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	NAPP2102648780
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party Spur Energy Partners LLC	OGRID 328947
Contact Name Braidy Moulder	Contact Telephone (713)264-2517
Contact email bmoulder@spurepllc.com	Incident # *(assigned by OCD)*
Contact mailing address 919 Milam Street, Suite 2475, Houston, TX 77002	

Location of Release Source

Latitude 32.662800 Longitude -104.474800
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Osage Boyd 15 FED	Site Type Tank Battery
Date Release Discovered 1/22/2021	API# *(if applicable)* 3001528992

Unit Letter	Section	Township	Range	County
F	15	19	25E	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) 3 bbls	Volume Recovered (bbls)
☒ Produced Water	Volume Released (bbls) 227	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☒ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

A swedge failed on the well head, breaking the threads off and causing a 230 bbl release.

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State of New Mexico
Oil Conservation Division

Incident ID	NAPP2102648780
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? Greater than 25 bbls
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? The OCD was notified via Email by Jerry Matthews from SPUR EP LLC.	

Initial Response

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

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

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

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

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

Printed Name: Bryant McBrayer
Title: Staff Scientist - Environmental

Signature:
Date: 1/7/2021

email: bryant.mcbrayer@terracon.com
Telephone: 806-853-3619

OCD Only

Received by:
Date:

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2102648780
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?	95 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☒ Yes ☐ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☒ Yes ☐ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

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

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

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

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

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Page 4

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2102648780
District RP	
Facility ID	
Application ID	

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

Printed Name: Bryant McBrayer Title: Staff Scientist - Environmental

Signature: Date: 1/7/21

email: bryant.mcbrayer@terracon.com Telephone: 806-853-3619

OCD Only

Received by: Date:

Form C-141
Page 5

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2102648780
District RP	
Facility ID	
Application ID	

Remediation Plan

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

- [x] Detailed description of proposed remediation technique
- [x] Scaled sitemap with GPS coordinates showing delineation points
- [x] Estimated volume of material to be remediated
- [x] Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- [x] 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: Bryant McBrayer
Title: Staff Scientist - Environmental

Signature:
Date: 1/7/21

email: bryant.mcbrayer@terracon.com
Telephone: 806-853-3619

OCD Only

Received by: _____ Date: _____

- [ ] Approved
- [ ] Approved with Attached Conditions of Approval
- [ ] Denied
- [ ] Deferral Approved

Signature: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2102648780
District RP	
Facility ID	
Application ID	

Closure

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

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

☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Bryant McBrayer Title: Staff Scientist - Environmental

Signature: Date: 1/7/21

email: bryant.mcbrayer@terracon.com Telephone: 806-853-3619

OCD Only

Received by: Chad Hensley Date: 09/29/2021

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: Date: 09/29/2021

Printed Name: Chad Hensley Title: Environmental Specialist Advanced

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.
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Form C-141
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Submit to appropriate OCD District office

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Release Notification

Responsible Party

Responsible Party Spur Energy Partners LLC	OGRID 328947
Contact Name Braidy Moulder	Contact Telephone (713)264-2517
Contact email bmoulder@spurepllc.com	Incident # *(assigned by OCD)*
Contact mailing address 919 Milam Street, Suite 2475, Houston, TX 77002	

Location of Release Source

Latitude 32.662800 Longitude -104.474800
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Osage Boyd 15 FED	Site Type Tank Battery
Date Release Discovered 1/22/2021	API# *(if applicable)* 3001528992

Unit Letter	Section	Township	Range	County
F	15	19	25E	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) 3 bbls	Volume Recovered (bbls)
☒ Produced Water	Volume Released (bbls) 227	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☒ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

A swedge failed on the well head, breaking the threads off and causing a 230 bbl release.

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State of New Mexico
Oil Conservation Division

Incident ID	NAPP2102648780
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? Greater than 25 bbls
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? The OCD was notified via Email by Jerry Matthews from SPUR EP LLC.	

