered. The fire caused damage to the containment liner. XTO reported the release to the New Mexico Oil Conservation Division (NMOCD) via email on May 31, 2022, and submitted a Release Notification Form C-141 (Form C-141) on June 10, 2022. The release was assigned Incident Number nAPP2216152113.

SITE CHARACTERIZATION 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 greater than 100 feet below ground surface (bgs) based on the nearest groundwater well with depth to water data. The nearest groundwater well with depth to water data is the New Mexico Office of the State Engineer (NMOSE) well C-01916, located approximately 0.23 miles east of the site. The well has a total depth of 188 feet bgs and a depth to groundwater of 110 feet bgs. All wells used to determine the regional depth to groundwater are depicted on Figure 1 and the referenced well logs are included in Appendix A.

The closest continuously flowing or significant watercourse to the Site is an intermittent riverine, located approximately 725 feet southwest of the Site. The Site is greater than 200 feet from a lakebed, sinkhole, or playa lake and greater than 300 feet from an occupied residence, school, hospital, institution, church, or wetland. The Site is greater than 1,000 feet to a freshwater well or spring and is not within a 100-year floodplain or overlying a subsurface mine. The Site is underlain by unstable geology (high 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): 100 mg/kg
- Chloride: 600 mg/kg

SITE ASSESSMENT ACTIVITIES

On June 14, 2022, July 21, 2022, and August 2, 2022, Ensolum personnel visited the Site to evaluate the release extent and conduct site assessment activities. One borehole (BH01) was advanced via hand auger near the location of the damage in the liner to assess the vertical extent of impacted soil. Delineation soil samples were collected from borehole BH01 at depths ranging from 1-foot to 6 feet bgs. Four additional potholes (PH01 through PH04) were advanced via backhoe around the lined containment to confirm the lateral extent of the release. Discrete delineation soil samples were collected from each pothole at depths ranging from 1-foot to 5 feet bgs. Soil from the borehole and potholes was field screened for volatile organic compounds (VOCs) utilizing a calibrated photoionization detector (PID) and chloride using Hach® chloride QuanTab® test strips. Field screening results and observations from the borehole and potholes were documented on lithologic/soil sampling logs, which are included as Appendix B. The borehole and potholes were backfilled with the soil removed and XTO repaired the tear in the liner. The delineation soil sample locations are depicted on Figure 2. Photographic documentation is included in Appendix C.

The soil samples were placed directly into pre-cleaned glass jars, labeled with the location, date, time, sampler name, method of analysis, and immediately placed on ice. The soil samples were transported at or below 4 degrees Celsius (°C) under strict chain-of-custody procedures to Eurofins Laboratories (Eurofins) in Carlsbad, New Mexico, for analysis of BTEX following United States Environmental Protection Agency (EPA) Method 8021B; TPH-gasoline rang organics (GRO), TPH-diesel range organics (DRO), and TPH-oil range organics (ORO) following EPA Method 8015M/D; and chloride following EPA Method 300.0.

LABORATORY ANALYTICAL RESULTS

Laboratory analytical results for the delineation soil samples collected from borehole BH01, indicated TPH and/or chloride concentrations exceeded the Closure Criteria to a total depth of 5 feet bgs, directly beneath the tear in the liner. Subsequent delineation sample BH01B, collected at 6 feet bgs, indicated benzene, BTEX, TPH, and chloride concentrations were compliant with the Closure Criteria.

Laboratory analytical results for the delineation soil samples collected from potholes PH01 through PH04, collected at depths ranging from 1-foot to 5 feet bgs around the lined containment, indicated benzene, BTEX, TPH-DRO/TPH-GRO, TPH, and chloride concentrations were compliant with the Closure Criteria. Laboratory analytical results are summarized in Table 1 and the complete laboratory analytical reports are included as Appendix D.

DEFFERAL REQUEST

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

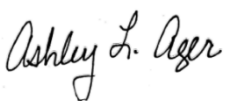
The impacted soil remaining in place beneath the liner is delineated vertically by delineation soil sample BH01D collected at 6 feet bgs and laterally by delineation soil samples from potholes PH01 through PH04. A maximum of 65 cubic yards of TPH and chloride impacted soil remains in place beneath the liner assuming a maximum 5-foot depth based on the delineation soil samples listed above.

XTO does not believe deferment will result in imminent risk to human health, the environment, or groundwater. Depth to groundwater was determined to be greater than 100 feet bgs, the release was contained laterally by the lined containment, and the impacted soil remaining in place is limited to the area immediately beneath the liner. The liner has been repaired by XTO and will restrict future vertical migration of residual impacts.

Based on the presence of active production equipment within the release area and the complete lateral and vertical delineation of impacted soil remaining in place, XTO requests deferral of final remediation for Incident Number nAPP2216152113 until final reclamation of the well pad or major construction, whichever comes first.

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 Ager, P.G, M.S
Program Director

cc: Garrett Green, XTO

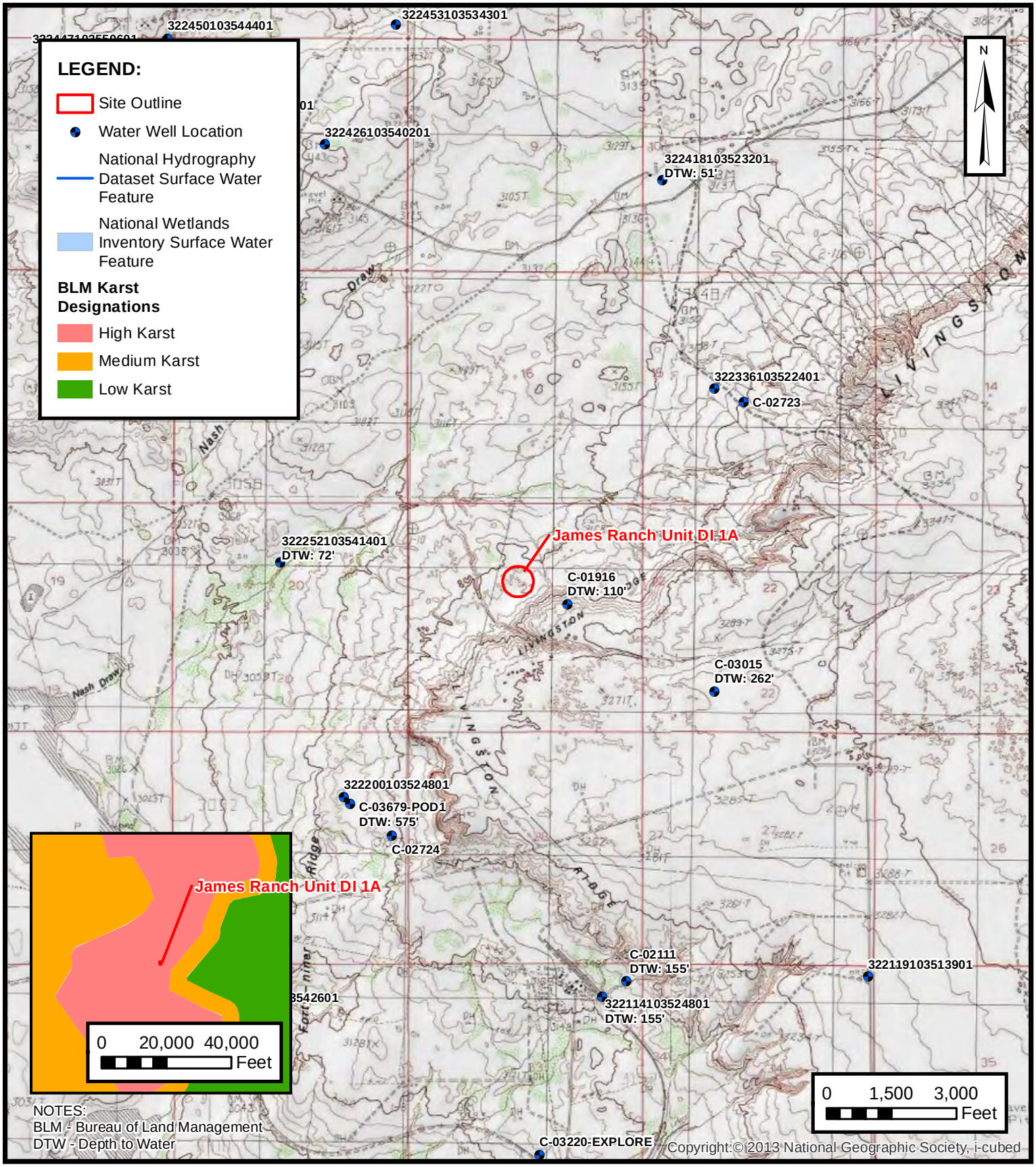
Shelby Pennington, XTO
Bureau of Land Management

Appendices:

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

ENSOLUM

FIGURES

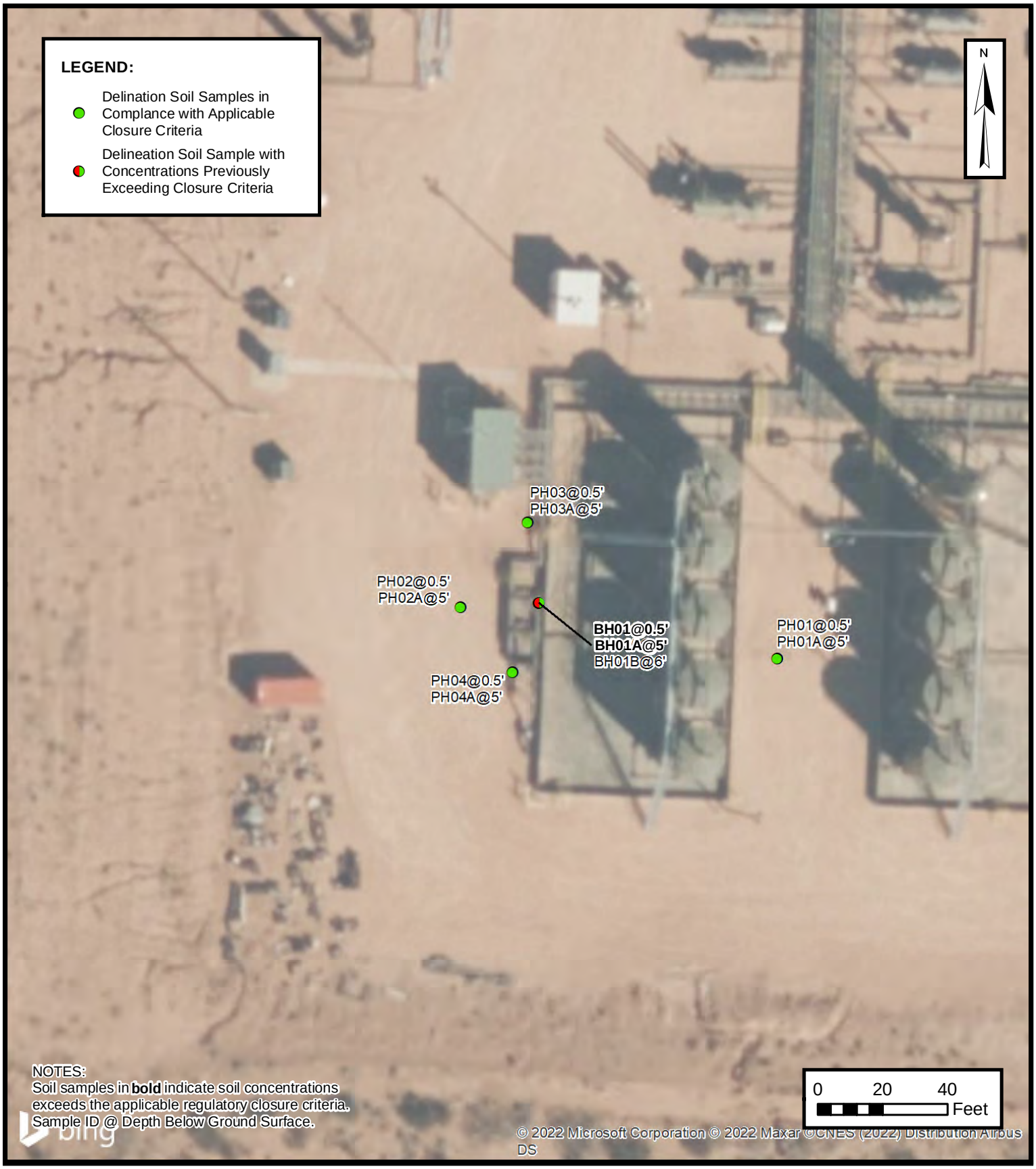


ENSOLUM
Environmental & Hydrogeologic Consultants

SITE RECEPTOR MAP

XTO ENERGY, INC
JAMES RANCH UNIT DI 1A
Incident Number:
Unit F, Sec 21, T22S, R30E
Eddy County, New Mexico

FIGURE
1



ENSOLUM
Environmental & Hydrogeologic Consultants

DELINEATION SOIL SAMPLE LOCATIONS

XTO ENERGY, INC
JAMES RANCH UNIT DI 1A
NAPP2216152113
Unit F, Sec 21, T22S, R30E
Eddy County, New Mexico

FIGURE
2

ENSOLUM

TABLES

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TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
James Ranch Unit DI 1A
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	NE	100	600
Delineation Soil Samples										
BH01	06/14/2022	0.5	<0.00200	<0.00401	<50.0	60.2	53.4	60.2	**114**	**7,590**
BH01A	06/14/2022	5	<0.00200	<0.00399	<50.0	<50.0	<50.0	<50.0	<50.0	**635**
BH01B	06/14/2022	6	<0.00199	<0.00398	<50.0	<50.0	<50.0	<50.0	<50.0	347
PH01	07/21/2022	0.5	<0.00199	<0.00398	<49.9	<49.9	<49.9	<49.9	<49.9	148
PH01A	07/21/2022	5	<0.00199	<0.00398	<49.9	<49.9	<49.9	<49.9	<49.9	25.0
PH02	08/02/2022	0.5	<0.00201	<0.00402	<50.0	<50.0	<50.0	<50.0	<50.0	309
PH02A	08/02/2022	5	<0.00199	<0.00398	<50.0	<50.0	<50.0	<50.0	<50.0	360
PH03	08/02/2022	0.5	<0.00200	<0.00399	<49.9	<49.9	<49.9	<49.9	<49.9	444
PH03A	08/02/2022	5	<0.00200	<0.00401	<49.9	<49.9	<49.9	<49.9	<49.9	302
PH04	08/02/2022	0.5	<0.00200	<0.00399	<50.0	<50.0	<50.0	<50.0	<50.0	211
PH04A	08/02/2022	5	<0.00200	<0.00399	<49.8	<49.8	<49.8	<49.8	<49.8	10.1

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

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: C 01916

Name of well owner: BOPCO L.P.

Mailing address: P.O. Box 2760

City: Midland State: Texas Zip code: 79702

Phone number: 432- 556 -8730 E-mail: TASavoie@Basspet.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Straub Corporation – Raymond Straub

New Mexico Well Driller License No.: WD-1478 Expiration Date: June-2013

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

STATE ENGINEER OFFICE ROSWELL 2013 APR -1 P 1:19

1) GPS Well Location: Latitude: 32 deg, 22 min, 54.42 sec
Longitude: -103 deg, 53 min, 00.57 sec, NAD 83

2) Reason(s) for plugging well: Water well is in the path of new construction. Water quality is below useable quality.

3) Was well used for any type of monitoring program? NO If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? YES If yes, provide additional detail, including analytical results and/or laboratory report(s): See Attachments

5) Static water level: ~ 110 feet below land surface / feet above land surface (circle one)

6) Depth of the well: 188 feet

C-1916
4167710

7) Inside diameter of innermost casing: 5 inches.

8) Casing material: Steel

9) The well was constructed with:

UNKWN an open-hole production interval, state the open interval: _____

UNKWN a well screen or perforated pipe, state the screened interval(s): _____

10) What annular interval surrounding the artesian casing of this well is cement-grouted? NA

11) Was the well built with surface casing? UNKWN If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? _____ If yes, please describe: _____

12) Has all pumping equipment and associated piping been removed from the well? yes If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well: The casing will be cut off below ground surface. A tremie line will be install and a Portland Type II/ V Cement grout will be placed from the bottom to within 5' of the surface. A concrete cap will be placed from 5' to 1' and the remainder will be filled with soil.

2) Will well head be cut-off below land surface after plugging? yes

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 20 Sacks

4) Type of Cement proposed: See Attached Conditions of Approval C.6
5% Fullers Earth / Type II/V Cement
See Attached Conditions of Approval C.6

5) Proposed cement grout mix: 8 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement: Salt water gel – The use of Fuller's Earth is to help with leak-off to the formation. Since the formation water is high in chlorides, Volclay Sodium Bentonite will not be acceptable. 5 LBS. of Gel per 94 LBS. of cement

SEE Attached Conditions of Approval C.G.

8) Additional notes and calculations: ((dia.^{2} * 0.005454)*Depth)/ 1.25 cuft-bag

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

The Public Land Survey is Section 21, Township 22 South, Range 30 East.

VIII. SIGNATURE:

I, Raymond L Straub Jr., P.G. , say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant

03/28/2013
Date

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

✓ Approved subject to the attached conditions.
____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this 11th day of April, 13

Scott A. Verhines, State Engineer

By: Tim Williams

Tim Williams
Carlsbad Basin Watermaster

2013 APR -1 P 1:19
STATE ENGINEER OFFICE
ROSWELL, NM

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			5 feet
Bottom of proposed interval of grout placement (ft bgl)			188 feet
Theoretical volume of grout required per interval (gallons)			20 Sacks
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			8 gallons
Mixed on-site or batch-mixed and delivered?			On-site
Grout additive 1 requested			5% Saltwater Bentonite
Additive 1 percent by dry weight relative to cement			5 LBS.
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2013 APR -1 P 1:19

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2013 APR -1 P 1:19

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
ROSWELL

Scott A. Verhines, P.E.
State Engineer

DISTRICT II
1900 West Second St.
Roswell, New Mexico 88201
Phone: (575) 622-6521
Fax: (575) 623-8559

April 17, 2013

BOPCO, L.P.
P.O. Box 2760
Midland, Texas 79702

RE: *Well Plugging Plan of Operations* for C-1916

Greetings:

Enclosed is your copy of the Well Plugging Plan for the above referenced project. The attached Conditions of Approval modify your Plan in accordance with the Rules and Regulations Governing Well Driller Licensing; Construction, Repair and Plugging of Wells 19.27.4 NMAC adopted August 31, 2005 by the State Engineer. Should you have any questions about the Plan or Conditions of Approval please do not hesitate to contact our office.

Sincerely,

Catherine Goetz
Water Resource Specialist
District II Office of the State Engineer

Enclosures

cc: Office of the State Engineer Santa Fe
Straub Corporation

Analytical Laboratory Report for:
BOPCO

BAKER HUGHES

Account Representative:
Willis Mossman

Production Water Analysis

Listed below please find water analysis report from: Perry R Bass Wsw, WATER SUPPLY WELL

Lab Test Number	Sample Date
201301003615	02/13/2013

Specific Gravity:	1.100
TDS:	153402
pH:	6.65

Cations	mg/L
Calcium as Ca^{++}	2669
Magnesium as Mg^{++}	2188
Sodium as Na^{+}	52812
Iron as Fe^{++}	9.49
Potassium as K^{+}	7466.0
Barium as Ba^{++}	0.28
Strontium as Sr^{++}	86.46
Manganese as Mn^{++}	0.46

Anions	mg/L
Bicarbonate as HCO_3^{-}	171
Sulfate as $SO_4^{=}$	6500
Chloride as Cl^{-}	81500

Gases	mg/L
Carbon Dioxide as CO_2	30
Hydrogen Sulfide as H_2S	0.0

Lab Comments:
SURFACE TEMP.=65.7°F

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2013 APR -1 P 1:19

Analytical Laboratory Report for:
BOPCO

Account Representative:
Willis Mossman

DownHole SAT™ Scale Prediction @ 250 deg. F

Lab Test Number	Sample Date	Location
201301003615	02/13/2013	WATER SUPPLY WELL

Mineral Scale	Saturation Index	Momentary Excess (lbs/1000 bbls)
Calcite (CaCO3)	0.46	-0.05
Strontianite (SrCO3)	0.00	-25.80
Anhydrite (CaSO4)	6.85	1699.09
Gypsum (CaSO4*2H2O)	1.55	710.25
Barite (BaSO4)	0.07	-6.67
Celestite (SrSO4)	0.23	-487.80
Siderite (FeCO3)	3.44	0.04
Halite (NaCl)	0.04	-545840.63
Iron sulfide (FeS)	0.00	-1.34

Interpretation of DHSat Results:
The Saturation Index is calculated for each mineral species independently and is a measure of the degree of supersaturation (driving force for precipitation) under the conditions modeled. This value ranges from 0 to infinity with 1.0 representing a condition of equilibrium where scale will neither dissolve nor precipitate. Values less than 1.0 are undersaturated and values greater than 1.0 are supersaturated. The Momentary excess is a measure of how much scale would have to precipitate to bring the system back to a non-scaling condition. This value ranges from negative (dissolving) to positive (precipitating) values. The Momentary Excess represents the amount of scale possible while the Saturation Level represents the probability that scale will form.

New Mexico Office of the State Engineer
Transaction Summary

72121 All Applications Under Statute 72-12-1

Transaction Number: 199433 **Transaction Desc:** C 01916 **File Date:** 07/31/1980

Primary Status: EXP Expired Permit
Secondary Status: EXP Expired
Person Assigned: mvigil
Applicant: PERRY R. BASS

Events

Date	Type	Description	Comment	Processed By
07/31/1980	APP	Application Received	*	mvigil
08/04/1980	FIN	Final Action on application		mvigil
08/04/1980	WAP	General Approval Letter		mvigil
09/01/1981	EXP	Expired Permit (well log late)		mvigil

Change To:

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
C 01916		3		PRO 72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE

****Point of Diversion**

C 01916	605068	3582947*	

*An (*) after northing value indicates UTM location was derived from PLSS - see Help

Remarks

WATER SUPPLY WELL FOR THE DRILLING OF JAMES RANCH UNIT #12.

STATE ENGINEER OFFICE ROSWELL, NEW MEXICO 2013 APR -1 P 1:19

Conditions

3 Appropriation and use of water under this permit shall not exceed a period of one year from the date of approval.

5A A totalizing meter shall be installed before the first branch of the discharge line from the well and the installation shall be acceptable to the State Engineer; the Engineer shall be advised of the make, model, serial number, date of installation, and initial reading of the meter prior to appropriation of water; pumping records shall be submitted to the District Supervisor for each calendar month on or before the 10th day of the following month.

6 The well shall be plugged upon completion of the permitted use, and a plugging report shall be filed with the State Engineer within 10 days.

Action of the State Engineer

Approval Code: A - Approved
Action Date: 08/04/1980
Log Due Date: 08/31/1981
State Engineer:

Conditions of Approval for C-1916 abandonment:

1) Plugging operations will be conducted in accordance with NMED, NMOCD, or other State or Federal agency having oversight for the above described project.

2) The well shall be plugged using a cement slurry (5.2 gals water per 94lb bag of Portland cement). It is understood that due to the high sulfate content Type V cement will be used as the data provided on water quality indicates 6,500 ppm sulfates. The cement grout will be pumped via tremie line from bottom up.

3) By item 2 above, the plan meets OSE requirements for tremie/grout abandonment, however, well records are not available to confirm well design/annular seals.

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 =

- 322252103541401

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

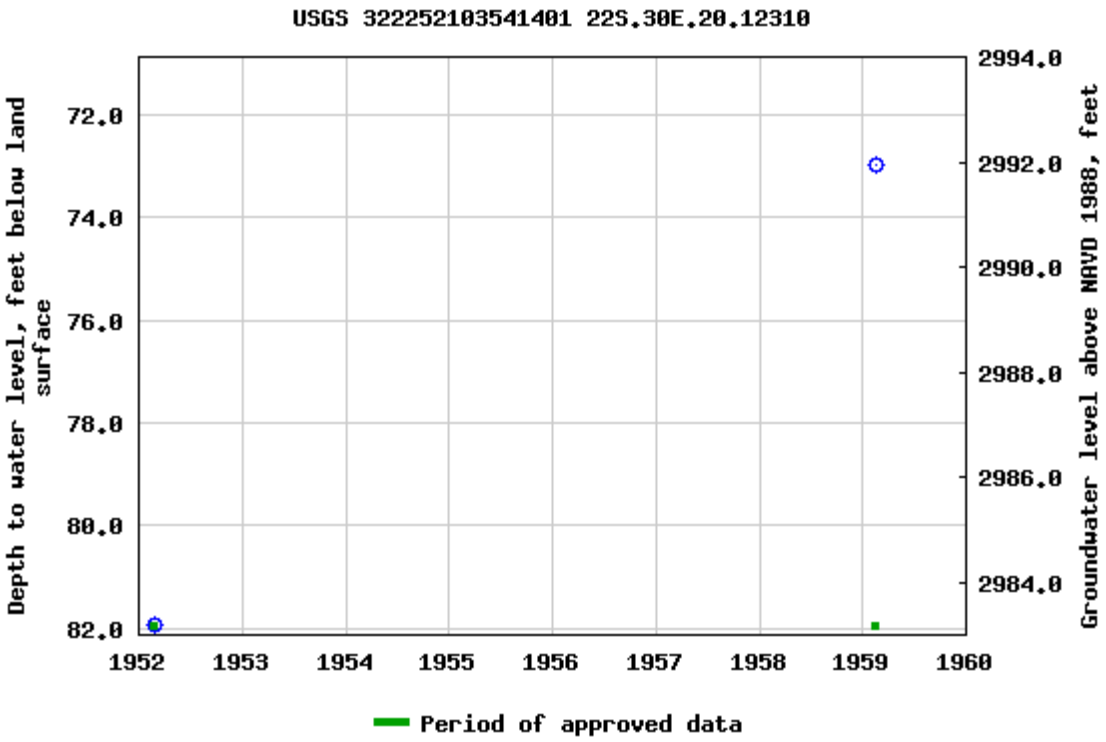
USGS 322252103541401 22S.30E.20.12310

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

Eddy County, New Mexico
Hydrologic Unit Code 13060011
Latitude 32°22'52", Longitude 103°54'14" NAD27
Land-surface elevation 3,065 feet above NAVD88
The depth of the well is 129 feet below land surface.
This well is completed in the Other aquifers (N9999OTHER) national aquifer.
This well is completed in the Rustler Formation (312RSLR) 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: 2022-08-23 15:01:08 EDT
0.58 0.5 nadww02

ENSOLUM

APPENDIX B

Lithologic Soil Sampling Logs

ENSOLUM

	Sample Name: BH01,BH01A,BH01B	Date:06/14/2022
	Site Name:James Ranch Unit DI 1A	
	Incident Number:NAPP2216152113	
	Job Number: 03E1558063	
LITHOLOGIC / SOIL SAMPLING LOG	Logged By: Liz Cheli	Hand auger
Coordinates: 32.37987, -103.88675	Hole Diameter: 4"	Total Depth: 6'

Comments: Field screening conducted with HACH Chloride Test Strips and PID for chloride and vapor, respectively. Chloride test performed with 1:4 dilution factor of soil to distilled water. No correction factors included.

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
					0	0		
D	13,614	0.4	N		0.5	0.5	CCHE	Caliche- caliche, tan caliche and fg sand, no odor no stain, dry
D	11,468.80	0	N	BH01	1	1		SAA
D	369.6	0	N		2	2		SAA
D	873.6	0.1	N		3	3		SAA
D	1,036	0.3	N		4	4	SM	Sand- silty sand, dark reddish brown, fine grain, no ofor, no stain, moist.
D	800.8	0	N	BH01A	5	5		SAA
D	476	0.1	N	BH01B	6	6		SAA

TD @ 6 feet bgs

ENSOLUM

	Sample Name: PH01,PH01A	Date:07/21/2022
	Site Name:James Ranch Unit DI 1A	
	Incident Number:NAPP2216152113	
	Job Number: 03E1558063	
LITHOLOGIC / SOIL SAMPLING LOG	Logged By: Liz Cheli	Method: Pothole
Coordinates: 32.37987, -103.88675	Hole Diameter: Varies	Total Depth: 5'

Comments: Field screening conducted with HACH Chloride Test Strips and PID for chloride and vapor, respectively. Chloride test performed with 1:4 dilution factor of soil to distilled water. No correction factors included.

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
					0	0		
D	168.00	0.8	N	PH01	0.5	0.5	SM	Sand- silty sand, light brown, fg-mg, contains caliche cobbles, no odor, no stain, dry
					1	1		
					2	2		
					3	3		
					4	4		
M	<168	0.8	N	PH01A	5	5	SM	Sand- silty sand, dark reddish brown, fine grain, no ofor, no stain, moist.

TD @ 5 feet bgs

ENSOLUM

	Sample Name: PH02,PH02A	Date:07/21/2022
	Site Name:James Ranch Unit DI 1A	
	Incident Number:NAPP2216152113	
	Job Number: 03E1558063	
LITHOLOGIC / SOIL SAMPLING LOG	Logged By: Liz Cheli	Method: Pothole
Coordinates: 32.37987, -103.88675	Hole Diameter: Varies	Total Depth: 5'

Comments: Field screening conducted with HACH Chloride Test Strips and PID for chloride and vapor, respectively. Chloride test performed with 1:4 dilution factor of soil to distilled water. No correction factors included.

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
					0	0		
D	470.40	0	N	PH02	0.5	0.5	SM	Sand- silty sand, light brown, fg-mg, contains caliche cobbles, no odor, no stain, dry
					1	1		
					2	2		
					3	3		
					4	4		
M	369.6	0.2	N	PH02A	5	5	SM	Sand- silty sand, dark reddish brown, fine grain, no ofor, no stain, moist.

TD @ 5 feet bgs

ENSOLUM	Sample Name: PH03,PH03A	Date:07/21/2022
	Site Name:James Ranch Unit DI 1A	
	Incident Number:NAPP2216152113	
	Job Number: 03E1558063	
LITHOLOGIC / SOIL SAMPLING LOG	Logged By: Liz Cheli	Hand auger
Coordinates: 32.37987, -103.88675	Hole Diameter: 4"	Total Depth: 5'

Comments: Field screening conducted with HACH Chloride Test Strips and PID for chloride and vapor, respectively. Chloride test performed with 1:4 dilution factor of soil to distilled water. No correction factors included.

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
					0	0		
D	369.6	0.1	N	PH03	0.5	0.5	SM	Sand- silty sand, light brown, fg-mg, contains caliche cobbles, no odor, no stain, dry
					1	1		
					2	2		
					3	3		
					4	4		
M	280	0	N	PH03A	5	5	SM	Sand- silty sand, dark reddish brown, fine grain, no ofor, no stain, moist.

TD @ 5 feet bgs

ENSOLUM

	Sample Name: PH04,PH04A	Date:07/21/2022
	Site Name:James Ranch Unit DI 1A	
	Incident Number:NAPP2216152113	
	Job Number: 03E1558063	
LITHOLOGIC / SOIL SAMPLING LOG	Logged By: Liz Cheli	Hand auger
Coordinates: 32.37987, -103.88675	Hole Diameter: 4"	Total Depth: 5'

Comments: Field screening conducted with HACH Chloride Test Strips and PID for chloride and vapor, respectively. Chloride test performed with 1:4 dilution factor of soil to distilled water. No correction factors included.

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
					0	0		
D	280	0.7	N	PH03	0.5	0.5	CCHE	Caliche- caliche, tan caliche and fg sand, no odor no stain, dry
					1	1		
					2	2		
					3	3		
					4	4		
M	280	0	N	PH03A	5	5	SM	Sand- silty sand, dark reddish brown, fine grain, no ofor, no stain, moist.

TD @ 5 feet bgs

ENSOLUM

APPENDIX C

Photographic Log

ENSOLUM

Photographic Log
XTO Energy, Inc.
James Ranch Unit DI 1A
NAPP2216152113

Photograph 1 Date:05/31/2022
Description: View of damage to the liner due to the fire, facing north

Photograph 2 Date:06/14/2022
Description: View of tank containment during site assessment, facing northeast

Photograph 3 Date:06/14/2022
Description: Location of BH01 within the containment, facing east

Photograph 4 Date:07/21/2022
Description: View of repaired containment following lateral delineation, facing southeast

ENSOLUM

APPENDIX D

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: 890-2417-1
Laboratory Sample Delivery Group: 03E1558063
Client Project/Site: JRUD1 1

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

Attn: Tacoma Morrissey

JKramer

Authorized for release by:
6/22/2022 12:08:25 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: JRUD1 1

Laboratory Job ID: 890-2417-1
SDG: 03E1558063

Table of Contents

Definitions/Glossary

Client: Ensolum
Project/Site: JRUD1 1

Job ID: 890-2417-1
SDG: 03E1558063

Qualifiers

GC VOA

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

GC Semi VOA

Qualifier	Qualifier Description
*1	LCS/LCSD RPD exceeds control limits.
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: JRUD1 1

Job ID: 890-2417-1
SDG: 03E1558063

Job ID: 890-2417-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-2417-1

Receipt
The samples were received on 6/15/2022 12:26 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.0°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
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: JRUD1 1

Job ID: 890-2417-1
SDG: 03E1558063

Client Sample ID: BH01

Lab Sample ID: 890-2417-1
Matrix: Solid
Date Collected: 06/14/22 15:18
Date Received: 06/15/22 12:26
Sample Depth: 0.5

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		06/17/22 16:16	06/20/22 13:23	1
Toluene	<0.00200	U	0.00200		mg/Kg		06/17/22 16:16	06/20/22 13:23	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		06/17/22 16:16	06/20/22 13:23	1
m-Xylene & p-Xylene	<0.00401	U	0.00401		mg/Kg		06/17/22 16:16	06/20/22 13:23	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		06/17/22 16:16	06/20/22 13:23	1
Xylenes, Total	<0.00401	U	0.00401		mg/Kg		06/17/22 16:16	06/20/22 13:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*117*		*70 - 130*	*06/17/22 16:16*	*06/20/22 13:23*	*1*
1,4-Difluorobenzene (Surr)	*90*		*70 - 130*	*06/17/22 16:16*	*06/20/22 13:23*	*1*

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00401	U	0.00401		mg/Kg			06/21/22 10:44	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	**114**		50.0		mg/Kg			06/17/22 09:14	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 *1	50.0		mg/Kg		06/16/22 08:31	06/16/22 17:04	1
Diesel Range Organics (Over C10-C28)	**60.2**		50.0		mg/Kg		06/16/22 08:31	06/16/22 17:04	1
Oil Range Organics (Over C28-C36)	**53.4**		50.0		mg/Kg		06/16/22 08:31	06/16/22 17:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*88*		*70 - 130*	*06/16/22 08:31*	*06/16/22 17:04*	*1*
o-Terphenyl	*92*		*70 - 130*	*06/16/22 08:31*	*06/16/22 17:04*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**7590**		50.1		mg/Kg			06/22/22 06:20	10

Client Sample ID: BH01A

Lab Sample ID: 890-2417-2
Matrix: Solid
Date Collected: 06/14/22 17:10
Date Received: 06/15/22 12:26
Sample Depth: 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		06/17/22 16:16	06/20/22 13:49	1
Toluene	<0.00200	U	0.00200		mg/Kg		06/17/22 16:16	06/20/22 13:49	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		06/17/22 16:16	06/20/22 13:49	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		06/17/22 16:16	06/20/22 13:49	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		06/17/22 16:16	06/20/22 13:49	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		06/17/22 16:16	06/20/22 13:49	1

Client Sample Results

Client: Ensolum
Project/Site: JRUD1 1

Job ID: 890-2417-1
SDG: 03E1558063

Client Sample ID: BH01A

Date Collected: 06/14/22 17:10
Date Received: 06/15/22 12:26
Sample Depth: 5

Lab Sample ID: 890-2417-2
Matrix: Solid

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*119*		*70 - 130*	*06/17/22 16:16*	*06/20/22 13:49*	*1*
1,4-Difluorobenzene (Surr)	*88*		*70 - 130*	*06/17/22 16:16*	*06/20/22 13:49*	*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			06/21/22 10:44	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			06/17/22 09:14	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 *1	50.0		mg/Kg		06/16/22 08:31	06/16/22 17:25	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		06/16/22 08:31	06/16/22 17:25	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		06/16/22 08:31	06/16/22 17:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	*103*		*70 - 130*	*06/16/22 08:31*	*06/16/22 17:25*	*1*
o-Terphenyl	*107*		*70 - 130*	*06/16/22 08:31*	*06/16/22 17:25*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**635**		24.9		mg/Kg			06/22/22 06:29	5

Client Sample ID: BH01B

Date Collected: 06/14/22 17:30
Date Received: 06/15/22 12:26
Sample Depth: 6

Lab Sample ID: 890-2417-3
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		06/17/22 16:16	06/20/22 14:16	1
Toluene	<0.00199	U	0.00199		mg/Kg		06/17/22 16:16	06/20/22 14:16	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		06/17/22 16:16	06/20/22 14:16	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		06/17/22 16:16	06/20/22 14:16	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		06/17/22 16:16	06/20/22 14:16	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		06/17/22 16:16	06/20/22 14:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*115*		*70 - 130*	*06/17/22 16:16*	*06/20/22 14:16*	*1*
1,4-Difluorobenzene (Surr)	*86*		*70 - 130*	*06/17/22 16:16*	*06/20/22 14:16*	*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			06/21/22 10:44	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			06/17/22 09:14	1

Client Sample Results

Client: Ensolum
Project/Site: JRUD1 1

Job ID: 890-2417-1
SDG: 03E1558063

Client Sample ID: BH01B

Date Collected: 06/14/22 17:30
Date Received: 06/15/22 12:26
Sample Depth: 6

Lab Sample ID: 890-2417-3

Matrix: Solid

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 *1	50.0		mg/Kg		06/16/22 08:31	06/16/22 17:47	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		06/16/22 08:31	06/16/22 17:47	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		06/16/22 08:31	06/16/22 17:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*87*		*70 - 130*	*06/16/22 08:31*	*06/16/22 17:47*	*1*
o-Terphenyl	*91*		*70 - 130*	*06/16/22 08:31*	*06/16/22 17:47*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**347**		24.8		mg/Kg			06/22/22 06:38	5

Surrogate Summary

Client: Ensolum
Project/Site: JRUD1 1

Job ID: 890-2417-1
SDG: 03E1558063

Method: 8021B - Volatile Organic Compounds (GC)

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

		Percent Surrogate Recovery (Acceptance Limits)	
		BFB1	DFBZ1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
890-2417-1	BH01	117	90
890-2417-1 MS	BH01	113	99
890-2417-1 MSD	BH01	121	102
890-2417-2	BH01A	119	88
890-2417-3	BH01B	115	86
LCS 880-27836/1-A	Lab Control Sample	113	104
LCSD 880-27836/2-A	Lab Control Sample Dup	115	90
MB 880-27836/5-A	Method Blank	93	89

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)
880-15959-A-5-D MS	Matrix Spike	82	77
880-15959-A-5-E MSD	Matrix Spike Duplicate	82	78
890-2417-1	BH01	88	92
890-2417-2	BH01A	103	107
890-2417-3	BH01B	87	91
LCS 880-27655/2-A	Lab Control Sample	94	96
LCSD 880-27655/3-A	Lab Control Sample Dup	88	90
MB 880-27655/1-A	Method Blank	84	95

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: JRUD1 1

Job ID: 890-2417-1
SDG: 03E1558063

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-27836/5-A
Matrix: Solid
Analysis Batch: 27881

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 27836

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		06/17/22 16:16	06/20/22 12:57	1
Toluene	<0.00200	U	0.00200		mg/Kg		06/17/22 16:16	06/20/22 12:57	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		06/17/22 16:16	06/20/22 12:57	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		06/17/22 16:16	06/20/22 12:57	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		06/17/22 16:16	06/20/22 12:57	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		06/17/22 16:16	06/20/22 12:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*	*06/17/22 16:16*	*06/20/22 12:57*	*1*
1,4-Difluorobenzene (Surr)	*89*		*70 - 130*	*06/17/22 16:16*	*06/20/22 12:57*	*1*

Lab Sample ID: LCS 880-27836/1-A
Matrix: Solid
Analysis Batch: 27881

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 27836

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.1013		mg/Kg		101	70 - 130		
Toluene			0.100	0.1006		mg/Kg		101	70 - 130		
Ethylbenzene			0.100	0.1056		mg/Kg		106	70 - 130		
m-Xylene & p-Xylene			0.200	0.2125		mg/Kg		106	70 - 130		
o-Xylene			0.100	0.1041		mg/Kg		104	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*113*		*70 - 130*
1,4-Difluorobenzene (Surr)	*104*		*70 - 130*

Lab Sample ID: LCSD 880-27836/2-A
Matrix: Solid
Analysis Batch: 27881

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 27836

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.1040		mg/Kg		104	70 - 130	3	35
Toluene			0.100	0.1061		mg/Kg		106	70 - 130	5	35
Ethylbenzene			0.100	0.1136		mg/Kg		114	70 - 130	7	35
m-Xylene & p-Xylene			0.200	0.2260		mg/Kg		113	70 - 130	6	35
o-Xylene			0.100	0.1086		mg/Kg		109	70 - 130	4	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*115*		*70 - 130*
1,4-Difluorobenzene (Surr)	*90*		*70 - 130*

Lab Sample ID: 890-2417-1 MS
Matrix: Solid
Analysis Batch: 27881

Client Sample ID: BH01
Prep Type: Total/NA
Prep Batch: 27836

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00200	U	0.0998	0.09243		mg/Kg		93	70 - 130		
Toluene	<0.00200	U	0.0998	0.08591		mg/Kg		86	70 - 130		

QC Sample Results

Client: Ensolum
Project/Site: JRUD1 1

Job ID: 890-2417-1
SDG: 03E1558063

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

Lab Sample ID: 890-2417-1 MS
Matrix: Solid
Analysis Batch: 27881

Client Sample ID: BH01
Prep Type: Total/NA
Prep Batch: 27836

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00200	U	0.0998	0.08975		mg/Kg		90	70 - 130
m-Xylene & p-Xylene	<0.00401	U	0.200	0.1812		mg/Kg		91	70 - 130
o-Xylene	<0.00200	U	0.0998	0.08365		mg/Kg		84	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*113*		*70 - 130*
1,4-Difluorobenzene (Surr)	*99*		*70 - 130*

Lab Sample ID: 890-2417-1 MSD
Matrix: Solid
Analysis Batch: 27881

Client Sample ID: BH01
Prep Type: Total/NA
Prep Batch: 27836

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00200	U	0.0994	0.09126		mg/Kg		92	70 - 130	1	35
Toluene	<0.00200	U	0.0994	0.08025		mg/Kg		81	70 - 130	7	35
Ethylbenzene	<0.00200	U	0.0994	0.08340		mg/Kg		84	70 - 130	7	35
m-Xylene & p-Xylene	<0.00401	U	0.199	0.1645		mg/Kg		83	70 - 130	10	35
o-Xylene	<0.00200	U	0.0994	0.07624		mg/Kg		77	70 - 130	9	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*121*		*70 - 130*
1,4-Difluorobenzene (Surr)	*102*		*70 - 130*

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

Lab Sample ID: MB 880-27655/1-A
Matrix: Solid
Analysis Batch: 27649

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 27655

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		06/16/22 08:31	06/16/22 10:25	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		06/16/22 08:31	06/16/22 10:25	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		06/16/22 08:31	06/16/22 10:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*84*		*70 - 130*	*06/16/22 08:31*	*06/16/22 10:25*	*1*
o-Terphenyl	*95*		*70 - 130*	*06/16/22 08:31*	*06/16/22 10:25*	*1*

Lab Sample ID: LCS 880-27655/2-A
Matrix: Solid
Analysis Batch: 27649

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 27655

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10			1000	1101		mg/Kg		110	70 - 130
Diesel Range Organics (Over C10-C28)			1000	974.5		mg/Kg		97	70 - 130