Initial Response

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

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

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

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

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Printed Name: Bryant McBrayer
Title: Staff Scientist - Environmental

Signature:
Date: 1/7/2021

email: bryant.mcbrayer@terracon.com
Telephone: 806-853-3619

OCD Only

Received by:
Date:

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2102648780
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?	95 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☒ Yes ☐ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☒ Yes ☐ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

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

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

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

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

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Page 4

State of New Mexico
Oil Conservation Division

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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: Bryant McBrayer Title: Staff Scientist - Environmental

Signature: Date: 1/7/21

email: bryant.mcbrayer@terracon.com Telephone: 806-853-3619

OCD Only

Received by: Date:

Form C-141
Page 5

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2102648780
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Remediation Plan

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

- [x] Detailed description of proposed remediation technique
- [x] Scaled sitemap with GPS coordinates showing delineation points
- [x] Estimated volume of material to be remediated
- [x] Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- [x] 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.

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Printed Name: Bryant McBrayer
Title: Staff Scientist - Environmental
Signature:
Date: 1/7/21
email: bryant.mcbrayer@terracon.com
Telephone: 806-853-3619

OCD Only

Received by: _____ Date: _____

- [ ] Approved
- [ ] Approved with Attached Conditions of Approval
- [ ] Denied
- [ ] Deferral Approved

Signature: _____ Date: _____

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Page 6

State of New Mexico
Oil Conservation Division

Incident ID	NAPP2102648780
District RP	
Facility ID	
Application ID	

Closure

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

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

☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

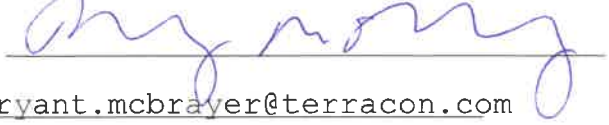
☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Bryant McBrayer Title: Staff Scientist - Environmental

Signature:  Date: 1/7/21

email: bryant.mcbrayer@terracon.com Telephone: 806-853-3619

OCD Only

Received by: _____ Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

Closure of Release Investigation and Remedial Action Plan

General Site Information:
Osage SWD Release

Site Contact:
Todd Mucha, Spur Energy Partners
920 Memorial City Way, Suite 1000, Houston, Texas 77024
(281) 795-2286

Depth to Ground Water
Between 51 and 100 feet below grade surface

Distance to Nearest Surface Water
Brantley Lake (Northwest-Central Eddy County, TX), approximately 7.16 miles to the Southeast

Driving Directions
From Hwy 285 head West on Hwy 21 (Rockin R Red Road) for 5.0 miles, then turn North and continue for 0.57 miles, then turn east and continue for 0.30 miles, then turn southeast and continue for 0.09 miles and you will arrive at the site.

Legal Description
Unit F, Section 15, T19S, R25E, Eddy County, New Mexico

August 30, 2021
Terracon Project No. AR217019

Prepared for:
Spur Energy Partners
Houston, Texas

Prepared by:
Terracon Consultants, Inc.
Lubbock, Texas

August 30, 2021

Spur Energy Partners
920 Memorial City Way, Suite 1000
Houston, Texas 77024

Attn: Mr. Todd Mucha
P: 281-795-2286
E: todd@spurepllc.com

RE: **Closure of Release Investigation and Remedial Action Plan**
Osage SWD
Unit F, Section 15, T19S, R25E
Eddy County, New Mexico
Terracon Project No. AR217019

Dear Mr. Mucha,

Terracon Consultants, Inc. (Terracon) is pleased to submit our Closure of Release Investigation and Remedial Action Plan (RAP) for the site referenced above. The Release Investigation and RAP were developed in accordance with the New Mexico Oil Conservation Division (NMOCD) regulations concerning response actions required for releases of crude and produced water and the following actions were taken to achieve protection of fresh water and the environment in accordance with NMOCD regulations. Terracon developed the release investigation and closure approach in general accordance with our MSA dated April 29, 2019.