QC Sample Results

Client: Ensolum
Project/Site: JRUD1 1

Job ID: 890-2417-1
SDG: 03E1558063

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

Lab Sample ID: LCS 880-27655/2-A
Matrix: Solid
Analysis Batch: 27649

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 27655

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1-Chlorooctane	94		70 - 130
o-Terphenyl	96		70 - 130

Lab Sample ID: LCSD 880-27655/3-A
Matrix: Solid
Analysis Batch: 27649

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 27655

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	837.8	*1	mg/Kg		84	70 - 130	27	20
Diesel Range Organics (Over C10-C28)			1000	927.3		mg/Kg		93	70 - 130	5	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1-Chlorooctane	88		70 - 130
o-Terphenyl	90		70 - 130

Lab Sample ID: 880-15959-A-5-D MS
Matrix: Solid
Analysis Batch: 27649

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 27655

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	<49.9	U *1	998	791.6		mg/Kg		75	70 - 130
Diesel Range Organics (Over C10-C28)	<49.9	U F1	998	707.8	F1	mg/Kg		69	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
1-Chlorooctane	82		70 - 130
o-Terphenyl	77		70 - 130

Lab Sample ID: 880-15959-A-5-E MSD
Matrix: Solid
Analysis Batch: 27649

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 27655

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	<49.9	U *1	999	786.2		mg/Kg		74	70 - 130	1	20
Diesel Range Organics (Over C10-C28)	<49.9	U F1	999	723.6		mg/Kg		70	70 - 130	2	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1-Chlorooctane	82		70 - 130
o-Terphenyl	78		70 - 130

QC Sample Results

Client: Ensolum
Project/Site: JRUD1 1

Job ID: 890-2417-1
SDG: 03E1558063

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-27812/1-A
Matrix: Solid
Analysis Batch: 28044

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			06/22/22 02:11	1

Lab Sample ID: LCS 880-27812/2-A
Matrix: Solid
Analysis Batch: 28044

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	263.9		mg/Kg		106	90 - 110		

Lab Sample ID: LCSD 880-27812/3-A
Matrix: Solid
Analysis Batch: 28044

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	265.9		mg/Kg		106	90 - 110	1	20

Lab Sample ID: 890-2416-A-1-D MS
Matrix: Solid
Analysis Batch: 28044

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	400		1250	1644		mg/Kg		99	90 - 110		

Lab Sample ID: 890-2416-A-1-E MSD
Matrix: Solid
Analysis Batch: 28044

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	400		1250	1638		mg/Kg		99	90 - 110	0	20

QC Association Summary

Client: Ensolum
Project/Site: JRUD1 1

Job ID: 890-2417-1
SDG: 03E1558063

GC VOA

Prep Batch: 27836

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2417-1	BH01	Total/NA	Solid	5035	
890-2417-2	BH01A	Total/NA	Solid	5035	
890-2417-3	BH01B	Total/NA	Solid	5035	
MB 880-27836/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-27836/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-27836/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-2417-1 MS	BH01	Total/NA	Solid	5035	
890-2417-1 MSD	BH01	Total/NA	Solid	5035	

Analysis Batch: 27881

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2417-1	BH01	Total/NA	Solid	8021B	27836
890-2417-2	BH01A	Total/NA	Solid	8021B	27836
890-2417-3	BH01B	Total/NA	Solid	8021B	27836
MB 880-27836/5-A	Method Blank	Total/NA	Solid	8021B	27836
LCS 880-27836/1-A	Lab Control Sample	Total/NA	Solid	8021B	27836
LCSD 880-27836/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	27836
890-2417-1 MS	BH01	Total/NA	Solid	8021B	27836
890-2417-1 MSD	BH01	Total/NA	Solid	8021B	27836

Analysis Batch: 28035

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2417-1	BH01	Total/NA	Solid	Total BTEX	
890-2417-2	BH01A	Total/NA	Solid	Total BTEX	
890-2417-3	BH01B	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 27649

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2417-1	BH01	Total/NA	Solid	8015B NM	27655
890-2417-2	BH01A	Total/NA	Solid	8015B NM	27655
890-2417-3	BH01B	Total/NA	Solid	8015B NM	27655
MB 880-27655/1-A	Method Blank	Total/NA	Solid	8015B NM	27655
LCS 880-27655/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	27655
LCSD 880-27655/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	27655
880-15959-A-5-D MS	Matrix Spike	Total/NA	Solid	8015B NM	27655
880-15959-A-5-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	27655

Prep Batch: 27655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2417-1	BH01	Total/NA	Solid	8015NM Prep	
890-2417-2	BH01A	Total/NA	Solid	8015NM Prep	
890-2417-3	BH01B	Total/NA	Solid	8015NM Prep	
MB 880-27655/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-27655/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-27655/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
880-15959-A-5-D MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
880-15959-A-5-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

QC Association Summary

Client: Ensolum
Project/Site: JRUD1 1

Job ID: 890-2417-1
SDG: 03E1558063

GC Semi VOA

Analysis Batch: 27766

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2417-1	BH01	Total/NA	Solid	8015 NM	
890-2417-2	BH01A	Total/NA	Solid	8015 NM	
890-2417-3	BH01B	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 27812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2417-1	BH01	Soluble	Solid	DI Leach	
890-2417-2	BH01A	Soluble	Solid	DI Leach	
890-2417-3	BH01B	Soluble	Solid	DI Leach	
MB 880-27812/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-27812/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-27812/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-2416-A-1-D MS	Matrix Spike	Soluble	Solid	DI Leach	
890-2416-A-1-E MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 28044

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2417-1	BH01	Soluble	Solid	300.0	27812
890-2417-2	BH01A	Soluble	Solid	300.0	27812
890-2417-3	BH01B	Soluble	Solid	300.0	27812
MB 880-27812/1-A	Method Blank	Soluble	Solid	300.0	27812
LCS 880-27812/2-A	Lab Control Sample	Soluble	Solid	300.0	27812
LCSD 880-27812/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	27812
890-2416-A-1-D MS	Matrix Spike	Soluble	Solid	300.0	27812
890-2416-A-1-E MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	27812

Lab Chronicle

Client: Ensolum
Project/Site: JRUD1 1

Job ID: 890-2417-1
SDG: 03E1558063

Client Sample ID: BH01

Date Collected: 06/14/22 15:18
Date Received: 06/15/22 12:26

Lab Sample ID: 890-2417-1
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	27836	06/17/22 16:16	MR	XEN MID
Total/NA	Analysis	8021B		1			27881	06/20/22 13:23	MR	XEN MID
Total/NA	Analysis	Total BTEX		1			28035	06/21/22 10:44	SM	XEN MID
Total/NA	Analysis	8015 NM		1			27766	06/17/22 09:14	AJ	XEN MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	27655	06/16/22 08:31	DM	XEN MID
Total/NA	Analysis	8015B NM		1			27649	06/16/22 17:04	AJ	XEN MID
Soluble	Leach	DI Leach			4.99 g	50 mL	27812	06/17/22 11:57	SC	XEN MID
Soluble	Analysis	300.0		10			28044	06/22/22 06:20	CH	XEN MID

Client Sample ID: BH01A

Date Collected: 06/14/22 17:10
Date Received: 06/15/22 12:26

Lab Sample ID: 890-2417-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.01 g	5 mL	27836	06/17/22 16:16	MR	XEN MID
Total/NA	Analysis	8021B		1			27881	06/20/22 13:49	MR	XEN MID
Total/NA	Analysis	Total BTEX		1			28035	06/21/22 10:44	SM	XEN MID
Total/NA	Analysis	8015 NM		1			27766	06/17/22 09:14	AJ	XEN MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	27655	06/16/22 08:31	DM	XEN MID
Total/NA	Analysis	8015B NM		1			27649	06/16/22 17:25	AJ	XEN MID
Soluble	Leach	DI Leach			5.03 g	50 mL	27812	06/17/22 11:57	SC	XEN MID
Soluble	Analysis	300.0		5			28044	06/22/22 06:29	CH	XEN MID

Client Sample ID: BH01B

Date Collected: 06/14/22 17:30
Date Received: 06/15/22 12:26

Lab Sample ID: 890-2417-3
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			5.03 g	5 mL	27836	06/17/22 16:16	MR	XEN MID
Total/NA	Analysis	8021B		1			27881	06/20/22 14:16	MR	XEN MID
Total/NA	Analysis	Total BTEX		1			28035	06/21/22 10:44	SM	XEN MID
Total/NA	Analysis	8015 NM		1			27766	06/17/22 09:14	AJ	XEN MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	27655	06/16/22 08:31	DM	XEN MID
Total/NA	Analysis	8015B NM		1			27649	06/16/22 17:47	AJ	XEN MID
Soluble	Leach	DI Leach			5.05 g	50 mL	27812	06/17/22 11:57	SC	XEN MID
Soluble	Analysis	300.0		5			28044	06/22/22 06:38	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: JRUD1 1

Job ID: 890-2417-1
SDG: 03E1558063

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	T104704400-21-22	06-30-22

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: JRUD1 1

Job ID: 890-2417-1
SDG: 03E1558063

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: JRUD1 1

Job ID: 890-2417-1
SDG: 03E1558063

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-2417-1	BH01	Solid	06/14/22 15:18	06/15/22 12:26	0.5
890-2417-2	BH01A	Solid	06/14/22 17:10	06/15/22 12:26	5
890-2417-3	BH01B	Solid	06/14/22 17:30	06/15/22 12:26	6

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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:	322 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:	JRUD1 1	Turn Around	
Project Number:	03E1558063	☒ Routine ☐ Rush	
Project Location:	Eddy County, NM	Due Date:	
Sampler's Name:	Liz Chell	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:	TOM-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	Chloride (epa. 300)	TPH (8015)	Btex (8021)	Sample Comments
BH01	S	6/14/22	1518	0.5	G	1	X	X	X	BH01C on hold
BH01A			1710	5						
BH01B			1730	6						
BH01C			1735	7						HOLD

890-2417 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	Ice Chip	6.15.22 1224	4		
3			6		
5					

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2417-1
SDG Number: 03E1558063

Login Number: 2417
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: 890-2417-1
SDG Number: 03E1558063

Login Number: 2417
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 06/16/22 11:11 AM

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

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ANALYTICAL REPORT

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

Laboratory Job ID: 890-2621-1
Laboratory Sample Delivery Group: 03E1558063
Client Project/Site: JRU D1 1

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

Attn: Kalei Jennings

JKramer

Authorized for release by:
7/31/2022 10:18:15 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: JRU D1 1

Laboratory Job ID: 890-2621-1
SDG: 03E1558063

Table of Contents

Definitions/Glossary

Client: Ensolum
Project/Site: JRU D1 1

Job ID: 890-2621-1
SDG: 03E1558063

Qualifiers

GC VOA

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

GC Semi VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
S1-	Surrogate recovery exceeds control limits, low biased.
U	Indicates the analyte was analyzed for but not detected.

HPLC/IC

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

Glossary

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

Case Narrative

Client: Ensolum
Project/Site: JRU D1 1

Job ID: 890-2621-1
SDG: 03E1558063

Job ID: 890-2621-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-2621-1

Receipt
The samples were received on 7/21/2022 4:36 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 13.8°C

GC VOA
Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 880-30893 and analytical batch 880-31046 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

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

GC Semi VOA
Method 8015MOD_NM: Surrogate recovery for the following sample was outside control limits: (890-2618-A-1-F MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015MOD_NM: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 880-30666 and analytical batch 880-30643 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

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

HPLC/IC
Method 300_ORGFM_28D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 880-30600 and analytical batch 880-30692 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Method 300_ORGFM_28D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-30602 and 880-30602 and analytical batch 880-30920 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: JRU D1 1

Job ID: 890-2621-1
SDG: 03E1558063

Client Sample ID: PH01 @ 0.5'

Lab Sample ID: 890-2621-1
Matrix: Solid
Date Collected: 07/21/22 10:14
Date Received: 07/21/22 16:36
Sample Depth: 0.5'

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 09:46	07/31/22 01:18	1
Toluene	<0.00199	U	0.00199		mg/Kg		07/28/22 09:46	07/31/22 01:18	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		07/28/22 09:46	07/31/22 01:18	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		07/28/22 09:46	07/31/22 01:18	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		07/28/22 09:46	07/31/22 01:18	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		07/28/22 09:46	07/31/22 01:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*124*		*70 - 130*	*07/28/22 09:46*	*07/31/22 01:18*	*1*
1,4-Difluorobenzene (Surr)	*97*		*70 - 130*	*07/28/22 09:46*	*07/31/22 01:18*	*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 09:18	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9		mg/Kg			07/27/22 10:58	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		07/26/22 10:41	07/27/22 00:24	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		07/26/22 10:41	07/27/22 00:24	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		07/26/22 10:41	07/27/22 00:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*70*		*70 - 130*	*07/26/22 10:41*	*07/27/22 00:24*	*1*
o-Terphenyl	*76*		*70 - 130*	*07/26/22 10:41*	*07/27/22 00:24*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**148**		4.95		mg/Kg			07/27/22 03:08	1

Client Sample ID: PH01 @ 5'

Lab Sample ID: 890-2621-2
Matrix: Solid
Date Collected: 07/21/22 10:20
Date Received: 07/21/22 16:36
Sample Depth: 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 09:46	07/31/22 01:38	1
Toluene	<0.00199	U	0.00199		mg/Kg		07/28/22 09:46	07/31/22 01:38	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		07/28/22 09:46	07/31/22 01:38	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		07/28/22 09:46	07/31/22 01:38	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		07/28/22 09:46	07/31/22 01:38	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		07/28/22 09:46	07/31/22 01:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*324*	*S1+*	*70 - 130*	*07/28/22 09:46*	*07/31/22 01:38*	*1*

Client Sample Results

Client: Ensolum
Project/Site: JRU D1 1

Job ID: 890-2621-1
SDG: 03E1558063

Client Sample ID: PH01 @ 5'

Date Collected: 07/21/22 10:20
Date Received: 07/21/22 16:36
Sample Depth: 5'

Lab Sample ID: 890-2621-2

Matrix: Solid

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Difluorobenzene (Surr)	*244*	*S1+*	*70 - 130*	*07/28/22 09:46*	*07/31/22 01:38*	*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 09:18	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9	mg/Kg			07/27/22 10:58	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		07/26/22 10:41	07/27/22 00:46	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9	mg/Kg		07/26/22 10:41	07/27/22 00:46	1
OII Range Organics (Over C28-C36)	<49.9	U	49.9	mg/Kg		07/26/22 10:41	07/27/22 00:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*72*		*70 - 130*	*07/26/22 10:41*	*07/27/22 00:46*	*1*
o-Terphenyl	*78*		*70 - 130*	*07/26/22 10:41*	*07/27/22 00:46*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**25.0**		4.96	mg/Kg			07/29/22 12:28	1

Surrogate Summary

Client: Ensolum
Project/Site: JRU D1 1

Job ID: 890-2621-1
SDG: 03E1558063

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)										
880-17457-A-4-B MS	Matrix Spike	97	85										
880-17457-A-4-C MSD	Matrix Spike Duplicate	90	83										
890-2621-1	PH01 @ 0.5'	124	97										
890-2621-2	PH01 @ 5'	324 S1+	244 S1+										
LCS 880-30893/1-A	Lab Control Sample	102	97										
LCSD 880-30893/2-A	Lab Control Sample Dup	102	99										
MB 880-30595/5-A	Method Blank	107	89										
MB 880-30893/5-A	Method Blank	98	90										

Surrogate Legend

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

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

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

		Percent Surrogate Recovery (Acceptance Limits)											
		1CO1	OTPH1										
Lab Sample ID	Client Sample ID	(70-130)	(70-130)										
890-2618-A-1-E MS	Matrix Spike	82	78										
890-2618-A-1-F MSD	Matrix Spike Duplicate	67 S1-	64 S1-										
890-2621-1	PH01 @ 0.5'	70	76										
890-2621-2	PH01 @ 5'	72	78										
LCS 880-30666/2-A	Lab Control Sample	90	92										
LCSD 880-30666/3-A	Lab Control Sample Dup	93	95										
MB 880-30666/1-A	Method Blank	100	108										

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: JRU D1 1

Job ID: 890-2621-1
SDG: 03E1558063

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-30595/5-A
Matrix: Solid
Analysis Batch: 31046

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30595

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/25/22 14:01	07/30/22 11:57	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/25/22 14:01	07/30/22 11:57	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/25/22 14:01	07/30/22 11:57	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		07/25/22 14:01	07/30/22 11:57	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/25/22 14:01	07/30/22 11:57	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		07/25/22 14:01	07/30/22 11:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*70 - 130*	*07/25/22 14:01*	*07/30/22 11:57*	*1*
1,4-Difluorobenzene (Surr)	*89*		*70 - 130*	*07/25/22 14:01*	*07/30/22 11:57*	*1*

Lab Sample ID: MB 880-30893/5-A
Matrix: Solid
Analysis Batch: 31046

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30893

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/28/22 09:46	07/30/22 22:33	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/28/22 09:46	07/30/22 22:33	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/28/22 09:46	07/30/22 22:33	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		07/28/22 09:46	07/30/22 22:33	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/28/22 09:46	07/30/22 22:33	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		07/28/22 09:46	07/30/22 22:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*	*07/28/22 09:46*	*07/30/22 22:33*	*1*
1,4-Difluorobenzene (Surr)	*90*		*70 - 130*	*07/28/22 09:46*	*07/30/22 22:33*	*1*

Lab Sample ID: LCS 880-30893/1-A
Matrix: Solid
Analysis Batch: 31046

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30893

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.07636		mg/Kg		76	70 - 130		
Toluene			0.100	0.07525		mg/Kg		75	70 - 130		
Ethylbenzene			0.100	0.07655		mg/Kg		77	70 - 130		
m-Xylene & p-Xylene			0.200	0.1566		mg/Kg		78	70 - 130		
o-Xylene			0.100	0.08861		mg/Kg		89	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*
1,4-Difluorobenzene (Surr)	*97*		*70 - 130*

Lab Sample ID: LCSD 880-30893/2-A
Matrix: Solid
Analysis Batch: 31046

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30893

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.08496		mg/Kg		85	70 - 130	11	35

QC Sample Results

Client: Ensolum
Project/Site: JRU D1 1

Job ID: 890-2621-1
SDG: 03E1558063

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

Lab Sample ID: LCSD 880-30893/2-A
Matrix: Solid
Analysis Batch: 31046

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30893

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Toluene			0.100	0.08283		mg/Kg		83	70 - 130	10	35
Ethylbenzene			0.100	0.08403		mg/Kg		84	70 - 130	9	35
m-Xylene & p-Xylene			0.200	0.1660		mg/Kg		83	70 - 130	6	35
o-Xylene			0.100	0.09377		mg/Kg		94	70 - 130	6	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*
1,4-Difluorobenzene (Surr)	*99*		*70 - 130*

Lab Sample ID: 880-17457-A-4-B MS
Matrix: Solid
Analysis Batch: 31046

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 30893

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	<0.00201	U F1	0.0998	0.008077	F1	mg/Kg		8	70 - 130
Toluene	0.00237	F1	0.0998	0.01293	F1	mg/Kg		11	70 - 130
Ethylbenzene	0.00203	F1	0.0998	0.01245	F1	mg/Kg		10	70 - 130
m-Xylene & p-Xylene	0.00684	F1	0.200	0.02690	F1	mg/Kg		10	70 - 130
o-Xylene	0.00277	F1	0.0998	0.01677	F1	mg/Kg		14	70 - 130

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

Lab Sample ID: 880-17457-A-4-C MSD
Matrix: Solid
Analysis Batch: 31046

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 30893

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00201	U F1	0.0994	0.01078	F1	mg/Kg		11	70 - 130	29	35
Toluene	0.00237	F1	0.0994	0.01290	F1	mg/Kg		11	70 - 130	0	35
Ethylbenzene	0.00203	F1	0.0994	0.01203	F1	mg/Kg		10	70 - 130	3	35
m-Xylene & p-Xylene	0.00684	F1	0.199	0.02672	F1	mg/Kg		10	70 - 130	1	35
o-Xylene	0.00277	F1	0.0994	0.01595	F1	mg/Kg		13	70 - 130	5	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*
1,4-Difluorobenzene (Surr)	*83*		*70 - 130*

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

Lab Sample ID: MB 880-30666/1-A
Matrix: Solid
Analysis Batch: 30643

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30666

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 10:41	07/26/22 20:25	1

QC Sample Results

Client: Ensolum
Project/Site: JRU D1 1

Job ID: 890-2621-1
SDG: 03E1558063

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

Lab Sample ID: MB 880-30666/1-A
Matrix: Solid
Analysis Batch: 30643

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30666

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		07/26/22 10:41	07/26/22 20:25	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/26/22 10:41	07/26/22 20:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*100*		*70 - 130*	*07/26/22 10:41*	*07/26/22 20:25*	*1*
o-Terphenyl	*108*		*70 - 130*	*07/26/22 10:41*	*07/26/22 20:25*	*1*

Lab Sample ID: LCS 880-30666/2-A
Matrix: Solid
Analysis Batch: 30643

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30666

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	1067		mg/Kg		107	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	914.2		mg/Kg		91	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*90*		*70 - 130*
o-Terphenyl	*92*		*70 - 130*

Lab Sample ID: LCSD 880-30666/3-A
Matrix: Solid
Analysis Batch: 30643

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30666

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	1056		mg/Kg		106	70 - 130	1	20
Diesel Range Organics (Over C10-C28)			1000	902.3		mg/Kg		90	70 - 130	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1-Chlorooctane	*93*		*70 - 130*
o-Terphenyl	*95*		*70 - 130*

Lab Sample ID: 890-2618-A-1-E MS
Matrix: Solid
Analysis Batch: 30643

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 30666

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 F2	1000	1169		mg/Kg		114	70 - 130		
Diesel Range Organics (Over C10-C28)	<50.0	U F1	1000	853.5		mg/Kg		84	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*82*		*70 - 130*
o-Terphenyl	*78*		*70 - 130*

QC Sample Results

Client: Ensolum
Project/Site: JRU D1 1

Job ID: 890-2621-1
SDG: 03E1558063

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

Lab Sample ID: 890-2618-A-1-F MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 30643 — **Prep Batch: 30666**

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 F2	999	943.2	F2	mg/Kg		92	70 - 130	21	20
Diesel Range Organics (Over C10-C28)	<50.0	U F1	999	704.6	F1	mg/Kg		69	70 - 130	19	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*67*	*S1-*	*70 - 130*
o-Terphenyl	*64*	*S1-*	*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-30600/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30692

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			07/26/22 22:31	1

Lab Sample ID: LCS 880-30600/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30692

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	254.9		mg/Kg		102	90 - 110		

Lab Sample ID: LCSD 880-30600/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30692

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	255.8		mg/Kg		102	90 - 110	0	20

Lab Sample ID: 880-17277-A-3-E MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30692

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	22.5	F1	252	299.6		mg/Kg		110	90 - 110		

Lab Sample ID: 880-17277-A-3-F MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30692

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	22.5	F1	252	302.1	F1	mg/Kg		111	90 - 110	1	20

QC Sample Results

Client: Ensolum
Project/Site: JRU D1 1

Job ID: 890-2621-1
SDG: 03E1558063

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 880-30602/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30920

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			07/29/22 10:35	1

Lab Sample ID: LCS 880-30602/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30920

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			250	261.1		mg/Kg		104	90 - 110		

Lab Sample ID: LCSD 880-30602/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30920

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	261.9		mg/Kg		105	90 - 110	0	20

Lab Sample ID: 880-17266-A-41-B MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30920

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	1680	F1	1250	3104	F1	mg/Kg		114	90 - 110		

Lab Sample ID: 880-17266-A-41-C MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30920

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	1680	F1	1250	2993		mg/Kg		105	90 - 110	4	20

Lab Sample ID: 880-17282-A-1-E MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30920

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	3090		1250	4253		mg/Kg		93	90 - 110		

Lab Sample ID: 880-17282-A-1-F MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 30920

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	3090		1250	4249		mg/Kg		93	90 - 110	0	20

QC Association Summary

Client: Ensolum
Project/Site: JRU D1 1

Job ID: 890-2621-1
SDG: 03E1558063

GC VOA

Prep Batch: 30595

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-30595/5-A	Method Blank	Total/NA	Solid	5035	

Prep Batch: 30893

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2621-1	PH01 @ 0.5'	Total/NA	Solid	5035	
890-2621-2	PH01 @ 5'	Total/NA	Solid	5035	
MB 880-30893/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-30893/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-30893/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-17457-A-4-B MS	Matrix Spike	Total/NA	Solid	5035	
880-17457-A-4-C MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 31046

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2621-1	PH01 @ 0.5'	Total/NA	Solid	8021B	30893
890-2621-2	PH01 @ 5'	Total/NA	Solid	8021B	30893
MB 880-30595/5-A	Method Blank	Total/NA	Solid	8021B	30595
MB 880-30893/5-A	Method Blank	Total/NA	Solid	8021B	30893
LCS 880-30893/1-A	Lab Control Sample	Total/NA	Solid	8021B	30893
LCSD 880-30893/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	30893
880-17457-A-4-B MS	Matrix Spike	Total/NA	Solid	8021B	30893
880-17457-A-4-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	30893

Analysis Batch: 31091

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2621-1	PH01 @ 0.5'	Total/NA	Solid	Total BTEX	
890-2621-2	PH01 @ 5'	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 30643

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2621-1	PH01 @ 0.5'	Total/NA	Solid	8015B NM	30666
890-2621-2	PH01 @ 5'	Total/NA	Solid	8015B NM	30666
MB 880-30666/1-A	Method Blank	Total/NA	Solid	8015B NM	30666
LCS 880-30666/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	30666
LCSD 880-30666/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	30666
890-2618-A-1-E MS	Matrix Spike	Total/NA	Solid	8015B NM	30666
890-2618-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	30666

Prep Batch: 30666

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2621-1	PH01 @ 0.5'	Total/NA	Solid	8015NM Prep	
890-2621-2	PH01 @ 5'	Total/NA	Solid	8015NM Prep	
MB 880-30666/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-30666/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-30666/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-2618-A-1-E MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-2618-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

QC Association Summary

Client: Ensolum
Project/Site: JRU D1 1

Job ID: 890-2621-1
SDG: 03E1558063

GC Semi VOA

Analysis Batch: 30803

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2621-1	PH01 @ 0.5'	Total/NA	Solid	8015 NM	
890-2621-2	PH01 @ 5'	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 30600

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2621-1	PH01 @ 0.5'	Soluble	Solid	DI Leach	
MB 880-30600/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-30600/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-30600/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
880-17277-A-3-E MS	Matrix Spike	Soluble	Solid	DI Leach	
880-17277-A-3-F MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Leach Batch: 30602

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2621-2	PH01 @ 5'	Soluble	Solid	DI Leach	
MB 880-30602/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-30602/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-30602/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
880-17266-A-41-B MS	Matrix Spike	Soluble	Solid	DI Leach	
880-17266-A-41-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	
880-17282-A-1-E MS	Matrix Spike	Soluble	Solid	DI Leach	
880-17282-A-1-F MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 30692

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2621-1	PH01 @ 0.5'	Soluble	Solid	300.0	30600
MB 880-30600/1-A	Method Blank	Soluble	Solid	300.0	30600
LCS 880-30600/2-A	Lab Control Sample	Soluble	Solid	300.0	30600
LCSD 880-30600/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	30600
880-17277-A-3-E MS	Matrix Spike	Soluble	Solid	300.0	30600
880-17277-A-3-F MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	30600

Analysis Batch: 30920

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2621-2	PH01 @ 5'	Soluble	Solid	300.0	30602
MB 880-30602/1-A	Method Blank	Soluble	Solid	300.0	30602
LCS 880-30602/2-A	Lab Control Sample	Soluble	Solid	300.0	30602
LCSD 880-30602/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	30602
880-17266-A-41-B MS	Matrix Spike	Soluble	Solid	300.0	30602
880-17266-A-41-C MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	30602
880-17282-A-1-E MS	Matrix Spike	Soluble	Solid	300.0	30602
880-17282-A-1-F MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	30602

Lab Chronicle

Client: Ensolum
Project/Site: JRU D1 1

Job ID: 890-2621-1
SDG: 03E1558063

Client Sample ID: PH01 @ 0.5'

Date Collected: 07/21/22 10:14
Date Received: 07/21/22 16:36

Lab Sample ID: 890-2621-1

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	30893	07/28/22 09:46	MR	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	31046	07/31/22 01:18	AJ	XEN MID
Total/NA	Analysis	Total BTEX		1			31091	07/31/22 09:18	AJ	XEN MID
Total/NA	Analysis	8015 NM		1			30803	07/27/22 10:58	SM	XEN MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	30666	07/26/22 10:41	DM	XEN MID
Total/NA	Analysis	8015B NM		1			30643	07/27/22 00:24	AJ	XEN MID
Soluble	Leach	DI Leach			5.05 g	50 mL	30600	07/25/22 15:21	KS	XEN MID
Soluble	Analysis	300.0		1			30692	07/27/22 03:08	CH	XEN MID

Client Sample ID: PH01 @ 5'

Date Collected: 07/21/22 10:20
Date Received: 07/21/22 16:36

Lab Sample ID: 890-2621-2

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	30893	07/28/22 09:46	MR	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	31046	07/31/22 01:38	AJ	XEN MID
Total/NA	Analysis	Total BTEX		1			31091	07/31/22 09:18	AJ	XEN MID
Total/NA	Analysis	8015 NM		1			30803	07/27/22 10:58	SM	XEN MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	30666	07/26/22 10:41	DM	XEN MID
Total/NA	Analysis	8015B NM		1			30643	07/27/22 00:46	AJ	XEN MID
Soluble	Leach	DI Leach			5.04 g	50 mL	30602	07/25/22 15:34	KS	XEN MID
Soluble	Analysis	300.0		1			30920	07/29/22 12:28	SMC	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: JRU D1 1

Job ID: 890-2621-1
SDG: 03E1558063

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: JRU D1 1

Job ID: 890-2621-1
SDG: 03E1558063

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: JRU D1 1

Job ID: 890-2621-1
SDG: 03E1558063

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-2621-1	PH01 @ 0.5'	Solid	07/21/22 10:14	07/21/22 16:36	0.5'
890-2621-2	PH01 @ 5'	Solid	07/21/22 10:20	07/21/22 16:36	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: _____

CIP - cooling in Process www.xenco.com Page 1 of 1

Project Manager:	Tacoma Morrissey	Bill to: (if different)	Garrett Green
Company Name:	Ensolum	Company Name:	XTO Energy
Address:	3122 Nati. Parks Hwy.	Address:	3104 E. Green St.
City, State ZIP:	Carlsbad NM 88220	City, State ZIP:	Carlsbad NM 88220
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:	JRU D11	Turn Around	
Project Number:	03E1558063	☐ Routine ☐ Rush	
Project Location:	Eddy County	Due Date:	
Sampler's Name:	Liz Crell	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:	TM-007
Cooler Custody Seals:	Yes No N/A	Correction Factor:	~~14.0~~ -0.2
Sample Custody Seals:	Yes No N/A	Temperature Reading:	~~13.8~~ 14.0
Total Containers:		Corrected Temperature:	13.8

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Chloride	BTEX	TPH
PH01 @ 0.5'	S	7/21/22	1014	0.5'	G	1	↓	↓	↓
PH01 @ 5'	S	↓	1020	5'	G	1	↓	↓	↓

ANALYSIS REQUEST

890-2621 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

incident number
napp2216152113

Job number
03E1558063

Cost Center
1082151001

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

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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1	Amanda Stuff	7/21/22 1630			
3			4		
5			6		

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2621-1
SDG Number: 03E1558063

Login Number: 2621
List Number: 1
Creator: Stutzman, Amanda

List Source: Eurofins Carlsbad

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	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: 890-2621-1
SDG Number: 03E1558063

Login Number: 2621
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 07/22/22 12:56 PM

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

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ANALYTICAL REPORT

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

Laboratory Job ID: 890-2707-1
Laboratory Sample Delivery Group: 03E1558063
Client Project/Site: JRU DI1

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

Attn: Tacoma Morrissey

JKramer

Authorized for release by:
8/12/2022 7:58:33 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: JRU DI1

Laboratory Job ID: 890-2707-1
SDG: 03E1558063

Table of Contents

Definitions/Glossary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2707-1
SDG: 03E1558063

Qualifiers

GC VOA

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

GC Semi VOA

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

HPLC/IC

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

Glossary

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

Case Narrative

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2707-1
SDG: 03E1558063

Job ID: 890-2707-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-2707-1

Receipt
The sample was received on 8/2/2022 3:53 PM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.0°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: Surrogate recovery for the following samples were outside control limits: PH04 (890-2707-1), (890-2706-A-1-A), (890-2706-A-1-B MS) and (890-2706-A-1-C MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015MOD_NM: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-31555 and analytical batch 880-31531 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 880-31559 and analytical batch 880-31937 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: JRU DI1

Job ID: 890-2707-1
SDG: 03E1558063

Client Sample ID: PH04

Date Collected: 08/02/22 11:55
Date Received: 08/02/22 15:53
Sample Depth: 5

Lab Sample ID: 890-2707-1

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		08/05/22 11:52	08/07/22 18:11	1
Toluene	<0.00200	U	0.00200		mg/Kg		08/05/22 11:52	08/07/22 18:11	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		08/05/22 11:52	08/07/22 18:11	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		08/05/22 11:52	08/07/22 18:11	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		08/05/22 11:52	08/07/22 18:11	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		08/05/22 11:52	08/07/22 18:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*	*08/05/22 11:52*	*08/07/22 18:11*	*1*
1,4-Difluorobenzene (Surr)	*107*		*70 - 130*	*08/05/22 11:52*	*08/07/22 18:11*	*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			08/09/22 16:25	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			08/08/22 11:58	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		08/05/22 09:50	08/05/22 23:20	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8		mg/Kg		08/05/22 09:50	08/05/22 23:20	1
Oil Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		08/05/22 09:50	08/05/22 23:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*68*	*S1-*	*70 - 130*	*08/05/22 09:50*	*08/05/22 23:20*	*1*
o-Terphenyl	*79*		*70 - 130*	*08/05/22 09:50*	*08/05/22 23:20*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**10.1**		4.97		mg/Kg			08/12/22 06:51	1

Surrogate Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2707-1
SDG: 03E1558063

Method: 8021B - Volatile Organic Compounds (GC)

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

		Percent Surrogate Recovery (Acceptance Limits)	
		BFB1	DFBZ1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
890-2692-A-1-F MS	Matrix Spike	98	104
890-2692-A-1-G MSD	Matrix Spike Duplicate	96	102
890-2707-1	PH04	103	107
LCS 880-31576/1-A	Lab Control Sample	96	106
LCSD 880-31576/2-A	Lab Control Sample Dup	92	103
MB 880-31576/5-A	Method Blank	98	95

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)
890-2706-A-1-B MS	Matrix Spike	68 S1-	67 S1-
890-2706-A-1-C MSD	Matrix Spike Duplicate	63 S1-	65 S1-
890-2707-1	PH04	68 S1-	79
LCS 880-31555/2-A	Lab Control Sample	89	96
LCSD 880-31555/3-A	Lab Control Sample Dup	89	97
MB 880-31555/1-A	Method Blank	83	101

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2707-1
SDG: 03E1558063

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-31576/5-A
Matrix: Solid
Analysis Batch: 31656

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31576

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		08/05/22 11:52	08/07/22 14:43	1
Toluene	<0.00200	U	0.00200		mg/Kg		08/05/22 11:52	08/07/22 14:43	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		08/05/22 11:52	08/07/22 14:43	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		08/05/22 11:52	08/07/22 14:43	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		08/05/22 11:52	08/07/22 14:43	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		08/05/22 11:52	08/07/22 14:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*	*08/05/22 11:52*	*08/07/22 14:43*	*1*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*	*08/05/22 11:52*	*08/07/22 14:43*	*1*

Lab Sample ID: LCS 880-31576/1-A
Matrix: Solid
Analysis Batch: 31656

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 31576

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.09840		mg/Kg		98	70 - 130		
Toluene			0.100	0.1101		mg/Kg		110	70 - 130		
Ethylbenzene			0.100	0.09388		mg/Kg		94	70 - 130		
m-Xylene & p-Xylene			0.200	0.2024		mg/Kg		101	70 - 130		
o-Xylene			0.100	0.09923		mg/Kg		99	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*
1,4-Difluorobenzene (Surr)	*106*		*70 - 130*

Lab Sample ID: LCSD 880-31576/2-A
Matrix: Solid
Analysis Batch: 31656

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 31576

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.1124		mg/Kg		112	70 - 130	13	35
Toluene			0.100	0.1077		mg/Kg		108	70 - 130	2	35
Ethylbenzene			0.100	0.08729		mg/Kg		87	70 - 130	7	35
m-Xylene & p-Xylene			0.200	0.1826		mg/Kg		91	70 - 130	10	35
o-Xylene			0.100	0.08974		mg/Kg		90	70 - 130	10	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*
1,4-Difluorobenzene (Surr)	*103*		*70 - 130*

Lab Sample ID: 890-2692-A-1-F MS
Matrix: Solid
Analysis Batch: 31656

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 31576

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00201	U	0.101	0.1015		mg/Kg		101	70 - 130		
Toluene	<0.00201	U	0.101	0.09221		mg/Kg		92	70 - 130		

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2707-1
SDG: 03E1558063

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

Lab Sample ID: 890-2692-A-1-F MS
Matrix: Solid
Analysis Batch: 31656

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 31576

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00201	U	0.101	0.07243		mg/Kg		72	70 - 130
m-Xylene & p-Xylene	<0.00402	U	0.201	0.1505		mg/Kg		75	70 - 130
o-Xylene	<0.00201	U	0.101	0.07369		mg/Kg		73	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*
1,4-Difluorobenzene (Surr)	*104*		*70 - 130*

Lab Sample ID: 890-2692-A-1-G MSD
Matrix: Solid
Analysis Batch: 31656

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 31576

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00201	U	0.0998	0.1015		mg/Kg		102	70 - 130	0	35
Toluene	<0.00201	U	0.0998	0.09175		mg/Kg		92	70 - 130	1	35
Ethylbenzene	<0.00201	U	0.0998	0.07057		mg/Kg		71	70 - 130	3	35
m-Xylene & p-Xylene	<0.00402	U	0.200	0.1460		mg/Kg		73	70 - 130	3	35
o-Xylene	<0.00201	U	0.0998	0.07205		mg/Kg		72	70 - 130	2	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*
1,4-Difluorobenzene (Surr)	*102*		*70 - 130*

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

Lab Sample ID: MB 880-31555/1-A
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31555

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		08/05/22 09:50	08/05/22 20:48	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		08/05/22 09:50	08/05/22 20:48	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		08/05/22 09:50	08/05/22 20:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*83*		*70 - 130*	*08/05/22 09:50*	*08/05/22 20:48*	*1*
o-Terphenyl	*101*		*70 - 130*	*08/05/22 09:50*	*08/05/22 20:48*	*1*

Lab Sample ID: LCS 880-31555/2-A
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 31555

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10			1000	885.3		mg/Kg		89	70 - 130
Diesel Range Organics (Over C10-C28)			1000	874.1		mg/Kg		87	70 - 130

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2707-1
SDG: 03E1558063

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

Lab Sample ID: LCS 880-31555/2-A
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 31555

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1-Chlorooctane	89		70 - 130
o-Terphenyl	96		70 - 130

Lab Sample ID: LCSD 880-31555/3-A
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 31555

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	855.1		mg/Kg		86	70 - 130	3	20
Diesel Range Organics (Over C10-C28)			1000	871.0		mg/Kg		87	70 - 130	0	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1-Chlorooctane	89		70 - 130
o-Terphenyl	97		70 - 130

Lab Sample ID: 890-2706-A-1-B MS
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 31555

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	999	833.2		mg/Kg		81	70 - 130
Diesel Range Organics (Over C10-C28)	92.2	F1	999	666.4	F1	mg/Kg		57	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
1-Chlorooctane	68	S1-	70 - 130
o-Terphenyl	67	S1-	70 - 130

Lab Sample ID: 890-2706-A-1-C MSD
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 31555

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	999	850.8		mg/Kg		83	70 - 130	2	20
Diesel Range Organics (Over C10-C28)	92.2	F1	999	643.6	F1	mg/Kg		55	70 - 130	3	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1-Chlorooctane	63	S1-	70 - 130
o-Terphenyl	65	S1-	70 - 130

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2707-1
SDG: 03E1558063

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-31559/1-A
Matrix: Solid
Analysis Batch: 31937

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			08/12/22 03:46	1

Lab Sample ID: LCS 880-31559/2-A
Matrix: Solid
Analysis Batch: 31937

Client Sample ID: Lab Control Sample
Prep Type: Soluble

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

Lab Sample ID: LCSD 880-31559/3-A
Matrix: Solid
Analysis Batch: 31937

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	247.1		mg/Kg		99	90 - 110	1	20

Lab Sample ID: 890-2706-A-3-C MS
Matrix: Solid
Analysis Batch: 31937

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	198	F1	250	448.2		mg/Kg		100	90 - 110		

Lab Sample ID: 890-2706-A-3-D MSD
Matrix: Solid
Analysis Batch: 31937

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	198	F1	250	480.5	F1	mg/Kg		113	90 - 110	7	20

QC Association Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2707-1
SDG: 03E1558063

GC VOA

Prep Batch: 31576

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2707-1	PH04	Total/NA	Solid	5035	
MB 880-31576/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-31576/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-31576/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-2692-A-1-F MS	Matrix Spike	Total/NA	Solid	5035	
890-2692-A-1-G MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 31656

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2707-1	PH04	Total/NA	Solid	8021B	31576
MB 880-31576/5-A	Method Blank	Total/NA	Solid	8021B	31576
LCS 880-31576/1-A	Lab Control Sample	Total/NA	Solid	8021B	31576
LCSD 880-31576/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	31576
890-2692-A-1-F MS	Matrix Spike	Total/NA	Solid	8021B	31576
890-2692-A-1-G MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	31576

Analysis Batch: 31866

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2707-1	PH04	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 31531

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2707-1	PH04	Total/NA	Solid	8015B NM	31555
MB 880-31555/1-A	Method Blank	Total/NA	Solid	8015B NM	31555
LCS 880-31555/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	31555
LCSD 880-31555/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	31555
890-2706-A-1-B MS	Matrix Spike	Total/NA	Solid	8015B NM	31555
890-2706-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	31555

Prep Batch: 31555

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2707-1	PH04	Total/NA	Solid	8015NM Prep	
MB 880-31555/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-31555/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-31555/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-2706-A-1-B MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-2706-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 31751

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2707-1	PH04	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 31559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2707-1	PH04	Soluble	Solid	DI Leach	
MB 880-31559/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-31559/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-31559/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	

QC Association Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2707-1
SDG: 03E1558063

HPLC/IC (Continued)

Leach Batch: 31559 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2706-A-3-C MS	Matrix Spike	Soluble	Solid	DI Leach	
890-2706-A-3-D MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 31937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2707-1	PH04	Soluble	Solid	300.0	31559
MB 880-31559/1-A	Method Blank	Soluble	Solid	300.0	31559
LCS 880-31559/2-A	Lab Control Sample	Soluble	Solid	300.0	31559
LCSD 880-31559/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	31559
890-2706-A-3-C MS	Matrix Spike	Soluble	Solid	300.0	31559
890-2706-A-3-D MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	31559