- Based on the magnitude of chloride concentrations detected within the release margins to depths subject to NMOCD Reclamation requirements, approximately 1,500 cubic yards (cy) of chloride impacted material was required to be excavated and disposed of at a permitted disposal facility under manifest.
- Following excavation to restrictive layer depths, vertical and horizontal delineation samples were collected from the base of the excavation to confirm the remaining levels of soil contaminants are below the desired NMOCD remediation action level (RAL).
- Based on the anticipated depth to groundwater and confirmed vertical delineation, a remedial response was not warranted within the soils at depths greater than 2 ft. below grade surface.

Terracon appreciates this opportunity to provide environmental services to Spur Energy Partners (Spur). Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,
Terracon Consultants, Inc.

Joseph Guesnier
Staff Scientist
Lubbock

Erin Loyd, P.G. (TX)
Principal
Office Manager – Lubbock

Terracon

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Closure of Release Investigation and Remedial Action Plan
Osage SWD
Unit F, Section 15, T19S, R25E
Eddy County, New Mexico
Terracon Project No. AR217019
August 30, 2021

1.0 SITE DESCRIPTION

The site is comprised of an approximate 0.36-acre produced water release. The site is within the Unit Letter F, Section 15, Township 19 South, Range 25 East, Eddy County, New Mexico. The Osage SWD facility consists of six produced water above-ground storage tanks (ASTs), a single crude oil AST, and one-gun barrel separator. A Topographic Map illustrating the site location is included in Figure 1 and a Site Diagram illustrating soil sample locations is included as Figure 2 in Appendix A. A water well record search is also included as New Mexico Office of the State Engineer (NMOSE) Point of Diversion (POD) Location Map as Figure 5 in Appendix A. A map illustrating the site's location in reference to the NMOCD Karst mapping database is presented in Figure 6 in Appendix A.

2.0 SCOPE OF SERVICES

Terracon's scope of services was to investigate the magnitude and extent of the documented release and develop a Remedial Action Plan (RAP) and closure in accordance with the NMOCD requirements that detail site closure activities to be completed. This closure report addresses the January 22, 2021 release of approximately 230 barrels (bbls) of produced water originating from a swedge that failed on the wellhead, breaking the threads.

3.0 INTRODUCTION AND NOTIFICATION

The following table provides detailed information regarding the January 22, 2021, produced water release at the Osage SWD Battery Release Site in Eddy County, New Mexico:

Required Information	Site and Release information	
Responsible party Local contact	Spur Energy Partners	
	Contact: Mr. Braidy Moulder	P: (713) 264-2517 E: bmoulder@spurepllc.com
NMOCD Notification	Notice of the release was provided to the NMOCD District 2 Artesia Office by Jerry Mathews (Spur) on January 22, 2021.	

Required Information	Site and Release information	
Facility description	The Osage SWD Release is in Eddy County, New Mexico. It is an approximate 0.36-acre area located within Unit F, Section 15, T19S, R25E, approximately 5 miles west of Hwy 285, and 0.57 miles north of Rockin R Red Road. The site was developed as a drilling pad and tank battery.	
Time of incident	January 22, 2021, discovered at 8:00 a.m.	
Discharge event	A swedge failed on the wellhead, breaking the threads off and causing a 230 bbl release.	
Type of discharge	The documented fluids release occurred at the tank battery and affected the surface and appears to be to depth.	
Quantity of spilled material	Total Fluids: 230	Produced Water: 227
Site characteristics	Relatively flat with drainage following the native ground surface; very gently sloping to the east.	
Immediate corrective actions	The wellhead was shut-in, and the vacuum trucks were enlisted to recover the fluids.	

4.0 INITIAL RESPONSE ACTIONS

4.1 Source Elimination

Initial source elimination was accomplished by the Spur foreman shutting in the wellhead and enlisting vacuum trucks to recover fluids. Spur enlisted the help of Terracon to assess the impacted areas of the release and develop a remediation plan of action.

5.0 GENERAL SITE CHARACTERISTICS

Remediation Determining Information	Site Ranking Characteristics
Groundwater	POD Number: RA-05900 Depth to Groundwater: 95 ft. bgs Distance to Well: 0.57 miles to the northwest Date Drilled: March 19, 1974
	Groundwater Quality: The well-referenced above, was originally drilled for and used for prospecting or development of natural resources.

Remediation Determining Information	Site Ranking Characteristics
Surface Water	Brantley Lake (North Central Eddy County), approximately 7.16 miles to the southeast.
Soil Characteristics	Soils at the site are mapped as Upton gravelly loam, 0 to 9 percent slopes, 0 to 13 inches gravelly loam, 13 - 21 inches cemented, and 21 – 60 inches very gravelly loam. This soil has a surface layer of gravelly loam. Petrocalcic, restrictive features are present at 7 - 20 inches bgs, resulting in the formation being categorized with a high runoff classification.
Karst Characterization	Terracon evaluated data from the NMOCD Public FTP Site, Karst map designations in reference to the site location. The site appears to be within a moderate-level Karst risk area. Based on on-site observations within the extent of the release margins, the potential for Karst formations in this specific area is of low potential. The site has a layer of solid competent rock from 60 to 72 inches bgs.
Depth of Remediation	The full extent of release quantities and excavation activities were not greater than 48 inches bgs.
100 Year Flood Plain	This release area is within the 100-year flood plain of a perennial dry creek bed

6.0 REGULATORY FRAMEWORK AND RESPONSE ACTION LEVELS

Oil and gas exploration and production facilities in New Mexico are generally regulated by the New Mexico Oil Conservation Division (NMOCD). The NMOCD has issued the *Closure Criteria for Soils Impacted by a Release, June 21, 2018,* and *Restoration, Reclamation, and Re-vegetation (19.15.29.13) NMAC – D (Reclamation of areas no longer in use)* as guidance documents for the remediation and reclamation of sites impacted by releases from oil and gas exploration and production activities. Sections 6.1 and 6.2 below detail the applicability of these guidance documents to the site-specific characteristics associated with the Osage SWD Release.

6.1 Remediation Levels

The *Closure Criteria for Soils Impacted by a Release* guidance document provides direction for initial response actions, site assessment, sampling procedures and provides closure criteria based on the depth to groundwater, distance to private and domestic water sources, and the distance to the nearest surface water body outlined in Table 1.

Constituent	Remediation Limits
Chloride (Soils from the Surface to 4 ft. Below Grade Surface)	600 mg/kg
TPH (GRO+DRO+MRO)	100 mg/kg
BTEX	50 mg/kg
Benzene	10 mg/kg

7.0 SOIL SAMPLING PROCEDURES

Soil sampling procedures are detailed in Appendix B as Exhibit 1.

8.0 RELEASE INVESTIGATION DATA EVALUATION

During Terracon's February 4, 2021 release investigation activities, a total of 9 soil samples were collected from the site and field titrations were performed for chloride analysis. All of the soil samples were collected from within the release margins.

8.1 Release Margins Data Evaluation

8.1.1 Reclamation Assessment Data Evaluation

Chloride was detected above NMOCD RALs in 6 of the 9 soil samples analyzed within the release margins. The chloride concentrations ranged from 329 mg/kg in soil sample FS-9 (2 ft bgs) to 2,462 mg/kg in soil sample FS-5 (2 ft bgs). The soil samples analyzed within the release margins exhibited chloride concentrations exceeding the applicable NMOCD RAL for chloride of 600 mg/kg, as summarized in Appendix B in Chloride & TPH Field Screening Summary.

8.1.2 Remediation Assessment Data Evaluation

Chloride was not detected below two feet due to a cemented, restrictive formation at depth.