Lab Chronicle

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2707-1
SDG: 03E1558063

Client Sample ID: PH04

Date Collected: 08/02/22 11:55
Date Received: 08/02/22 15:53

Lab Sample ID: 890-2707-1

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	31576	08/05/22 11:52	MR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	31656	08/07/22 18:11	MR	EET MID
Total/NA	Analysis	Total BTEX		1			31866	08/09/22 16:25	SM	EET MID
Total/NA	Analysis	8015 NM		1			31751	08/08/22 11:58	SM	EET MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	31555	08/05/22 09:50	DM	EET MID
Total/NA	Analysis	8015B NM		1			31531	08/05/22 23:20	SM	EET MID
Soluble	Leach	DI Leach			5.03 g	50 mL	31559	08/05/22 10:29	CH	EET MID
Soluble	Analysis	300.0		1			31937	08/12/22 06:51	AJ	EET MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2707-1
SDG: 03E1558063

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: JRU DI1

Job ID: 890-2707-1
SDG: 03E1558063

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

Protocol References:

ASTM = ASTM International

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:

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

Sample Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2707-1
SDG: 03E1558063

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-2707-1	PH04	Solid	08/02/22 11:55	08/02/22 15:53	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 Energy
Address:	3122 National Parks Hwy	Address:	3104 E. Green Street
City, State ZIP:	Carlsbad, NM 88220	City, State ZIP:	Carlsbad, NM 88220
Phone:	303-887-2946	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:	JRU DI 1	Turn Around	
Project Number:	03E1558063	☑ Routine ☐ Rush	
Project Location:		Due Date:	
Sampler's Name:	Conner Shore	TAT starts the day received by the lab, if received by 4:30pm	
PO #:			

SAMPLE RECEIPT				
Temp Blank:	Yes No	Wet Ice:	Yes No	
Samples Received Intact:	Yes No	Thermometer ID:	WM 007	
Cooler Custody Seals:	Yes No N/A	Correction Factor:	-0.2	
Sample Custody Seals:	Yes No N/A	Temperature Reading:	3.2	
Total Containers:		Corrected Temperature:	3.0	

ANALYSIS REQUEST

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	CHLORIDES (EPA: 300.0)	TPH (8015)	BTEX (8021)
PH04	S	08.02.22	1155	5'	C	1		x	x	x

890-2707 Chain of Custody

Preservative Codes

None: NO DI Water: H_2O
Cool: Cool MeOH: Me
HCL: HC HNO_3: HN
H_2S0_4: H_2 NaOH: Na
H_3PO_4: HP
$NaHSO_4$: NABIS
$Na_2S_2O_3$: $NaSO_3$
Zn Acetate+NaOH: Zn
NaOH+Ascorbic Acid: SAPC

Sample Comments

Incident ID: nAPP2216152113
Cost Center: 1082151001
AFE:
API: 30-015-47514

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

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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1		8.2.22 1553	4		
3			6		
5					

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2707-1
SDG Number: 03E1558063

Login Number: 2707
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: 890-2707-1
SDG Number: 03E1558063

Login Number: 2707
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 08/04/22 10:22 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: 890-2708-1
Laboratory Sample Delivery Group: 03E1558063
Client Project/Site: JRU DI1

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

Attn: Tacoma Morrissey

JKramer

Authorized for release by:
8/12/2022 7:58:52 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: JRU DI1

Laboratory Job ID: 890-2708-1
SDG: 03E1558063

Table of Contents

Definitions/Glossary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2708-1
SDG: 03E1558063

Qualifiers

GC VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

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

HPLC/IC

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

Glossary

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

Case Narrative

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2708-1
SDG: 03E1558063

Job ID: 890-2708-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-2708-1

Receipt
The sample was received on 8/2/2022 3:53 PM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.0°C

GC VOA
Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-31602 and 880-31669 and analytical batch 880-31654 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: Surrogate recovery for the following sample was outside control limits: PH04 (890-2708-1). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-31669 and analytical batch 880-31654 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: Surrogate recovery for the following samples were outside control limits: (890-2706-A-1-A), (890-2706-A-1-B MS) and (890-2706-A-1-C MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015MOD_NM: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-31555 and analytical batch 880-31531 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 880-31559 and analytical batch 880-31937 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: JRU DI1

Job ID: 890-2708-1
SDG: 03E1558063

Client Sample ID: PH04

Date Collected: 08/02/22 11:20
Date Received: 08/02/22 15:53
Sample Depth: 0.5

Lab Sample ID: 890-2708-1

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		08/05/22 13:42	08/07/22 20:37	1
Toluene	<0.00200	U	0.00200		mg/Kg		08/05/22 13:42	08/07/22 20:37	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		08/05/22 13:42	08/07/22 20:37	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		08/05/22 13:42	08/07/22 20:37	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		08/05/22 13:42	08/07/22 20:37	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		08/05/22 13:42	08/07/22 20:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*151*	*S1+*	*70 - 130*	*08/05/22 13:42*	*08/07/22 20:37*	*1*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*	*08/05/22 13:42*	*08/07/22 20:37*	*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			08/08/22 16:27	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			08/08/22 11:58	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		08/05/22 09:50	08/05/22 23:42	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		08/05/22 09:50	08/05/22 23:42	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		08/05/22 09:50	08/05/22 23:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*78*		*70 - 130*	*08/05/22 09:50*	*08/05/22 23:42*	*1*
o-Terphenyl	*85*		*70 - 130*	*08/05/22 09:50*	*08/05/22 23:42*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**211**		4.99		mg/Kg			08/12/22 07:00	1

Surrogate Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2708-1
SDG: 03E1558063

Method: 8021B - Volatile Organic Compounds (GC)

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

		Percent Surrogate Recovery (Acceptance Limits)											
		BFB1	DFBZ1										
Lab Sample ID	Client Sample ID	(70-130)	(70-130)										
890-2689-A-13-E MS	Matrix Spike	114	95										
890-2689-A-13-F MSD	Matrix Spike Duplicate	120	94										
890-2703-A-1-C MS	Matrix Spike	109	95										
890-2703-A-1-D MSD	Matrix Spike Duplicate	113	80										
890-2708-1	PH04	151 S1+	95										
LCS 880-31602/1-A	Lab Control Sample	107	99										
LCS 880-31669/1-A	Lab Control Sample	100	99										
LCSD 880-31602/2-A	Lab Control Sample Dup	99	97										
LCSD 880-31669/2-A	Lab Control Sample Dup	101	101										
MB 880-31602/5-A	Method Blank	95	80										
MB 880-31669/5-A	Method Blank	130	111										

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)										
890-2706-A-1-B MS	Matrix Spike	68 S1-	67 S1-										
890-2706-A-1-C MSD	Matrix Spike Duplicate	63 S1-	65 S1-										
890-2708-1	PH04	78	85										
LCS 880-31555/2-A	Lab Control Sample	89	96										
LCSD 880-31555/3-A	Lab Control Sample Dup	89	97										
MB 880-31555/1-A	Method Blank	83	101										

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2708-1
SDG: 03E1558063

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-31602/5-A
Matrix: Solid
Analysis Batch: 31654

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31602

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		08/05/22 13:42	08/07/22 13:44	1
Toluene	<0.00200	U	0.00200		mg/Kg		08/05/22 13:42	08/07/22 13:44	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		08/05/22 13:42	08/07/22 13:44	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		08/05/22 13:42	08/07/22 13:44	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		08/05/22 13:42	08/07/22 13:44	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		08/05/22 13:42	08/07/22 13:44	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*	*08/05/22 13:42*	*08/07/22 13:44*	*1*
1,4-Difluorobenzene (Surr)	*80*		*70 - 130*	*08/05/22 13:42*	*08/07/22 13:44*	*1*

Lab Sample ID: LCS 880-31602/1-A
Matrix: Solid
Analysis Batch: 31654

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 31602

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.1073		mg/Kg		107	70 - 130		
Toluene			0.100	0.1053		mg/Kg		105	70 - 130		
Ethylbenzene			0.100	0.1105		mg/Kg		111	70 - 130		
m-Xylene & p-Xylene			0.200	0.2245		mg/Kg		112	70 - 130		
o-Xylene			0.100	0.1208		mg/Kg		121	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*107*		*70 - 130*
1,4-Difluorobenzene (Surr)	*99*		*70 - 130*

Lab Sample ID: LCSD 880-31602/2-A
Matrix: Solid
Analysis Batch: 31654

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 31602

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.09355		mg/Kg		94	70 - 130	14	35
Toluene			0.100	0.09121		mg/Kg		91	70 - 130	14	35
Ethylbenzene			0.100	0.09177		mg/Kg		92	70 - 130	19	35
m-Xylene & p-Xylene			0.200	0.1821		mg/Kg		91	70 - 130	21	35
o-Xylene			0.100	0.1009		mg/Kg		101	70 - 130	18	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*
1,4-Difluorobenzene (Surr)	*97*		*70 - 130*

Lab Sample ID: 890-2703-A-1-C MS
Matrix: Solid
Analysis Batch: 31654

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 31602

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00200	U F2 F1	0.0998	0.04079	F1	mg/Kg		41	70 - 130		
Toluene	<0.00200	U F2 F1	0.0998	0.04164	F1	mg/Kg		42	70 - 130		

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2708-1
SDG: 03E1558063

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

Lab Sample ID: 890-2703-A-1-C MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 31654 — **Prep Batch: 31602**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylbenzene	<0.00200	U F2 F1	0.0998	0.04162	F1	mg/Kg		42	70 - 130
m-Xylene & p-Xylene	<0.00401	U F2 F1	0.200	0.07188	F1	mg/Kg		36	70 - 130
o-Xylene	<0.00200	U F2 F1	0.0998	0.05817	F1	mg/Kg		58	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*109*		*70 - 130*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*

Lab Sample ID: 890-2703-A-1-D MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 31654 — **Prep Batch: 31602**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00200	U F2 F1	0.100	0.002587	F2 F1	mg/Kg		3	70 - 130	176	35
Toluene	<0.00200	U F2 F1	0.100	0.003991	F2 F1	mg/Kg		4	70 - 130	165	35
Ethylbenzene	<0.00200	U F2 F1	0.100	0.004040	F2 F1	mg/Kg		4	70 - 130	165	35
m-Xylene & p-Xylene	<0.00401	U F2 F1	0.201	<0.00402	U F2 F1	mg/Kg		1	70 - 130	185	35
o-Xylene	<0.00200	U F2 F1	0.100	0.01486	F2 F1	mg/Kg		15	70 - 130	119	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*113*		*70 - 130*
1,4-Difluorobenzene (Surr)	*80*		*70 - 130*

Lab Sample ID: MB 880-31669/5-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 31654 — **Prep Batch: 31669**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		08/07/22 12:02	08/08/22 00:21	1
Toluene	<0.00200	U	0.00200	mg/Kg		08/07/22 12:02	08/08/22 00:21	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		08/07/22 12:02	08/08/22 00:21	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		08/07/22 12:02	08/08/22 00:21	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		08/07/22 12:02	08/08/22 00:21	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		08/07/22 12:02	08/08/22 00:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*130*		*70 - 130*	*08/07/22 12:02*	*08/08/22 00:21*	*1*
1,4-Difluorobenzene (Surr)	*111*		*70 - 130*	*08/07/22 12:02*	*08/08/22 00:21*	*1*

Lab Sample ID: LCS 880-31669/1-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 31654 — **Prep Batch: 31669**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	0.100	0.1009		mg/Kg		101	70 - 130
Toluene	0.100	0.09893		mg/Kg		99	70 - 130
Ethylbenzene	0.100	0.09835		mg/Kg		98	70 - 130
m-Xylene & p-Xylene	0.200	0.1984		mg/Kg		99	70 - 130

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2708-1
SDG: 03E1558063

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

Lab Sample ID: LCS 880-31669/1-A
Matrix: Solid
Analysis Batch: 31654

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 31669

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
o-Xylene			0.100	0.1126		mg/Kg		113	70 - 130		

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

Lab Sample ID: LCSD 880-31669/2-A
Matrix: Solid
Analysis Batch: 31654

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 31669

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.1023		mg/Kg		102	70 - 130	1	35
Toluene			0.100	0.1004		mg/Kg		100	70 - 130	2	35
Ethylbenzene			0.100	0.1014		mg/Kg		101	70 - 130	3	35
m-Xylene & p-Xylene			0.200	0.2043		mg/Kg		102	70 - 130	3	35
o-Xylene			0.100	0.1134		mg/Kg		113	70 - 130	1	35

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

Lab Sample ID: 890-2689-A-13-E MS
Matrix: Solid
Analysis Batch: 31654

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 31669

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	<0.00202	U	0.100	0.1058		mg/Kg		105	70 - 130		
Toluene	<0.00202	U	0.100	0.1129		mg/Kg		112	70 - 130		
Ethylbenzene	<0.00202	U	0.100	0.1179		mg/Kg		117	70 - 130		
m-Xylene & p-Xylene	<0.00403	U	0.201	0.2446		mg/Kg		122	70 - 130		
o-Xylene	<0.00202	U F1	0.100	0.1369	F1	mg/Kg		136	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*114*		*70 - 130*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*

Lab Sample ID: 890-2689-A-13-F MSD
Matrix: Solid
Analysis Batch: 31654

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 31669

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00202	U	0.100	0.1039		mg/Kg		104	70 - 130	2	35
Toluene	<0.00202	U	0.100	0.1120		mg/Kg		112	70 - 130	1	35
Ethylbenzene	<0.00202	U	0.100	0.1218		mg/Kg		122	70 - 130	3	35
m-Xylene & p-Xylene	<0.00403	U	0.200	0.2532		mg/Kg		126	70 - 130	3	35
o-Xylene	<0.00202	U F1	0.100	0.1413	F1	mg/Kg		141	70 - 130	3	35

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2708-1
SDG: 03E1558063

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

Lab Sample ID: 890-2689-A-13-F MSD
Matrix: Solid
Analysis Batch: 31654

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 31669

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	120		70 - 130
1,4-Difluorobenzene (Surr)	94		70 - 130

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

Lab Sample ID: MB 880-31555/1-A
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31555

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		08/05/22 09:50	08/05/22 20:48	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		08/05/22 09:50	08/05/22 20:48	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		08/05/22 09:50	08/05/22 20:48	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	83		70 - 130	08/05/22 09:50	08/05/22 20:48	1
o-Terphenyl	101		70 - 130	08/05/22 09:50	08/05/22 20:48	1

Lab Sample ID: LCS 880-31555/2-A
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 31555

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	885.3		mg/Kg		89	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	874.1		mg/Kg		87	70 - 130		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1-Chlorooctane	89		70 - 130
o-Terphenyl	96		70 - 130

Lab Sample ID: LCSD 880-31555/3-A
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 31555

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	855.1		mg/Kg		86	70 - 130	3	20
Diesel Range Organics (Over C10-C28)			1000	871.0		mg/Kg		87	70 - 130	0	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1-Chlorooctane	89		70 - 130
o-Terphenyl	97		70 - 130

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2708-1
SDG: 03E1558063

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

Lab Sample ID: 890-2706-A-1-B MS
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 31555

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	999	833.2		mg/Kg		81	70 - 130
Diesel Range Organics (Over C10-C28)	92.2	F1	999	666.4	F1	mg/Kg		57	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*68*	*S1-*	*70 - 130*
o-Terphenyl	*67*	*S1-*	*70 - 130*

Lab Sample ID: 890-2706-A-1-C MSD
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 31555

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	999	850.8		mg/Kg		83	70 - 130	2	20
Diesel Range Organics (Over C10-C28)	92.2	F1	999	643.6	F1	mg/Kg		55	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*63*	*S1-*	*70 - 130*
o-Terphenyl	*65*	*S1-*	*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-31559/1-A
Matrix: Solid
Analysis Batch: 31937

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			08/12/22 03:46	1

Lab Sample ID: LCS 880-31559/2-A
Matrix: Solid
Analysis Batch: 31937

Client Sample ID: Lab Control Sample
Prep Type: Soluble

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

Lab Sample ID: LCSD 880-31559/3-A
Matrix: Solid
Analysis Batch: 31937

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	247.1		mg/Kg		99	90 - 110	1	20

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2708-1
SDG: 03E1558063

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 890-2706-A-3-C MS
Matrix: Solid
Analysis Batch: 31937

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	198	F1	250	448.2		mg/Kg		100	90 - 110		

Lab Sample ID: 890-2706-A-3-D MSD
Matrix: Solid
Analysis Batch: 31937

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	198	F1	250	480.5	F1	mg/Kg		113	90 - 110	7	20

QC Association Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2708-1
SDG: 03E1558063

GC VOA

Prep Batch: 31602

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2708-1	PH04	Total/NA	Solid	5035	
MB 880-31602/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-31602/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-31602/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-2703-A-1-C MS	Matrix Spike	Total/NA	Solid	5035	
890-2703-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 31654

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2708-1	PH04	Total/NA	Solid	8021B	31602
MB 880-31602/5-A	Method Blank	Total/NA	Solid	8021B	31602
MB 880-31669/5-A	Method Blank	Total/NA	Solid	8021B	31669
LCS 880-31602/1-A	Lab Control Sample	Total/NA	Solid	8021B	31602
LCS 880-31669/1-A	Lab Control Sample	Total/NA	Solid	8021B	31669
LCSD 880-31602/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	31602
LCSD 880-31669/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	31669
890-2689-A-13-E MS	Matrix Spike	Total/NA	Solid	8021B	31669
890-2689-A-13-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	31669
890-2703-A-1-C MS	Matrix Spike	Total/NA	Solid	8021B	31602
890-2703-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	31602

Prep Batch: 31669

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-31669/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-31669/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-31669/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-2689-A-13-E MS	Matrix Spike	Total/NA	Solid	5035	
890-2689-A-13-F MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 31805

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2708-1	PH04	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 31531

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2708-1	PH04	Total/NA	Solid	8015B NM	31555
MB 880-31555/1-A	Method Blank	Total/NA	Solid	8015B NM	31555
LCS 880-31555/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	31555
LCSD 880-31555/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	31555
890-2706-A-1-B MS	Matrix Spike	Total/NA	Solid	8015B NM	31555
890-2706-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	31555

Prep Batch: 31555

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2708-1	PH04	Total/NA	Solid	8015NM Prep	
MB 880-31555/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-31555/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-31555/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-2706-A-1-B MS	Matrix Spike	Total/NA	Solid	8015NM Prep	

QC Association Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2708-1
SDG: 03E1558063

GC Semi VOA (Continued)

Prep Batch: 31555 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2706-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 31752

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2708-1	PH04	Total/NA	Solid	8015 NM	

HPLC/IC

Leach Batch: 31559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2708-1	PH04	Soluble	Solid	DI Leach	
MB 880-31559/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-31559/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-31559/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-2706-A-3-C MS	Matrix Spike	Soluble	Solid	DI Leach	
890-2706-A-3-D MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 31937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2708-1	PH04	Soluble	Solid	300.0	31559
MB 880-31559/1-A	Method Blank	Soluble	Solid	300.0	31559
LCS 880-31559/2-A	Lab Control Sample	Soluble	Solid	300.0	31559
LCSD 880-31559/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	31559
890-2706-A-3-C MS	Matrix Spike	Soluble	Solid	300.0	31559
890-2706-A-3-D MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	31559

Lab Chronicle

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2708-1
SDG: 03E1558063

Client Sample ID: PH04

Date Collected: 08/02/22 11:20
Date Received: 08/02/22 15:53

Lab Sample ID: 890-2708-1

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	31602	08/05/22 13:42	MR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	31654	08/07/22 20:37	EL	EET MID
Total/NA	Analysis	Total BTEX		1			31805	08/08/22 16:27	SM	EET MID
Total/NA	Analysis	8015 NM		1			31752	08/08/22 11:58	SM	EET MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	31555	08/05/22 09:50	DM	EET MID
Total/NA	Analysis	8015B NM		1			31531	08/05/22 23:42	SM	EET MID
Soluble	Leach	DI Leach			5.01 g	50 mL	31559	08/05/22 10:29	CH	EET MID
Soluble	Analysis	300.0		1			31937	08/12/22 07:00	AJ	EET MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2708-1
SDG: 03E1558063

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: JRU DI1

Job ID: 890-2708-1
SDG: 03E1558063

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

Protocol References:

ASTM = ASTM International

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:

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

Sample Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2708-1
SDG: 03E1558063

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-2708-1	PH04	Solid	08/02/22 11:20	08/02/22 15:53	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 Energy
Address:	3122 National Parks Hwy	Address:	3104 E. Green Street
City, State ZIP:	Carlsbad, NM 88220	City, State ZIP:	Carlsbad, NM 88220
Phone:	303-887-2946	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:	JRU DI 1	Turn Around	
Project Number:	03E1558063	☑ Routine ☐ Rush	
Project Location:		Due Date:	
Sampler's Name:	Conner Shore	TAT starts the day received by the lab, if received by 4:30pm	
PO #:			

SAMPLE RECEIPT				
Temp Blank:	Yes No	Wet Ice:	Yes No	
Samples Received Intact:	Yes No	Thermometer ID:	NM-007	
Cooler Custody Seals:	Yes No N/A	Correction Factor:	-0.2	
Sample Custody Seals:	Yes No N/A	Temperature Reading:	3.2	
Total Containers:		Corrected Temperature:	3.0	

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	CHLORIDES (EPA: 300.0)	TPH (8015)	BTEX (8021)	Sample Comments
PH04	S	08.02.22	1120	0.5'	C	1		x	x	x	Incident ID: nAPP2216152113
											Cost Center: 1082151001
											AFE:
											API: 30-015-47514

ANALYSIS REQUEST / Parameters

890-2708 Chain of Custody

Preservative Codes

None: NO DI Water: H_2O
Cool: Cool MeOH: Me
HCL: HC HNO_3: HN
H_2S0_4: H_2 NaOH: Na
H_3PO_4: HP
$NaHSO_4$: NABIS
$Na_2S_2O_3$: $NaSO_3$
Zn Acetate+NaOH: Zn
NaOH+Ascorbic Acid: SAPC

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

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

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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1		8.2.22 1553	2		
3			4		
5			6		

Revised Date: 08/25/2020 Rev: 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2708-1
SDG Number: 03E1558063

Login Number: 2708
List Number: 1
Creator: Clifton, Cloe

List Source: Eurofins Carlsbad

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

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2708-1
SDG Number: 03E1558063

Login Number: 2708
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 08/04/22 10:22 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: 890-2709-1
Laboratory Sample Delivery Group: 03E1558063
Client Project/Site: JRU DI1