8.2 Release Investigation Data Summary

Based on the review of the above release investigation analytical results, the areas within the release margins exhibit concentrations of chloride above the NMOCD Remediation Action Limits but were not analyzed for concentrations of Benzene, BTEX, or TPH above the NMOCD Remediation Action Limits. Based on these results above NMOCD RALs, additional remedial response actions were implemented at the site.

It is anticipated that released produced water-associated chlorides consolidated upon the cemented layer of the Upton Gravelly loam features within the release margins. Based on the presence of the competent rock, further analytical evaluation of deeper horizons appears unwarranted at this time.

8.3 Confirmation Extent Data Evaluation

During Terracon's confirmation sampling events dated February 23, 2021, March 08, 2021, and July 17, 2021, composite soil samples were collected from the base of the open excavation in conjunction with reclamation activities. Confirmation composite samples were collected every 200 sq. ft and 21 total soil samples were collected from the site and analyzed for BTEX, Chloride, and/or TPH.

8.3.1 Confirmation Assessment Data Evaluation

Benzene was detected above the applicable laboratory SDLs in one of the 21 confirmation soil samples. Benzene concentrations consisted of 0.00213 mg/kg in soil sample FS-18 (1.5 ft bgs to 2 ft bgs). The detected Benzene concentration did not exceed the applicable NMOCD RAL for benzene of 10 mg/kg, as summarized in Table 2.

Total BTEX was not detected above applicable laboratory SDLs in the confirmation soil samples analyzed within the release margins. The undetected Total BTEX concentrations did not exceed the applicable NMOCD RAL for BTEX of 50 mg/kg, as summarized in Table 2.

Total TPH was not detected above applicable laboratory SDLs in the confirmation soil samples analyzed within the release margins. The undetected Total TPH concentrations did not exceed the applicable NMOCD RAL of 100 mg/kg for Total TPH, as summarized in Table 2.

Chloride was detected above applicable laboratory SDLs in 13 of the 21 analyzed confirmation samples. The chloride concentrations ranged from 5.22 mg/kg in soil sample FS-21 (1.5 ft bgs to 2 ft bgs) to 290 mg/kg in soil sample FS-8 (1.5 to 2 ft bgs). The detected chloride concentrations did not exceed the applicable NMOCD RAL for chloride of 600 mg/kg, as summarized in Table 2.

8.3.2 Confirmation Data Summary

Based on the review of the above confirmation analytical results, the areas surrounding the remediation margins do not exhibit concentrations above NMOCD RAL for benzene, Total BTEX, chloride, and Total TPH.

Based on these results below NMOCD RALs, Sections 9.0 and subsequent detail recommended closure of response actions to be implemented at the site. Terracon recommends the restoration of the above-mentioned site on March 1, 2020.

8.4 Perimeter Sample Data Evaluation

During Terracon's perimeter sampling event dated July 17, 2021, composite soil samples were collected from the perimeter of the release margin in conjunction with reclamation activities. Perimeter samples were collected every 200 sq. ft, and 10 total soil samples were collected from the site and analyzed for BTEX, Chloride, and/or TPH.

8.4.1 Perimeter Assessment Data Evaluation

Benzene was detected above the applicable laboratory SDLs in two of the ten perimeter soil samples. Benzene concentrations consisted of 0.00199 mg/kg in soil sample P-1 (1 ft bgs to 1.5 ft bgs). The detected Benzene concentration did not exceed the applicable NMOCD RAL for benzene of 10 mg/kg, as summarized in Table 2.

Total BTEX was detected above applicable laboratory SDLs in one of the ten perimeter soil samples analyzed. Total BTEX concentrations consisted of 0.00641 mg/kg in soil sample P-7 (1 ft bgs to 1.5 ft bgs). The detected Total BTEX concentrations did not exceed the applicable NMOCD RAL for BTEX of 50 mg/kg, as summarized in Table 2.