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

Attn: Tacoma Morrissey

JKramer

Authorized for release by:
8/12/2022 7:59:09 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: JRU DI1

Laboratory Job ID: 890-2709-1
SDG: 03E1558063

Table of Contents

Definitions/Glossary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2709-1
SDG: 03E1558063

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

HPLC/IC

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

Glossary

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

Case Narrative

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2709-1
SDG: 03E1558063

Job ID: 890-2709-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-2709-1

Receipt
The sample was received on 8/2/2022 3:53 PM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.0°C

GC VOA
Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-31669 and analytical batch 880-31654 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 880-31669 and analytical batch 880-31654 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: Surrogate recovery for the following samples were outside control limits: (890-2706-A-1-A), (890-2706-A-1-B MS) and (890-2706-A-1-C MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015MOD_NM: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-31555 and analytical batch 880-31531 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 880-31559 and analytical batch 880-31937 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: JRU DI1

Job ID: 890-2709-1
SDG: 03E1558063

Client Sample ID: PH02

Date Collected: 08/02/22 11:00
Date Received: 08/02/22 15:53
Sample Depth: 0.5

Lab Sample ID: 890-2709-1

Matrix: Solid

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00201	U	0.00201		mg/Kg		08/07/22 12:02	08/08/22 08:12	1
Toluene	<0.00201	U	0.00201		mg/Kg		08/07/22 12:02	08/08/22 08:12	1
Ethylbenzene	<0.00201	U	0.00201		mg/Kg		08/07/22 12:02	08/08/22 08:12	1
m-Xylene & p-Xylene	<0.00402	U	0.00402		mg/Kg		08/07/22 12:02	08/08/22 08:12	1
o-Xylene	<0.00201	U	0.00201		mg/Kg		08/07/22 12:02	08/08/22 08:12	1
Xylenes, Total	<0.00402	U	0.00402		mg/Kg		08/07/22 12:02	08/08/22 08:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*113*		*70 - 130*	*08/07/22 12:02*	*08/08/22 08:12*	*1*
1,4-Difluorobenzene (Surr)	*92*		*70 - 130*	*08/07/22 12:02*	*08/08/22 08:12*	*1*

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00402	U	0.00402		mg/Kg			08/08/22 16:27	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			08/08/22 11:58	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		08/05/22 09:50	08/06/22 00:04	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		08/05/22 09:50	08/06/22 00:04	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		08/05/22 09:50	08/06/22 00:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*74*		*70 - 130*	*08/05/22 09:50*	*08/06/22 00:04*	*1*
o-Terphenyl	*87*		*70 - 130*	*08/05/22 09:50*	*08/06/22 00:04*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**309**		4.97		mg/Kg			08/12/22 07:28	1

Surrogate Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2709-1
SDG: 03E1558063

Method: 8021B - Volatile Organic Compounds (GC)

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

		Percent Surrogate Recovery (Acceptance Limits)											
Lab Sample ID	Client Sample ID	BFB1 (70-130)	DFBZ1 (70-130)										
890-2689-A-13-E MS	Matrix Spike	114	95										
890-2689-A-13-F MSD	Matrix Spike Duplicate	120	94										
890-2709-1	PH02	113	92										
LCS 880-31669/1-A	Lab Control Sample	100	99										
LCSD 880-31669/2-A	Lab Control Sample Dup	101	101										
MB 880-31602/5-A	Method Blank	95	80										
MB 880-31669/5-A	Method Blank	130	111										

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)										
890-2706-A-1-B MS	Matrix Spike	68 S1-	67 S1-										
890-2706-A-1-C MSD	Matrix Spike Duplicate	63 S1-	65 S1-										
890-2709-1	PH02	74	87										
LCS 880-31555/2-A	Lab Control Sample	89	96										
LCSD 880-31555/3-A	Lab Control Sample Dup	89	97										
MB 880-31555/1-A	Method Blank	83	101										

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2709-1
SDG: 03E1558063

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-31602/5-A
Matrix: Solid
Analysis Batch: 31654

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31602

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		08/05/22 13:42	08/07/22 13:44	1
Toluene	<0.00200	U	0.00200		mg/Kg		08/05/22 13:42	08/07/22 13:44	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		08/05/22 13:42	08/07/22 13:44	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		08/05/22 13:42	08/07/22 13:44	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		08/05/22 13:42	08/07/22 13:44	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		08/05/22 13:42	08/07/22 13:44	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*	*08/05/22 13:42*	*08/07/22 13:44*	*1*
1,4-Difluorobenzene (Surr)	*80*		*70 - 130*	*08/05/22 13:42*	*08/07/22 13:44*	*1*

Lab Sample ID: MB 880-31669/5-A
Matrix: Solid
Analysis Batch: 31654

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31669

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		08/07/22 12:02	08/08/22 00:21	1
Toluene	<0.00200	U	0.00200		mg/Kg		08/07/22 12:02	08/08/22 00:21	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		08/07/22 12:02	08/08/22 00:21	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		08/07/22 12:02	08/08/22 00:21	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		08/07/22 12:02	08/08/22 00:21	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		08/07/22 12:02	08/08/22 00:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*130*		*70 - 130*	*08/07/22 12:02*	*08/08/22 00:21*	*1*
1,4-Difluorobenzene (Surr)	*111*		*70 - 130*	*08/07/22 12:02*	*08/08/22 00:21*	*1*

Lab Sample ID: LCS 880-31669/1-A
Matrix: Solid
Analysis Batch: 31654

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 31669

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.1009		mg/Kg		101	70 - 130		
Toluene			0.100	0.09893		mg/Kg		99	70 - 130		
Ethylbenzene			0.100	0.09835		mg/Kg		98	70 - 130		
m-Xylene & p-Xylene			0.200	0.1984		mg/Kg		99	70 - 130		
o-Xylene			0.100	0.1126		mg/Kg		113	70 - 130		

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

Lab Sample ID: LCSD 880-31669/2-A
Matrix: Solid
Analysis Batch: 31654

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 31669

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.1023		mg/Kg		102	70 - 130	1	35

Eurofins Carlsbad

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2709-1
SDG: 03E1558063

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

Lab Sample ID: LCSD 880-31669/2-A
Matrix: Solid
Analysis Batch: 31654

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 31669

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Toluene			0.100	0.1004		mg/Kg		100	70 - 130	2	35
Ethylbenzene			0.100	0.1014		mg/Kg		101	70 - 130	3	35
m-Xylene & p-Xylene			0.200	0.2043		mg/Kg		102	70 - 130	3	35
o-Xylene			0.100	0.1134		mg/Kg		113	70 - 130	1	35

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

Lab Sample ID: 890-2689-A-13-E MS
Matrix: Solid
Analysis Batch: 31654

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 31669

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	<0.00202	U	0.100	0.1058		mg/Kg		105	70 - 130
Toluene	<0.00202	U	0.100	0.1129		mg/Kg		112	70 - 130
Ethylbenzene	<0.00202	U	0.100	0.1179		mg/Kg		117	70 - 130
m-Xylene & p-Xylene	<0.00403	U	0.201	0.2446		mg/Kg		122	70 - 130
o-Xylene	<0.00202	U F1	0.100	0.1369	F1	mg/Kg		136	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*114*		*70 - 130*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*

Lab Sample ID: 890-2689-A-13-F MSD
Matrix: Solid
Analysis Batch: 31654

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 31669

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	<0.00202	U	0.100	0.1039		mg/Kg		104	70 - 130	2	35
Toluene	<0.00202	U	0.100	0.1120		mg/Kg		112	70 - 130	1	35
Ethylbenzene	<0.00202	U	0.100	0.1218		mg/Kg		122	70 - 130	3	35
m-Xylene & p-Xylene	<0.00403	U	0.200	0.2532		mg/Kg		126	70 - 130	3	35
o-Xylene	<0.00202	U F1	0.100	0.1413	F1	mg/Kg		141	70 - 130	3	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*120*		*70 - 130*
1,4-Difluorobenzene (Surr)	*94*		*70 - 130*

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

Lab Sample ID: MB 880-31555/1-A
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31555

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		08/05/22 09:50	08/05/22 20:48	1

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2709-1
SDG: 03E1558063

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

Lab Sample ID: MB 880-31555/1-A
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31555

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		08/05/22 09:50	08/05/22 20:48	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		08/05/22 09:50	08/05/22 20:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*83*		*70 - 130*	*08/05/22 09:50*	*08/05/22 20:48*	*1*
o-Terphenyl	*101*		*70 - 130*	*08/05/22 09:50*	*08/05/22 20:48*	*1*

Lab Sample ID: LCS 880-31555/2-A
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 31555

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	885.3		mg/Kg		89	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	874.1		mg/Kg		87	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*89*		*70 - 130*
o-Terphenyl	*96*		*70 - 130*

Lab Sample ID: LCSD 880-31555/3-A
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 31555

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	855.1		mg/Kg		86	70 - 130	3	20
Diesel Range Organics (Over C10-C28)			1000	871.0		mg/Kg		87	70 - 130	0	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1-Chlorooctane	*89*		*70 - 130*
o-Terphenyl	*97*		*70 - 130*

Lab Sample ID: 890-2706-A-1-B MS
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 31555

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	999	833.2		mg/Kg		81	70 - 130		
Diesel Range Organics (Over C10-C28)	92.2	F1	999	666.4	F1	mg/Kg		57	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*68*	*S1-*	*70 - 130*
o-Terphenyl	*67*	*S1-*	*70 - 130*

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2709-1
SDG: 03E1558063

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

Lab Sample ID: 890-2706-A-1-C MSD
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 31555

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	999	850.8		mg/Kg		83	70 - 130	2	20
Diesel Range Organics (Over C10-C28)	92.2	F1	999	643.6	F1	mg/Kg		55	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*63*	*S1-*	*70 - 130*
o-Terphenyl	*65*	*S1-*	*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-31559/1-A
Matrix: Solid
Analysis Batch: 31937

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			08/12/22 03:46	1

Lab Sample ID: LCS 880-31559/2-A
Matrix: Solid
Analysis Batch: 31937

Client Sample ID: Lab Control Sample
Prep Type: Soluble

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

Lab Sample ID: LCSD 880-31559/3-A
Matrix: Solid
Analysis Batch: 31937

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	247.1		mg/Kg		99	90 - 110	1	20

Lab Sample ID: 890-2706-A-3-C MS
Matrix: Solid
Analysis Batch: 31937

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	198	F1	250	448.2		mg/Kg		100	90 - 110		

Lab Sample ID: 890-2706-A-3-D MSD
Matrix: Solid
Analysis Batch: 31937

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	198	F1	250	480.5	F1	mg/Kg		113	90 - 110	7	20

QC Association Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2709-1
SDG: 03E1558063

GC VOA

Prep Batch: 31602

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-31602/5-A	Method Blank	Total/NA	Solid	5035	

Analysis Batch: 31654

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2709-1	PH02	Total/NA	Solid	8021B	31669
MB 880-31602/5-A	Method Blank	Total/NA	Solid	8021B	31602
MB 880-31669/5-A	Method Blank	Total/NA	Solid	8021B	31669
LCS 880-31669/1-A	Lab Control Sample	Total/NA	Solid	8021B	31669
LCSD 880-31669/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	31669
890-2689-A-13-E MS	Matrix Spike	Total/NA	Solid	8021B	31669
890-2689-A-13-F MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	31669

Prep Batch: 31669

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2709-1	PH02	Total/NA	Solid	5035	
MB 880-31669/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-31669/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-31669/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-2689-A-13-E MS	Matrix Spike	Total/NA	Solid	5035	
890-2689-A-13-F MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 31810

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2709-1	PH02	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 31531

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2709-1	PH02	Total/NA	Solid	8015B NM	31555
MB 880-31555/1-A	Method Blank	Total/NA	Solid	8015B NM	31555
LCS 880-31555/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	31555
LCSD 880-31555/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	31555
890-2706-A-1-B MS	Matrix Spike	Total/NA	Solid	8015B NM	31555
890-2706-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	31555

Prep Batch: 31555

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2709-1	PH02	Total/NA	Solid	8015NM Prep	
MB 880-31555/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-31555/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-31555/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-2706-A-1-B MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-2706-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 31753

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2709-1	PH02	Total/NA	Solid	8015 NM	

QC Association Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2709-1
SDG: 03E1558063

HPLC/IC

Leach Batch: 31559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2709-1	PH02	Soluble	Solid	DI Leach	
MB 880-31559/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-31559/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-31559/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-2706-A-3-C MS	Matrix Spike	Soluble	Solid	DI Leach	
890-2706-A-3-D MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 31937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2709-1	PH02	Soluble	Solid	300.0	31559
MB 880-31559/1-A	Method Blank	Soluble	Solid	300.0	31559
LCS 880-31559/2-A	Lab Control Sample	Soluble	Solid	300.0	31559
LCSD 880-31559/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	31559
890-2706-A-3-C MS	Matrix Spike	Soluble	Solid	300.0	31559
890-2706-A-3-D MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	31559

Lab Chronicle

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2709-1
SDG: 03E1558063

Client Sample ID: PH02

Date Collected: 08/02/22 11:00
Date Received: 08/02/22 15:53

Lab Sample ID: 890-2709-1

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			4.97 g	5 mL	31669	08/07/22 12:02	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	31654	08/08/22 08:12	EL	EET MID
Total/NA	Analysis	Total BTEX		1			31810	08/08/22 16:27	SM	EET MID
Total/NA	Analysis	8015 NM		1			31753	08/08/22 11:58	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	31555	08/05/22 09:50	DM	EET MID
Total/NA	Analysis	8015B NM		1			31531	08/06/22 00:04	SM	EET MID
Soluble	Leach	DI Leach			5.03 g	50 mL	31559	08/05/22 10:29	CH	EET MID
Soluble	Analysis	300.0		1			31937	08/12/22 07:28	AJ	EET MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2709-1
SDG: 03E1558063

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: JRU DI1

Job ID: 890-2709-1
SDG: 03E1558063

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

Protocol References:

ASTM = ASTM International

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:

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

Sample Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2709-1
SDG: 03E1558063

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-2709-1	PH02	Solid	08/02/22 11:00	08/02/22 15:53	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 Energy
Address:	3122 National Parks Hwy	Address:	3104 E. Green Street
City, State ZIP:	Carlsbad, NM 88220	City, State ZIP:	Carlsbad, NM 88220
Phone:	303-887-2946 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:	JRU DI 1	**Turn Around**	
Project Number:	03E1558063	☑ Routine ☐ Rush	
Project Location:		Due Date:	
Sampler's Name:	Conner Shore	TAT starts the day received by the lab, if received by 4:30pm	
PO #:			

SAMPLE RECEIPT			
Temp Blank:	(Yes) No	Wet Ice:	(Yes) No
Samples Received Intact:	(Yes) No	Thermometer ID:	TNM-007
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	-0.2
Sample Custody Seals:	Yes No (N/A)	Temperature Reading:	3.2
Total Containers:		Corrected Temperature:	3.0

Preservative Codes

None: NO — DI Water: H_2O
Cool: Cool — MeOH: Me
HCL: HC — HNO_3: HN
H_2S0_4: H_2 — NaOH: Na
H_3PO_4: HP
$NaHSO_4$: NABIS
$Na_2S_2O_3$: $NaSO_3$
Zn Acetate+NaOH: Zn
NaOH+Ascorbic Acid: SAPC

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	Parameters: CHLORIDES (EPA: 300.0)	Parameters: TPH (8015)	Parameters: BTEX (8021)	Sample Comments
PH02	S	08.02.22	1100	0.5'	C	1		x	x	x	Incident ID: nAPP2216152113
											Cost Center: 1082151001
											AFE:
											API: 30-015-47514

890-2709 Chain of Custody

ANALYSIS REQUEST

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

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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1		8-2-22 1553	2		
3			4		
5			6		

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2709-1
SDG Number: 03E1558063

Login Number: 2709
List Number: 1
Creator: Clifton, Cloe

List Source: Eurofins Carlsbad

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

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2709-1
SDG Number: 03E1558063

Login Number: 2709
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 08/04/22 10:22 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: 890-2711-1
Laboratory Sample Delivery Group: 03E1558063
Client Project/Site: JRU DI1

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

Attn: Tacoma Morrissey

JKramer

Authorized for release by:
8/12/2022 7:59:24 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: JRU DI1

Laboratory Job ID: 890-2711-1
SDG: 03E1558063

Table of Contents

Definitions/Glossary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2711-1
SDG: 03E1558063

Qualifiers

GC VOA

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

GC Semi VOA

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

HPLC/IC

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

Glossary

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

Case Narrative

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2711-1
SDG: 03E1558063

Job ID: 890-2711-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-2711-1

Receipt
The sample was received on 8/2/2022 3:53 PM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.0°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: Surrogate recovery for the following samples were outside control limits: (890-2706-A-1-A), (890-2706-A-1-B MS) and (890-2706-A-1-C MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015MOD_NM: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-31555 and analytical batch 880-31531 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 880-31559 and analytical batch 880-31937 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: JRU DI1

Job ID: 890-2711-1
SDG: 03E1558063

Client Sample ID: PH02

Date Collected: 08/02/22 13:05
Date Received: 08/02/22 15:53
Sample Depth: 5

Lab Sample ID: 890-2711-1

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		08/09/22 08:41	08/10/22 03:55	1
Toluene	<0.00199	U	0.00199		mg/Kg		08/09/22 08:41	08/10/22 03:55	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		08/09/22 08:41	08/10/22 03:55	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		08/09/22 08:41	08/10/22 03:55	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		08/09/22 08:41	08/10/22 03:55	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		08/09/22 08:41	08/10/22 03:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*113*		*70 - 130*	*08/09/22 08:41*	*08/10/22 03:55*	*1*
1,4-Difluorobenzene (Surr)	*110*		*70 - 130*	*08/09/22 08:41*	*08/10/22 03:55*	*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			08/10/22 10:12	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			08/08/22 11:58	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		08/05/22 09:50	08/06/22 00:25	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		08/05/22 09:50	08/06/22 00:25	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		08/05/22 09:50	08/06/22 00:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*78*		*70 - 130*	*08/05/22 09:50*	*08/06/22 00:25*	*1*
o-Terphenyl	*94*		*70 - 130*	*08/05/22 09:50*	*08/06/22 00:25*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**360**		50.0		mg/Kg			08/12/22 07:37	10

Surrogate Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2711-1
SDG: 03E1558063

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)
880-17597-A-2-F MS	Matrix Spike	96	103
880-17597-A-2-G MSD	Matrix Spike Duplicate	112	95
890-2711-1	PH02	113	110
LCS 880-31834/1-A	Lab Control Sample	99	108
LCSD 880-31834/2-A	Lab Control Sample Dup	114	102
MB 880-31717/5-A	Method Blank	96	95
MB 880-31834/5-A	Method Blank	98	93

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)
890-2706-A-1-B MS	Matrix Spike	68 S1-	67 S1-
890-2706-A-1-C MSD	Matrix Spike Duplicate	63 S1-	65 S1-
890-2711-1	PH02	78	94
LCS 880-31555/2-A	Lab Control Sample	89	96
LCSD 880-31555/3-A	Lab Control Sample Dup	89	97
MB 880-31555/1-A	Method Blank	83	101

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2711-1
SDG: 03E1558063

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-31717/5-A
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31717

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		08/08/22 10:13	08/09/22 16:06	1
Toluene	<0.00200	U	0.00200		mg/Kg		08/08/22 10:13	08/09/22 16:06	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		08/08/22 10:13	08/09/22 16:06	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		08/08/22 10:13	08/09/22 16:06	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		08/08/22 10:13	08/09/22 16:06	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		08/08/22 10:13	08/09/22 16:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*	*08/08/22 10:13*	*08/09/22 16:06*	*1*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*	*08/08/22 10:13*	*08/09/22 16:06*	*1*

Lab Sample ID: MB 880-31834/5-A
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31834

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		08/09/22 08:41	08/10/22 02:52	1
Toluene	<0.00200	U	0.00200		mg/Kg		08/09/22 08:41	08/10/22 02:52	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		08/09/22 08:41	08/10/22 02:52	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		08/09/22 08:41	08/10/22 02:52	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		08/09/22 08:41	08/10/22 02:52	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		08/09/22 08:41	08/10/22 02:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*	*08/09/22 08:41*	*08/10/22 02:52*	*1*
1,4-Difluorobenzene (Surr)	*93*		*70 - 130*	*08/09/22 08:41*	*08/10/22 02:52*	*1*

Lab Sample ID: LCS 880-31834/1-A
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 31834

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.1002		mg/Kg		100	70 - 130		
Toluene			0.100	0.09582		mg/Kg		96	70 - 130		
Ethylbenzene			0.100	0.07829		mg/Kg		78	70 - 130		
m-Xylene & p-Xylene			0.200	0.1630		mg/Kg		82	70 - 130		
o-Xylene			0.100	0.08318		mg/Kg		83	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*
1,4-Difluorobenzene (Surr)	*108*		*70 - 130*

Lab Sample ID: LCSD 880-31834/2-A
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 31834

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.08862		mg/Kg		89	70 - 130	12	35

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2711-1
SDG: 03E1558063

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

Lab Sample ID: LCSD 880-31834/2-A
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 31834

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Toluene			0.100	0.1079		mg/Kg		108	70 - 130	12	35
Ethylbenzene			0.100	0.09720		mg/Kg		97	70 - 130	22	35
m-Xylene & p-Xylene			0.200	0.2134		mg/Kg		107	70 - 130	27	35
o-Xylene			0.100	0.1062		mg/Kg		106	70 - 130	24	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*114*		*70 - 130*
1,4-Difluorobenzene (Surr)	*102*		*70 - 130*

Lab Sample ID: 880-17597-A-2-F MS
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 31834

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	<0.00200	U	0.0998	0.1058		mg/Kg		105	70 - 130
Toluene	<0.00200	U	0.0998	0.1035		mg/Kg		104	70 - 130
Ethylbenzene	<0.00200	U	0.0998	0.08434		mg/Kg		85	70 - 130
m-Xylene & p-Xylene	<0.00399	U	0.200	0.1748		mg/Kg		88	70 - 130
o-Xylene	<0.00200	U	0.0998	0.08766		mg/Kg		87	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*
1,4-Difluorobenzene (Surr)	*103*		*70 - 130*

Lab Sample ID: 880-17597-A-2-G MSD
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 31834

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	0.08278		mg/Kg		82	70 - 130	24	35
Toluene	<0.00200	U	0.100	0.1051		mg/Kg		105	70 - 130	2	35
Ethylbenzene	<0.00200	U	0.100	0.09458		mg/Kg		94	70 - 130	11	35
m-Xylene & p-Xylene	<0.00399	U	0.201	0.2062		mg/Kg		103	70 - 130	16	35
o-Xylene	<0.00200	U	0.100	0.1025		mg/Kg		101	70 - 130	16	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*112*		*70 - 130*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*

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

Lab Sample ID: MB 880-31555/1-A
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31555

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		08/05/22 09:50	08/05/22 20:48	1

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2711-1
SDG: 03E1558063

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

Lab Sample ID: MB 880-31555/1-A
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31555

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		08/05/22 09:50	08/05/22 20:48	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		08/05/22 09:50	08/05/22 20:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*83*		*70 - 130*	*08/05/22 09:50*	*08/05/22 20:48*	*1*
o-Terphenyl	*101*		*70 - 130*	*08/05/22 09:50*	*08/05/22 20:48*	*1*

Lab Sample ID: LCS 880-31555/2-A
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 31555

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	885.3		mg/Kg		89	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	874.1		mg/Kg		87	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*89*		*70 - 130*
o-Terphenyl	*96*		*70 - 130*

Lab Sample ID: LCSD 880-31555/3-A
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 31555

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	855.1		mg/Kg		86	70 - 130	3	20
Diesel Range Organics (Over C10-C28)			1000	871.0		mg/Kg		87	70 - 130	0	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1-Chlorooctane	*89*		*70 - 130*
o-Terphenyl	*97*		*70 - 130*

Lab Sample ID: 890-2706-A-1-B MS
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 31555

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	999	833.2		mg/Kg		81	70 - 130		
Diesel Range Organics (Over C10-C28)	92.2	F1	999	666.4	F1	mg/Kg		57	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*68*	*S1-*	*70 - 130*
o-Terphenyl	*67*	*S1-*	*70 - 130*

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2711-1
SDG: 03E1558063

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

Lab Sample ID: 890-2706-A-1-C MSD
Matrix: Solid
Analysis Batch: 31531

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 31555

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	999	850.8		mg/Kg		83	70 - 130	2	20
Diesel Range Organics (Over C10-C28)	92.2	F1	999	643.6	F1	mg/Kg		55	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*63*	*S1-*	*70 - 130*
o-Terphenyl	*65*	*S1-*	*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-31559/1-A
Matrix: Solid
Analysis Batch: 31937

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			08/12/22 03:46	1

Lab Sample ID: LCS 880-31559/2-A
Matrix: Solid
Analysis Batch: 31937

Client Sample ID: Lab Control Sample
Prep Type: Soluble

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

Lab Sample ID: LCSD 880-31559/3-A
Matrix: Solid
Analysis Batch: 31937

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	247.1		mg/Kg		99	90 - 110	1	20

Lab Sample ID: 890-2706-A-3-C MS
Matrix: Solid
Analysis Batch: 31937

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	198	F1	250	448.2		mg/Kg		100	90 - 110

Lab Sample ID: 890-2706-A-3-D MSD
Matrix: Solid
Analysis Batch: 31937

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	198	F1	250	480.5	F1	mg/Kg		113	90 - 110	7	20

QC Association Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2711-1
SDG: 03E1558063

GC VOA

Prep Batch: 31717

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-31717/5-A	Method Blank	Total/NA	Solid	5035	

Prep Batch: 31834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2711-1	PH02	Total/NA	Solid	5035	
MB 880-31834/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-31834/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-31834/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-17597-A-2-F MS	Matrix Spike	Total/NA	Solid	5035	
880-17597-A-2-G MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 31851

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2711-1	PH02	Total/NA	Solid	8021B	31834
MB 880-31717/5-A	Method Blank	Total/NA	Solid	8021B	31717
MB 880-31834/5-A	Method Blank	Total/NA	Solid	8021B	31834
LCS 880-31834/1-A	Lab Control Sample	Total/NA	Solid	8021B	31834
LCSD 880-31834/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	31834
880-17597-A-2-F MS	Matrix Spike	Total/NA	Solid	8021B	31834
880-17597-A-2-G MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	31834

Analysis Batch: 31900

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2711-1	PH02	Total/NA	Solid	Total BTEX	

GC Semi VOA

Analysis Batch: 31531

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2711-1	PH02	Total/NA	Solid	8015B NM	31555
MB 880-31555/1-A	Method Blank	Total/NA	Solid	8015B NM	31555
LCS 880-31555/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	31555
LCSD 880-31555/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	31555
890-2706-A-1-B MS	Matrix Spike	Total/NA	Solid	8015B NM	31555
890-2706-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	31555

Prep Batch: 31555

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2711-1	PH02	Total/NA	Solid	8015NM Prep	
MB 880-31555/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-31555/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-31555/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-2706-A-1-B MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-2706-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 31754

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2711-1	PH02	Total/NA	Solid	8015 NM	

QC Association Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2711-1
SDG: 03E1558063

HPLC/IC

Leach Batch: 31559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2711-1	PH02	Soluble	Solid	DI Leach	
MB 880-31559/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-31559/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-31559/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-2706-A-3-C MS	Matrix Spike	Soluble	Solid	DI Leach	
890-2706-A-3-D MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 31937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2711-1	PH02	Soluble	Solid	300.0	31559
MB 880-31559/1-A	Method Blank	Soluble	Solid	300.0	31559
LCS 880-31559/2-A	Lab Control Sample	Soluble	Solid	300.0	31559
LCSD 880-31559/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	31559
890-2706-A-3-C MS	Matrix Spike	Soluble	Solid	300.0	31559
890-2706-A-3-D MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	31559

Lab Chronicle

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2711-1
SDG: 03E1558063

Client Sample ID: PH02

Date Collected: 08/02/22 13:05
Date Received: 08/02/22 15:53

Lab Sample ID: 890-2711-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	31834	08/09/22 08:41	MR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	31851	08/10/22 03:55	MR	EET MID
Total/NA	Analysis	Total BTEX		1			31900	08/10/22 10:12	SM	EET MID
Total/NA	Analysis	8015 NM		1			31754	08/08/22 11:58	SM	EET MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	31555	08/05/22 09:50	DM	EET MID
Total/NA	Analysis	8015B NM		1			31531	08/06/22 00:25	SM	EET MID
Soluble	Leach	DI Leach			5 g	50 mL	31559	08/05/22 10:29	CH	EET MID
Soluble	Analysis	300.0		10			31937	08/12/22 07:37	AJ	EET MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2711-1
SDG: 03E1558063

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: JRU DI1

Job ID: 890-2711-1
SDG: 03E1558063

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

Protocol References:

ASTM = ASTM International

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:

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

Sample Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2711-1
SDG: 03E1558063

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-2711-1	PH02	Solid	08/02/22 13:05	08/02/22 15:53	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 Energy
Address:	3122 National Parks Hwy	Address:	3104 E. Green Street
City, State ZIP:	Carlsbad, NM 88220	City, State ZIP:	Carlsbad, NM 88220
Phone:	303-887-2946	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:	JRU DI 1	Turn Around	
Project Number:	03E1558063	☑ Routine ☐ Rush	
Project Location:		Due Date:	
Sampler's Name:	Conner Shore	TAT starts the day received by the lab, if received by 4:30pm	
PO #:			

SAMPLE RECEIPT				
Temp Blank:	Yes No	Wet Ice:	Yes No	
Samples Received Intact:	Yes No	Thermometer ID:	TMH-007	
Cooler Custody Seals:	Yes No N/A	Correction Factor:	-0.2	
Sample Custody Seals:	Yes No N/A	Temperature Reading:	3.2	
Total Containers:		Corrected Temperature:	3.0	

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	CHLORIDES (EPA: 300.0)	TPH (8015)	BTEX (8021	Parameters
PH02	S	08.02.22	1305	5'	C	1		x	x	x	

890-2711 Chain of Custody

Preservative Codes

None: NO DI Water: H_2O
Cool: Cool MeOH: Me
HCL: HC HNO_3: HN
H_2S0_4: H_2 NaOH: Na
H_3PO_4: HP
$NaHSO_4$: NABIS
$Na_2S_2O_3$: $NaSO_3$
Zn Acetate+NaOH: Zn
NaOH+Ascorbic Acid: SAPC

Sample Comments

Incident ID: nAPP2216152113

Cost Center: 1082151001

AFE:

API: 30-015-47514

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		8.2.22 1553	2		
3			4		
5			6		

Revised Date: 08/25/2020 Rev: 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2711-1
SDG Number: 03E1558063

Login Number: 2711
List Number: 1
Creator: Clifton, Cloe

List Source: Eurofins Carlsbad

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

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2711-1
SDG Number: 03E1558063

Login Number: 2711
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 08/04/22 10:22 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: 890-2712-1
Laboratory Sample Delivery Group: 03E1558063
Client Project/Site: JRU DI1

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

Attn: Kalei Jennings

JKramer

Authorized for release by:
8/12/2022 7:59:56 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: JRU DI1

Laboratory Job ID: 890-2712-1
SDG: 03E1558063

Table of Contents

Definitions/Glossary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2712-1
SDG: 03E1558063

Qualifiers

GC VOA

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

GC Semi VOA

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

HPLC/IC

Qualifier	Qualifier Description
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: JRU DI1

Job ID: 890-2712-1
SDG: 03E1558063

Job ID: 890-2712-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-2712-1

Receipt
The sample was received on 8/2/2022 3:53 PM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.0°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: Surrogate recovery for the following sample was outside control limits: (LCS 880-31570/2-A). Evidence of matrix interferences is not obvious.

Method 8015MOD_NM: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 880-31570 and analytical batch 880-31633 recovered outside control limits for the following analytes: Gasoline Range Organics (GRO)-C6-C10.

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

HPLC/IC
Method 300_ORGFM_28D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-31559 and analytical batch 880-31937 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: JRU DI1

Job ID: 890-2712-1
SDG: 03E1558063

Client Sample ID: PH03

Date Collected: 08/02/22 13:30
Date Received: 08/02/22 15:53
Sample Depth: 0.5

Lab Sample ID: 890-2712-1

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		08/09/22 08:41	08/10/22 04:16	1
Toluene	<0.00200	U	0.00200		mg/Kg		08/09/22 08:41	08/10/22 04:16	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		08/09/22 08:41	08/10/22 04:16	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		08/09/22 08:41	08/10/22 04:16	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		08/09/22 08:41	08/10/22 04:16	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		08/09/22 08:41	08/10/22 04:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*70 - 130*	*08/09/22 08:41*	*08/10/22 04:16*	*1*
1,4-Difluorobenzene (Surr)	*113*		*70 - 130*	*08/09/22 08:41*	*08/10/22 04:16*	*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			08/10/22 10:12	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9		mg/Kg			08/08/22 11:44	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 *1	49.9		mg/Kg		08/05/22 10:50	08/06/22 12:00	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		08/05/22 10:50	08/06/22 12:00	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		08/05/22 10:50	08/06/22 12:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*96*		*70 - 130*	*08/05/22 10:50*	*08/06/22 12:00*	*1*
o-Terphenyl	*110*		*70 - 130*	*08/05/22 10:50*	*08/06/22 12:00*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**444**		24.9		mg/Kg			08/12/22 07:46	5

Surrogate Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2712-1
SDG: 03E1558063

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)										
880-17597-A-2-F MS	Matrix Spike	96	103										
880-17597-A-2-G MSD	Matrix Spike Duplicate	112	95										
890-2712-1	PH03	105	113										
LCS 880-31834/1-A	Lab Control Sample	99	108										
LCSD 880-31834/2-A	Lab Control Sample Dup	114	102										
MB 880-31717/5-A	Method Blank	96	95										
MB 880-31834/5-A	Method Blank	98	93										

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)										
890-2712-1	PH03	96	110										
890-2712-1 MS	PH03	77	85										
890-2712-1 MSD	PH03	92	101										
LCS 880-31570/2-A	Lab Control Sample	135 S1+	133 S1+										
LCSD 880-31570/3-A	Lab Control Sample Dup	111	130										
MB 880-31570/1-A	Method Blank	91	105										

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2712-1
SDG: 03E1558063

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-31717/5-A
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31717

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		08/08/22 10:13	08/09/22 16:06	1
Toluene	<0.00200	U	0.00200		mg/Kg		08/08/22 10:13	08/09/22 16:06	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		08/08/22 10:13	08/09/22 16:06	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		08/08/22 10:13	08/09/22 16:06	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		08/08/22 10:13	08/09/22 16:06	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		08/08/22 10:13	08/09/22 16:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*	*08/08/22 10:13*	*08/09/22 16:06*	*1*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*	*08/08/22 10:13*	*08/09/22 16:06*	*1*

Lab Sample ID: MB 880-31834/5-A
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31834

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		08/09/22 08:41	08/10/22 02:52	1
Toluene	<0.00200	U	0.00200		mg/Kg		08/09/22 08:41	08/10/22 02:52	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		08/09/22 08:41	08/10/22 02:52	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		08/09/22 08:41	08/10/22 02:52	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		08/09/22 08:41	08/10/22 02:52	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		08/09/22 08:41	08/10/22 02:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*	*08/09/22 08:41*	*08/10/22 02:52*	*1*
1,4-Difluorobenzene (Surr)	*93*		*70 - 130*	*08/09/22 08:41*	*08/10/22 02:52*	*1*

Lab Sample ID: LCS 880-31834/1-A
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 31834

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.1002		mg/Kg		100	70 - 130		
Toluene			0.100	0.09582		mg/Kg		96	70 - 130		
Ethylbenzene			0.100	0.07829		mg/Kg		78	70 - 130		
m-Xylene & p-Xylene			0.200	0.1630		mg/Kg		82	70 - 130		
o-Xylene			0.100	0.08318		mg/Kg		83	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*
1,4-Difluorobenzene (Surr)	*108*		*70 - 130*

Lab Sample ID: LCSD 880-31834/2-A
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 31834

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.08862		mg/Kg		89	70 - 130	12	35

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2712-1
SDG: 03E1558063

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

Lab Sample ID: LCSD 880-31834/2-A
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 31834

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Toluene			0.100	0.1079		mg/Kg		108	70 - 130	12	35
Ethylbenzene			0.100	0.09720		mg/Kg		97	70 - 130	22	35
m-Xylene & p-Xylene			0.200	0.2134		mg/Kg		107	70 - 130	27	35
o-Xylene			0.100	0.1062		mg/Kg		106	70 - 130	24	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*114*		*70 - 130*
1,4-Difluorobenzene (Surr)	*102*		*70 - 130*

Lab Sample ID: 880-17597-A-2-F MS
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 31834

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	<0.00200	U	0.0998	0.1058		mg/Kg		105	70 - 130
Toluene	<0.00200	U	0.0998	0.1035		mg/Kg		104	70 - 130
Ethylbenzene	<0.00200	U	0.0998	0.08434		mg/Kg		85	70 - 130
m-Xylene & p-Xylene	<0.00399	U	0.200	0.1748		mg/Kg		88	70 - 130
o-Xylene	<0.00200	U	0.0998	0.08766		mg/Kg		87	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*
1,4-Difluorobenzene (Surr)	*103*		*70 - 130*

Lab Sample ID: 880-17597-A-2-G MSD
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 31834

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	0.08278		mg/Kg		82	70 - 130	24	35
Toluene	<0.00200	U	0.100	0.1051		mg/Kg		105	70 - 130	2	35
Ethylbenzene	<0.00200	U	0.100	0.09458		mg/Kg		94	70 - 130	11	35
m-Xylene & p-Xylene	<0.00399	U	0.201	0.2062		mg/Kg		103	70 - 130	16	35
o-Xylene	<0.00200	U	0.100	0.1025		mg/Kg		101	70 - 130	16	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*112*		*70 - 130*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*

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

Lab Sample ID: MB 880-31570/1-A
Matrix: Solid
Analysis Batch: 31633

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31570

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		08/05/22 10:50	08/06/22 10:56	1

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2712-1
SDG: 03E1558063

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

Lab Sample ID: MB 880-31570/1-A
Matrix: Solid
Analysis Batch: 31633

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31570

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		08/05/22 10:50	08/06/22 10:56	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		08/05/22 10:50	08/06/22 10:56	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*91*		*70 - 130*	*08/05/22 10:50*	*08/06/22 10:56*	*1*
o-Terphenyl	*105*		*70 - 130*	*08/05/22 10:50*	*08/06/22 10:56*	*1*

Lab Sample ID: LCS 880-31570/2-A
Matrix: Solid
Analysis Batch: 31633

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 31570

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	1077		mg/Kg		108	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	1004		mg/Kg		100	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*135*	*S1+*	*70 - 130*
o-Terphenyl	*133*	*S1+*	*70 - 130*

Lab Sample ID: LCSD 880-31570/3-A
Matrix: Solid
Analysis Batch: 31633

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 31570

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	860.0	*1	mg/Kg		86	70 - 130	22	20
Diesel Range Organics (Over C10-C28)			1000	967.6		mg/Kg		97	70 - 130	4	20

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

Lab Sample ID: 890-2712-1 MS
Matrix: Solid
Analysis Batch: 31633

Client Sample ID: PH03
Prep Type: Total/NA
Prep Batch: 31570

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	<49.9	U *1	999	994.7		mg/Kg		100	70 - 130		
Diesel Range Organics (Over C10-C28)	<49.9	U	999	709.9		mg/Kg		71	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*77*		*70 - 130*
o-Terphenyl	*85*		*70 - 130*

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2712-1
SDG: 03E1558063

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

Lab Sample ID: 890-2712-1 MSD
Matrix: Solid
Analysis Batch: 31633

Client Sample ID: PH03
Prep Type: Total/NA
Prep Batch: 31570

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	<49.9	U *1	999	840.2		mg/Kg		84	70 - 130	17	20
Diesel Range Organics (Over C10-C28)	<49.9	U	999	843.5		mg/Kg		84	70 - 130	17	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*92*		*70 - 130*
o-Terphenyl	*101*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-31559/1-A
Matrix: Solid
Analysis Batch: 31937

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			08/12/22 03:46	1

Lab Sample ID: LCS 880-31559/2-A
Matrix: Solid
Analysis Batch: 31937

Client Sample ID: Lab Control Sample
Prep Type: Soluble

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

Lab Sample ID: LCSD 880-31559/3-A
Matrix: Solid
Analysis Batch: 31937

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	247.1		mg/Kg		99	90 - 110	1	20

Lab Sample ID: 890-2706-A-3-C MS
Matrix: Solid
Analysis Batch: 31937

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	198	F1	250	448.2		mg/Kg		100	90 - 110		

Lab Sample ID: 890-2706-A-3-D MSD
Matrix: Solid
Analysis Batch: 31937

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	198	F1	250	480.5	F1	mg/Kg		113	90 - 110	7	20

QC Association Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2712-1
SDG: 03E1558063

GC VOA

Prep Batch: 31717

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-31717/5-A	Method Blank	Total/NA	Solid	5035	

Prep Batch: 31834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2712-1	PH03	Total/NA	Solid	5035	
MB 880-31834/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-31834/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-31834/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-17597-A-2-F MS	Matrix Spike	Total/NA	Solid	5035	
880-17597-A-2-G MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 31851

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2712-1	PH03	Total/NA	Solid	8021B	31834
MB 880-31717/5-A	Method Blank	Total/NA	Solid	8021B	31717
MB 880-31834/5-A	Method Blank	Total/NA	Solid	8021B	31834
LCS 880-31834/1-A	Lab Control Sample	Total/NA	Solid	8021B	31834
LCSD 880-31834/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	31834
880-17597-A-2-F MS	Matrix Spike	Total/NA	Solid	8021B	31834
880-17597-A-2-G MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	31834

Analysis Batch: 31901

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2712-1	PH03	Total/NA	Solid	Total BTEX	

GC Semi VOA

Prep Batch: 31570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2712-1	PH03	Total/NA	Solid	8015NM Prep	
MB 880-31570/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-31570/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-31570/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-2712-1 MS	PH03	Total/NA	Solid	8015NM Prep	
890-2712-1 MSD	PH03	Total/NA	Solid	8015NM Prep	

Analysis Batch: 31633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2712-1	PH03	Total/NA	Solid	8015B NM	31570
MB 880-31570/1-A	Method Blank	Total/NA	Solid	8015B NM	31570
LCS 880-31570/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	31570
LCSD 880-31570/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	31570
890-2712-1 MS	PH03	Total/NA	Solid	8015B NM	31570
890-2712-1 MSD	PH03	Total/NA	Solid	8015B NM	31570

Analysis Batch: 31742

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2712-1	PH03	Total/NA	Solid	8015 NM	

QC Association Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2712-1
SDG: 03E1558063

HPLC/IC

Leach Batch: 31559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2712-1	PH03	Soluble	Solid	DI Leach	
MB 880-31559/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-31559/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-31559/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-2706-A-3-C MS	Matrix Spike	Soluble	Solid	DI Leach	
890-2706-A-3-D MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 31937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2712-1	PH03	Soluble	Solid	300.0	31559
MB 880-31559/1-A	Method Blank	Soluble	Solid	300.0	31559
LCS 880-31559/2-A	Lab Control Sample	Soluble	Solid	300.0	31559
LCSD 880-31559/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	31559
890-2706-A-3-C MS	Matrix Spike	Soluble	Solid	300.0	31559
890-2706-A-3-D MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	31559