Total TPH was detected above applicable laboratory SDLs in one of the ten perimeter soil samples analyzed. Total TPH concentrations consisted of 79.5 mg/kg in soil sample P-10 (1 ft bgs to 1.5 ft bgs). The detected Total TPH concentrations did not exceed the applicable NMOCD RAL of 100 mg/kg for Total TPH, as summarized in Table 2.

Chloride was detected above applicable laboratory SDLs in four of the ten analyzed perimeter samples. The chloride concentrations ranged from 5.31 mg/kg in soil sample P-4 (1 ft bgs to 1.5 ft bgs) to 88.9 mg/kg in soil sample P-10 (1 ft bgs to 1.5 bgs). The detected chloride concentrations did not exceed the applicable NMOCD RAL for chloride of 600 mg/kg, as summarized in Table 2.

8.4.2 Confirmation Data Summary

Based on the review of the above confirmation analytical results, the areas surrounding the remediation margins do not exhibit concentrations above NMOCD RAL for benzene, Total BTEX, chloride, and Total TPH.

Based on these results below NMOCD RALs, Sections 9.0 and subsequent detail recommended closure of response actions to be implemented at the site. Terracon recommends the restoration of the above-mentioned site on March 1, 2020.

9.0 SOIL RECLAMATION AND REMEDIATION

Impacted soil was remediated, reclaimed, and managed according to the criteria described below, which is intended to protect freshwaters, public health, and the environment from exposure to the above constituents of concern.

9.1 Impacted Soil Management

Soils exceeding the designated NMOCD RALs described in Section 6 will be remediated as follows:

- Impacted soils within the release margins, illustrated in Figure 2 of Appendix A, were excavated to a maximum depth of 2.0 feet bgs, or upon refusal due to encountering a restrictive barrier, or field evidence demonstrates that impacted materials have been sufficiently mitigated, whichever occurs first.
- A total of 1,500 cubic yards of impacted material were excavated, stockpiled, and removed, and disposed of at a permitted facility.
- Following excavation, vertical and horizontal delineation samples were collected from the base, walls and perimeter of the excavation to confirm the remaining levels of soil constituents were below the desired NMOCD RALs.

9.2 Soil Disposition

The selected method of soil management is removal and disposal at an NMOCD-approved facility. Excavated soils were transported by truck (20 cubic yard capacity) and disposed of at the Lea Land Disposal Facility located in Lea County, New Mexico, based on landfill approvals.

10.0 TERMINATION OF REMEDIAL ACTIONS, FINAL CLOSURE AND REPORTING

10.1 Termination of Reclamation and Remedial Actions

Reclamation and remedial actions at the site were terminated when the confirmation samples indicate that the above objectives have been completed within the reclamation and remedial depth designations. The reclamation and remedial approaches intend to achieve compliance with NMOCD regulatory objectives in ensuring that any remaining contaminants will not pose a threat to present or foreseeable beneficial use of freshwater, public health, and the environment.

10.2 Final Closure

Upon termination of remedial actions (Sections 6 and 9), the area of the release was closed by backfilling the excavated area, contouring to surrounding area topography.

10.3 Final Report

Due to the completion of remedial activities, a final report summarizing actions taken to mitigate environmental damage related to the release has been provided to NMOCD for approval.