Lab Chronicle

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2712-1
SDG: 03E1558063

Client Sample ID: PH03

Date Collected: 08/02/22 13:30
Date Received: 08/02/22 15:53

Lab Sample ID: 890-2712-1

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	31834	08/09/22 08:41	MR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	31851	08/10/22 04:16	MR	EET MID
Total/NA	Analysis	Total BTEX		1			31901	08/10/22 10:12	SM	EET MID
Total/NA	Analysis	8015 NM		1			31742	08/08/22 11:44	SM	EET MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	31570	08/05/22 10:50	DM	EET MID
Total/NA	Analysis	8015B NM		1			31633	08/06/22 12:00	SM	EET MID
Soluble	Leach	DI Leach			5.02 g	50 mL	31559	08/05/22 10:29	CH	EET MID
Soluble	Analysis	300.0		5			31937	08/12/22 07:46	AJ	EET MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2712-1
SDG: 03E1558063

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: JRU DI1

Job ID: 890-2712-1
SDG: 03E1558063

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

Protocol References:

ASTM = ASTM International

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:

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

Sample Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2712-1
SDG: 03E1558063

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-2712-1	PH03	Solid	08/02/22 13:30	08/02/22 15:53	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 Energy
Address:	3122 National Parks Hwy	Address:	3104 E. Green Street
City, State ZIP:	Carlsbad, NM 88220	City, State ZIP:	Carlsbad, NM 88220
Phone:	303-887-2946 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:	JRU DI 1	**Turn Around**	
Project Number:	03E1558063	☑ Routine ☐ Rush	
Project Location:		Due Date:	
Sampler's Name:	Conner Shore	TAT starts the day received by the lab, if received by 4:30pm	
PO #:			

SAMPLE RECEIPT				
Temp Blank:	(Yes) No	Wet Ice:	(Yes) No	
Samples Received Intact:	(Yes) No	Thermometer ID:	TWM007	
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	-0.2	
Sample Custody Seals:	Yes No (N/A)	Temperature Reading:	3.2	
Total Containers:		Corrected Temperature:	3.0	

ANALYSIS REQUEST

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	CHLORIDES (EPA: 300.0)	TPH (8015)	BTEX (8021)
PH03	S	08.02.22	1330	0.5'	C	1		x	x	x

890-2712 Chain of Custody

Preservative Codes

None: NO DI Water: H_2O
Cool: Cool MeOH: Me
HCL: HC HNO_3: HN
H_2S0_4: H_2 NaOH: Na
H_3PO_4: HP
$NaHSO_4$: NABIS
$Na_2S_2O_3$: $NaSO_3$
Zn Acetate+NaOH: Zn
NaOH+Ascorbic Acid: SAPC

Sample Comments

Incident ID: nAPP2216152113

Cost Center: 1082151001

AFE:

API: 30-015-47514

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		8.2.22 1553	2		
3			4		
5			6		

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2712-1
SDG Number: 03E1558063

Login Number: 2712
List Number: 1
Creator: Clifton, Cloe

List Source: Eurofins Carlsbad

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

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2712-1
SDG Number: 03E1558063

Login Number: 2712
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 08/04/22 10:22 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: 890-2713-1
Laboratory Sample Delivery Group: 03E1558063
Client Project/Site: JRU DI1

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

Attn: Kalei Jennings

JKramer

Authorized for release by:
8/12/2022 8:00:47 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: JRU DI1

Laboratory Job ID: 890-2713-1
SDG: 03E1558063

Table of Contents

Definitions/Glossary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2713-1
SDG: 03E1558063

Qualifiers

GC VOA

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

GC Semi VOA

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

HPLC/IC

Qualifier	Qualifier Description
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: JRU DI1

Job ID: 890-2713-1
SDG: 03E1558063

Job ID: 890-2713-1

Laboratory: Eurofins Carlsbad

Narrative

Job Narrative
890-2713-1

Receipt
The sample was received on 8/2/2022 3:53 PM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.0°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: Surrogate recovery for the following sample was outside control limits: (LCS 880-31570/2-A). Evidence of matrix interferences is not obvious.

Method 8015MOD_NM: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 880-31570 and analytical batch 880-31633 recovered outside control limits for the following analytes: Gasoline Range Organics (GRO)-C6-C10.

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

HPLC/IC
Method 300_ORGFM_28D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-31559 and analytical batch 880-31937 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: JRU DI1

Job ID: 890-2713-1
SDG: 03E1558063

Client Sample ID: PH03

Date Collected: 08/02/22 13:40
Date Received: 08/02/22 15:53
Sample Depth: 5

Lab Sample ID: 890-2713-1

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		08/09/22 08:41	08/10/22 11:59	1
Toluene	<0.00200	U	0.00200		mg/Kg		08/09/22 08:41	08/10/22 11:59	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		08/09/22 08:41	08/10/22 11:59	1
m-Xylene & p-Xylene	<0.00401	U	0.00401		mg/Kg		08/09/22 08:41	08/10/22 11:59	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		08/09/22 08:41	08/10/22 11:59	1
Xylenes, Total	<0.00401	U	0.00401		mg/Kg		08/09/22 08:41	08/10/22 11:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*70 - 130*	*08/09/22 08:41*	*08/10/22 11:59*	*1*
1,4-Difluorobenzene (Surr)	*105*		*70 - 130*	*08/09/22 08:41*	*08/10/22 11:59*	*1*

Method: Total BTEX - Total BTEX Calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00401	U	0.00401		mg/Kg			08/10/22 16:51	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.9	U	49.9		mg/Kg			08/08/22 11:44	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 *1	49.9		mg/Kg		08/05/22 10:50	08/06/22 13:05	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		08/05/22 10:50	08/06/22 13:05	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		08/05/22 10:50	08/06/22 13:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*92*		*70 - 130*	*08/05/22 10:50*	*08/06/22 13:05*	*1*
o-Terphenyl	*103*		*70 - 130*	*08/05/22 10:50*	*08/06/22 13:05*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**302**		25.0		mg/Kg			08/12/22 07:55	5

Surrogate Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2713-1
SDG: 03E1558063

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)
880-17597-A-2-F MS	Matrix Spike	96	103
880-17597-A-2-G MSD	Matrix Spike Duplicate	112	95
890-2713-1	PH03	111	105
LCS 880-31834/1-A	Lab Control Sample	99	108
LCSD 880-31834/2-A	Lab Control Sample Dup	114	102
MB 880-31717/5-A	Method Blank	96	95
MB 880-31834/5-A	Method Blank	98	93

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)
890-2712-A-1-C MS	Matrix Spike	77	85
890-2712-A-1-D MSD	Matrix Spike Duplicate	92	101
890-2713-1	PH03	92	103
LCS 880-31570/2-A	Lab Control Sample	135 S1+	133 S1+
LCSD 880-31570/3-A	Lab Control Sample Dup	111	130
MB 880-31570/1-A	Method Blank	91	105

Surrogate Legend

1CO = 1-Chlorooctane
OTPH = o-Terphenyl

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2713-1
SDG: 03E1558063

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-31717/5-A
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31717

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		08/08/22 10:13	08/09/22 16:06	1
Toluene	<0.00200	U	0.00200		mg/Kg		08/08/22 10:13	08/09/22 16:06	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		08/08/22 10:13	08/09/22 16:06	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		08/08/22 10:13	08/09/22 16:06	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		08/08/22 10:13	08/09/22 16:06	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		08/08/22 10:13	08/09/22 16:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*	*08/08/22 10:13*	*08/09/22 16:06*	*1*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*	*08/08/22 10:13*	*08/09/22 16:06*	*1*

Lab Sample ID: MB 880-31834/5-A
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31834

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		08/09/22 08:41	08/10/22 02:52	1
Toluene	<0.00200	U	0.00200		mg/Kg		08/09/22 08:41	08/10/22 02:52	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		08/09/22 08:41	08/10/22 02:52	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		08/09/22 08:41	08/10/22 02:52	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		08/09/22 08:41	08/10/22 02:52	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		08/09/22 08:41	08/10/22 02:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*	*08/09/22 08:41*	*08/10/22 02:52*	*1*
1,4-Difluorobenzene (Surr)	*93*		*70 - 130*	*08/09/22 08:41*	*08/10/22 02:52*	*1*

Lab Sample ID: LCS 880-31834/1-A
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 31834

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			0.100	0.1002		mg/Kg		100	70 - 130		
Toluene			0.100	0.09582		mg/Kg		96	70 - 130		
Ethylbenzene			0.100	0.07829		mg/Kg		78	70 - 130		
m-Xylene & p-Xylene			0.200	0.1630		mg/Kg		82	70 - 130		
o-Xylene			0.100	0.08318		mg/Kg		83	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*
1,4-Difluorobenzene (Surr)	*108*		*70 - 130*

Lab Sample ID: LCSD 880-31834/2-A
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 31834

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			0.100	0.08862		mg/Kg		89	70 - 130	12	35

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2713-1
SDG: 03E1558063

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

Lab Sample ID: LCSD 880-31834/2-A
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 31834

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Toluene			0.100	0.1079		mg/Kg		108	70 - 130	12	35
Ethylbenzene			0.100	0.09720		mg/Kg		97	70 - 130	22	35
m-Xylene & p-Xylene			0.200	0.2134		mg/Kg		107	70 - 130	27	35
o-Xylene			0.100	0.1062		mg/Kg		106	70 - 130	24	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*114*		*70 - 130*
1,4-Difluorobenzene (Surr)	*102*		*70 - 130*

Lab Sample ID: 880-17597-A-2-F MS
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 31834

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	<0.00200	U	0.0998	0.1058		mg/Kg		105	70 - 130
Toluene	<0.00200	U	0.0998	0.1035		mg/Kg		104	70 - 130
Ethylbenzene	<0.00200	U	0.0998	0.08434		mg/Kg		85	70 - 130
m-Xylene & p-Xylene	<0.00399	U	0.200	0.1748		mg/Kg		88	70 - 130
o-Xylene	<0.00200	U	0.0998	0.08766		mg/Kg		87	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*
1,4-Difluorobenzene (Surr)	*103*		*70 - 130*

Lab Sample ID: 880-17597-A-2-G MSD
Matrix: Solid
Analysis Batch: 31851

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 31834

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	0.08278		mg/Kg		82	70 - 130	24	35
Toluene	<0.00200	U	0.100	0.1051		mg/Kg		105	70 - 130	2	35
Ethylbenzene	<0.00200	U	0.100	0.09458		mg/Kg		94	70 - 130	11	35
m-Xylene & p-Xylene	<0.00399	U	0.201	0.2062		mg/Kg		103	70 - 130	16	35
o-Xylene	<0.00200	U	0.100	0.1025		mg/Kg		101	70 - 130	16	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*112*		*70 - 130*
1,4-Difluorobenzene (Surr)	*95*		*70 - 130*

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

Lab Sample ID: MB 880-31570/1-A
Matrix: Solid
Analysis Batch: 31633

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31570

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		08/05/22 10:50	08/06/22 10:56	1

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2713-1
SDG: 03E1558063

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

Lab Sample ID: MB 880-31570/1-A
Matrix: Solid
Analysis Batch: 31633

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31570

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		08/05/22 10:50	08/06/22 10:56	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		08/05/22 10:50	08/06/22 10:56	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*91*		*70 - 130*	*08/05/22 10:50*	*08/06/22 10:56*	*1*
o-Terphenyl	*105*		*70 - 130*	*08/05/22 10:50*	*08/06/22 10:56*	*1*

Lab Sample ID: LCS 880-31570/2-A
Matrix: Solid
Analysis Batch: 31633

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 31570

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	1077		mg/Kg		108	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	1004		mg/Kg		100	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*135*	*S1+*	*70 - 130*
o-Terphenyl	*133*	*S1+*	*70 - 130*

Lab Sample ID: LCSD 880-31570/3-A
Matrix: Solid
Analysis Batch: 31633

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 31570

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	860.0	*1	mg/Kg		86	70 - 130	22	20
Diesel Range Organics (Over C10-C28)			1000	967.6		mg/Kg		97	70 - 130	4	20

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

Lab Sample ID: 890-2712-A-1-C MS
Matrix: Solid
Analysis Batch: 31633

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 31570

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	<49.9	U *1	999	994.7		mg/Kg		100	70 - 130		
Diesel Range Organics (Over C10-C28)	<49.9	U	999	709.9		mg/Kg		71	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*77*		*70 - 130*
o-Terphenyl	*85*		*70 - 130*

QC Sample Results

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2713-1
SDG: 03E1558063

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

Lab Sample ID: 890-2712-A-1-D MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 31633 — **Prep Batch: 31570**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	<49.9	U *1	999	840.2		mg/Kg		84	70 - 130	17	20
Diesel Range Organics (Over C10-C28)	<49.9	U	999	843.5		mg/Kg		84	70 - 130	17	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*92*		*70 - 130*
o-Terphenyl	*101*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-31559/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 31937

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			08/12/22 03:46	1

Lab Sample ID: LCS 880-31559/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 31937

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

Lab Sample ID: LCSD 880-31559/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 31937

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			250	247.1		mg/Kg		99	90 - 110	1	20

Lab Sample ID: 890-2706-A-3-C MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 31937

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	198	F1	250	448.2		mg/Kg		100	90 - 110		

Lab Sample ID: 890-2706-A-3-D MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 31937

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	198	F1	250	480.5	F1	mg/Kg		113	90 - 110	7	20

QC Association Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2713-1
SDG: 03E1558063

GC VOA

Prep Batch: 31717

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 880-31717/5-A	Method Blank	Total/NA	Solid	5035	

Prep Batch: 31834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2713-1	PH03	Total/NA	Solid	5035	
MB 880-31834/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-31834/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-31834/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-17597-A-2-F MS	Matrix Spike	Total/NA	Solid	5035	
880-17597-A-2-G MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 31851

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2713-1	PH03	Total/NA	Solid	8021B	31834
MB 880-31717/5-A	Method Blank	Total/NA	Solid	8021B	31717
MB 880-31834/5-A	Method Blank	Total/NA	Solid	8021B	31834
LCS 880-31834/1-A	Lab Control Sample	Total/NA	Solid	8021B	31834
LCSD 880-31834/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	31834
880-17597-A-2-F MS	Matrix Spike	Total/NA	Solid	8021B	31834
880-17597-A-2-G MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	31834

Analysis Batch: 31930

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2713-1	PH03	Total/NA	Solid	Total BTEX	

GC Semi VOA

Prep Batch: 31570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2713-1	PH03	Total/NA	Solid	8015NM Prep	
MB 880-31570/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-31570/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-31570/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-2712-A-1-C MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-2712-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 31633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2713-1	PH03	Total/NA	Solid	8015B NM	31570
MB 880-31570/1-A	Method Blank	Total/NA	Solid	8015B NM	31570
LCS 880-31570/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	31570
LCSD 880-31570/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	31570
890-2712-A-1-C MS	Matrix Spike	Total/NA	Solid	8015B NM	31570
890-2712-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	31570

Analysis Batch: 31743

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2713-1	PH03	Total/NA	Solid	8015 NM	

QC Association Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2713-1
SDG: 03E1558063

HPLC/IC

Leach Batch: 31559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2713-1	PH03	Soluble	Solid	DI Leach	
MB 880-31559/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-31559/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-31559/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-2706-A-3-C MS	Matrix Spike	Soluble	Solid	DI Leach	
890-2706-A-3-D MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 31937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-2713-1	PH03	Soluble	Solid	300.0	31559
MB 880-31559/1-A	Method Blank	Soluble	Solid	300.0	31559
LCS 880-31559/2-A	Lab Control Sample	Soluble	Solid	300.0	31559
LCSD 880-31559/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	31559
890-2706-A-3-C MS	Matrix Spike	Soluble	Solid	300.0	31559
890-2706-A-3-D MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	31559

Lab Chronicle

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2713-1
SDG: 03E1558063

Client Sample ID: PH03

Date Collected: 08/02/22 13:40
Date Received: 08/02/22 15:53

Lab Sample ID: 890-2713-1

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	31834	08/09/22 08:41	MR	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	31851	08/10/22 11:59	MR	EET MID
Total/NA	Analysis	Total BTEX		1			31930	08/10/22 16:51	SM	EET MID
Total/NA	Analysis	8015 NM		1			31743	08/08/22 11:44	SM	EET MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	31570	08/05/22 10:50	DM	EET MID
Total/NA	Analysis	8015B NM		1			31633	08/06/22 13:05	SM	EET MID
Soluble	Leach	DI Leach			5 g	50 mL	31559	08/05/22 10:29	CH	EET MID
Soluble	Analysis	300.0		5			31937	08/12/22 07:55	AJ	EET MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2713-1
SDG: 03E1558063

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: JRU DI1

Job ID: 890-2713-1
SDG: 03E1558063

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

Protocol References:

ASTM = ASTM International

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:

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

Sample Summary

Client: Ensolum
Project/Site: JRU DI1

Job ID: 890-2713-1
SDG: 03E1558063

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-2713-1	PH03	Solid	08/02/22 13:40	08/02/22 15:53	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 Energy
Address:	3122 National Parks Hwy	Address:	3104 E. Green Street
City, State ZIP:	Carlsbad, NM 88220	City, State ZIP:	Carlsbad, NM 88220
Phone:	303-887-2946 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:	JRU DI 1	Turn Around	
Project Number:	03E1558063	☑ Routine ☐ Rush	
Project Location:		Due Date:	
Sampler's Name:	Conner Shore	TAT starts the day received by the lab, if received by 4:30pm	
PO #:			

SAMPLE RECEIPT	Temp Blank: (Yes) No	Wet Ice: (Yes) No	
Samples Received Intact:	(Yes) No	Thermometer ID:	IR-007
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	-0.2
Sample Custody Seals:	Yes No (N/A)	Temperature Reading:	3.2
Total Containers:		Corrected Temperature:	3.0

ANALYSIS REQUEST

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	CHLORIDES (EPA: 300.0)	TPH (8015)	BTEX (8021)
PH03	S	08.02.22	1340	5'	C	1		x	x	x

890-2713 Chain of Custody

Preservative Codes

None: NO DI Water: H_2O
Cool: Cool MeOH: Me
HCL: HC HNO_3: HN
H_2S0_4: H_2 NaOH: Na
H_3PO_4: HP
$NaHSO_4$: NABIS
$Na_2S_2O_3$: $NaSO_3$
Zn Acetate+NaOH: Zn
NaOH+Ascorbic Acid: SAPC

Sample Comments

Incident ID: nAPP2216152113

Cost Center: 1082151001

AFE:

API: 30-015-47514

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

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

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1	2	8-2-22 1553	2		
3			4		
5			6		

Revised Date: 08/25/2020 Rev. 2020.2

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2713-1
SDG Number: 03E1558063

Login Number: 2713
List Number: 1
Creator: Clifton, Cloe

List Source: Eurofins Carlsbad

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

Login Sample Receipt Checklist

Client: Ensolum

Job Number: 890-2713-1
SDG Number: 03E1558063

Login Number: 2713
List Number: 2
Creator: Rodriguez, Leticia

List Source: Eurofins Midland
List Creation: 08/04/22 10:22 AM

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

ENSOLUM

APPENDIX E

NMOCD Notifications

Collins, Melanie

From: Collins, Melanie
Sent: Tuesday, May 31, 2022 1:02 PM
To: ocd.enviro@state.nm.us; Hamlet, Robert, EMNRD; mike.bratcher@state.nm.us
Cc: Jarrett, Ryan; McSpadden, Wes; Pennington, Shelby G; DelawareSpills /SM
Subject: 24-hour notification - JRU DI 1A release date 5-30-22

All,

This is notification of a small fire that occurred Monday, May 30, 2022, at the JRU DI 1A Battery near the coordinates listed below. Fire was extinguished and fire department was notified. Details will be provided with a form C-141. Please contact us with any questions or concerns.

32.37987, -103.88675

Thank you,

Melanie Collins
SSHE Technician
XTO ENERGY
An **ExxonMobil** Subsidiary
6401 Holiday Hill Rd, Bldg 5
Midland, TX 79707
432-218-3709

From: Aimee Cole
To: Tacoma Morrissey; Kalei Jennings
Subject: FW: XTO - Sampling Notification (week of 6/13/22 - 6/17/22) (updated)
Date: Monday, June 13, 2022 12:22:23 PM
Attachments: image001.png
image002.png
image003.png
image004.png

See below for your records.
Thanks!

Aimee Cole
Senior Managing Scientist
720-384-7365
Ensolum, LLC

From: Baker, Adrian <adrian.baker@exxonmobil.com>
Sent: Monday, June 13, 2022 9:39 AM
To: ocd.enviro@state.nm.us; Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>; Hamlet, Robert, EMNRD <Robert.Hamlet@state.nm.us>; Nobui, Jennifer, EMNRD <Jennifer.Nobui@state.nm.us>
Cc: DelawareSpills /SM <DelawareSpills@exxonmobil.com>; Green, Garrett J <garrett.green@exxonmobil.com>; Aimee Cole <acole@ensolum.com>
Subject: XTO - Sampling Notification (week of 6/13/22 - 6/17/22) (updated)

[**EXTERNAL EMAIL**]

All,

XTO plans to complete final sampling activities at the following sites the week of June 13, 2022.

Monday, June 13th

- JRU 106/ nAPP2212344322

Tuesday, June 14th

- PLU South Frac Pond / nAPP2211150068
- JRU DI2 702H & 707H / nAPP2211654411 & nAPP2208349430
- JRU DI 1 – Liner Delineation / Release Date May 30, 2022

Wednesday, June 15th

- PLU Big Sinks 25 Battery / nAPP2213148421

th

Thursday, June 16

- PLU 28 Big Sinks 127H / nAPP2210143304

Friday, June 17th

- PLU 28 Big Sinks 127H / nAPP2210143304

Adrian Baker
Environmental Coordinator
Permian Business Unit

XTO Energy Inc.
6401 N. Holiday Hill Dr.
Midland, Tx 79707
Mobile:(432)-236-3808
adrian.baker@exxonmobil.com

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

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 138563

CONDITIONS

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 138563
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
rhamlet	XTO's deferral requests to complete final remediation during any future major construction/alteration or final plugging/abandonment, whichever occurs first. Ensolum and XTO do not believe deferment will result in imminent risk to human health, the environment, or groundwater. The area requested for deferral is "BH01". The area has been delineated and documented in the report. At this time, OCD approves this request. The Deferral Request and C-141 will be accepted for record and marked accordingly. The release will remain open in OCD database files and reflect an open environmental issue. This is a Federal site and will require like approval from BLM.	11/30/2022