APPENDIX A – FIGURES AND TABLES

Figure 1 – Topographic Map

Figure 2 – Site Diagram

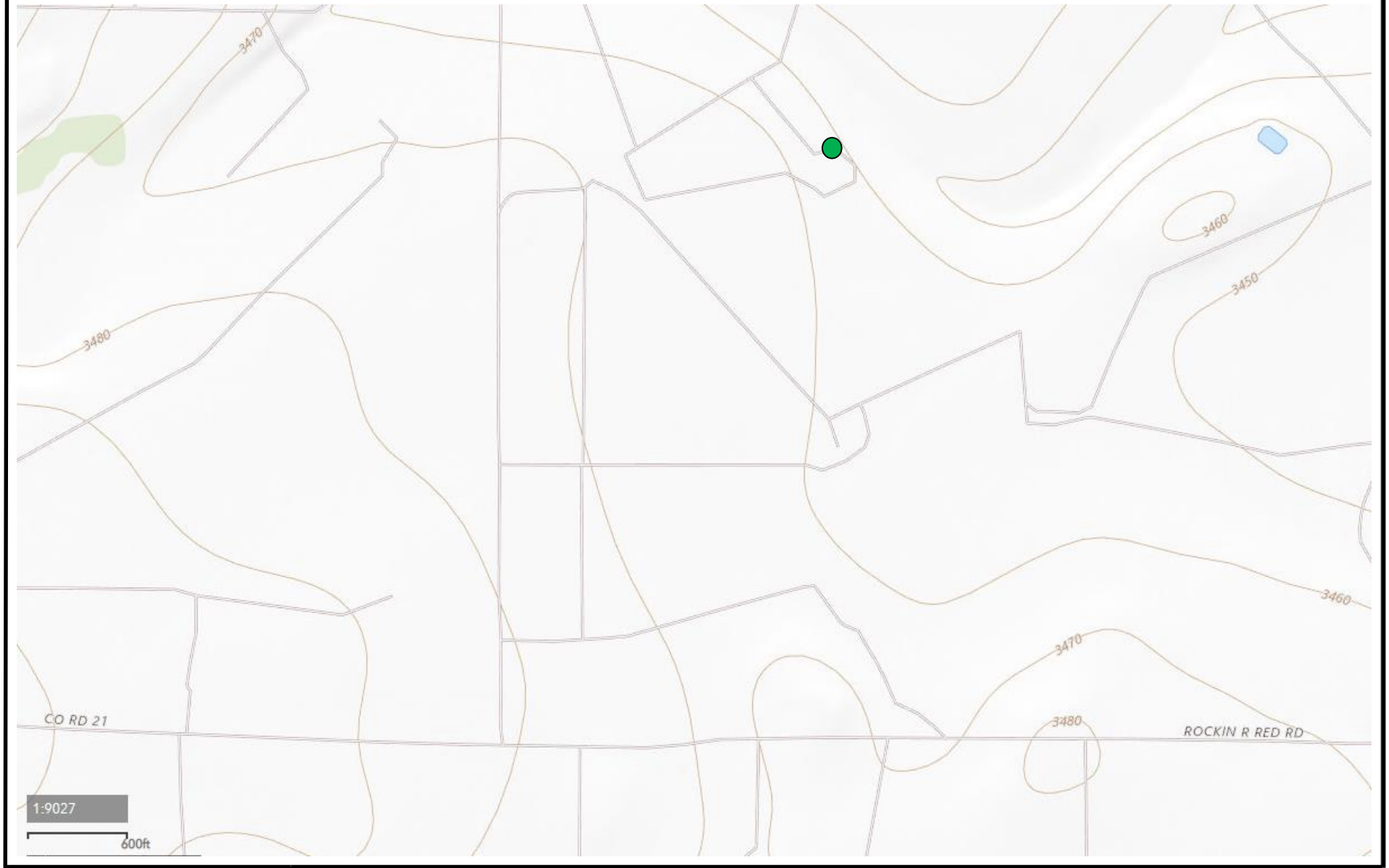
Figure 3 – Contamination Concentration Map

Figure 4 – Confirmation Concentration Map (wall)

Figure 4.1 – Confirmation Concentration Map (floor)

Figure 5 – NMOSE POD Location Map

Figure 6 – Cave Karst Public UCP



Site Location

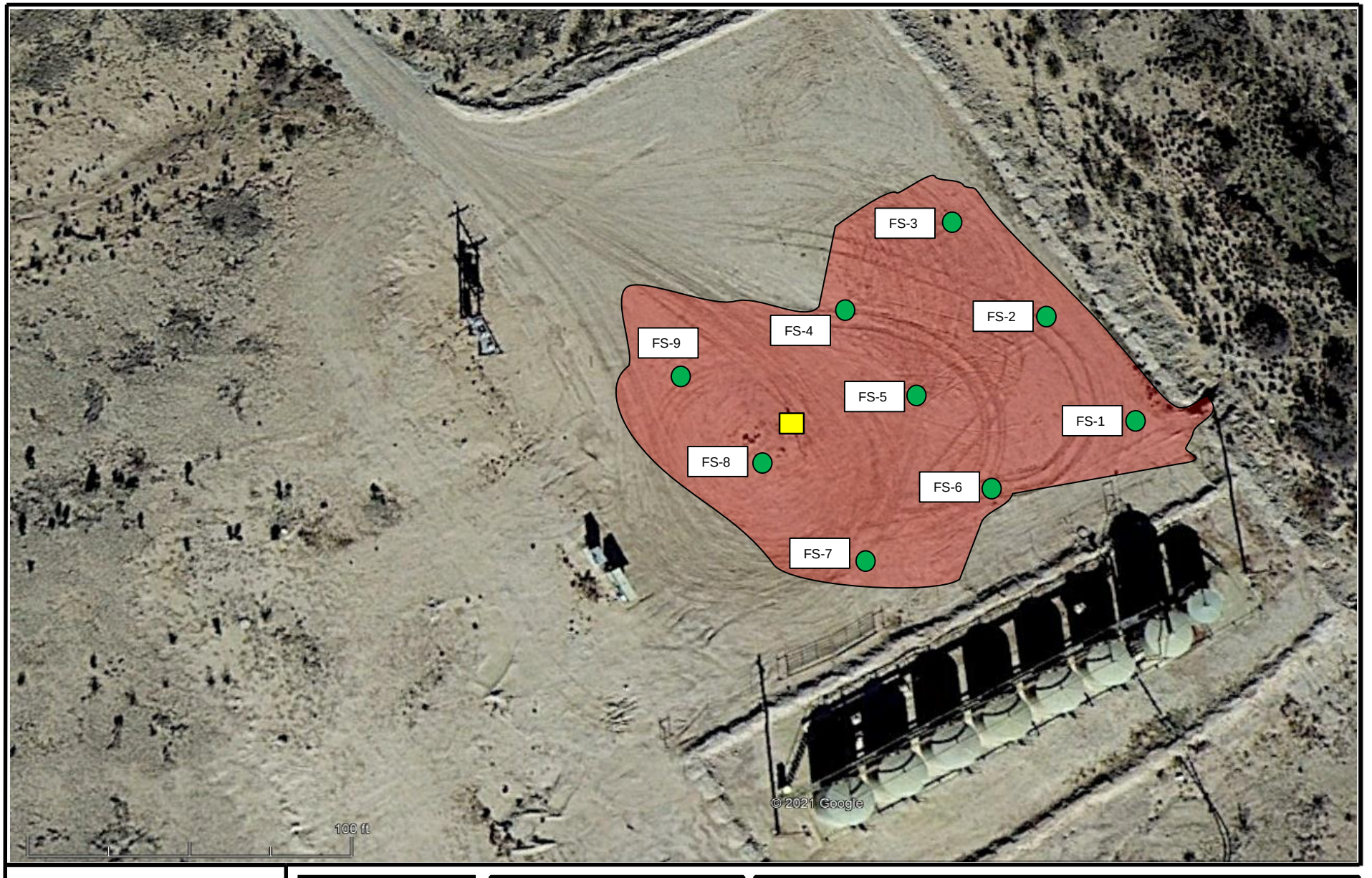
N

Project No.	AR217019
Scale:	1" : 600'
Source:	Google Earth
Date:	3/9/2021

Terracon
Consulting Engineers & Scientists
5847 50th Street Lubbock, Texas 79424
PH. (806) 300 -0140 FAX. (806) 797 -0947

Figure 1 – Topographic Map

Osage SWD
32.662800,-104.474800
Eddy County, New Mexico



Inferred Release

Wellhead Location

Sample Location

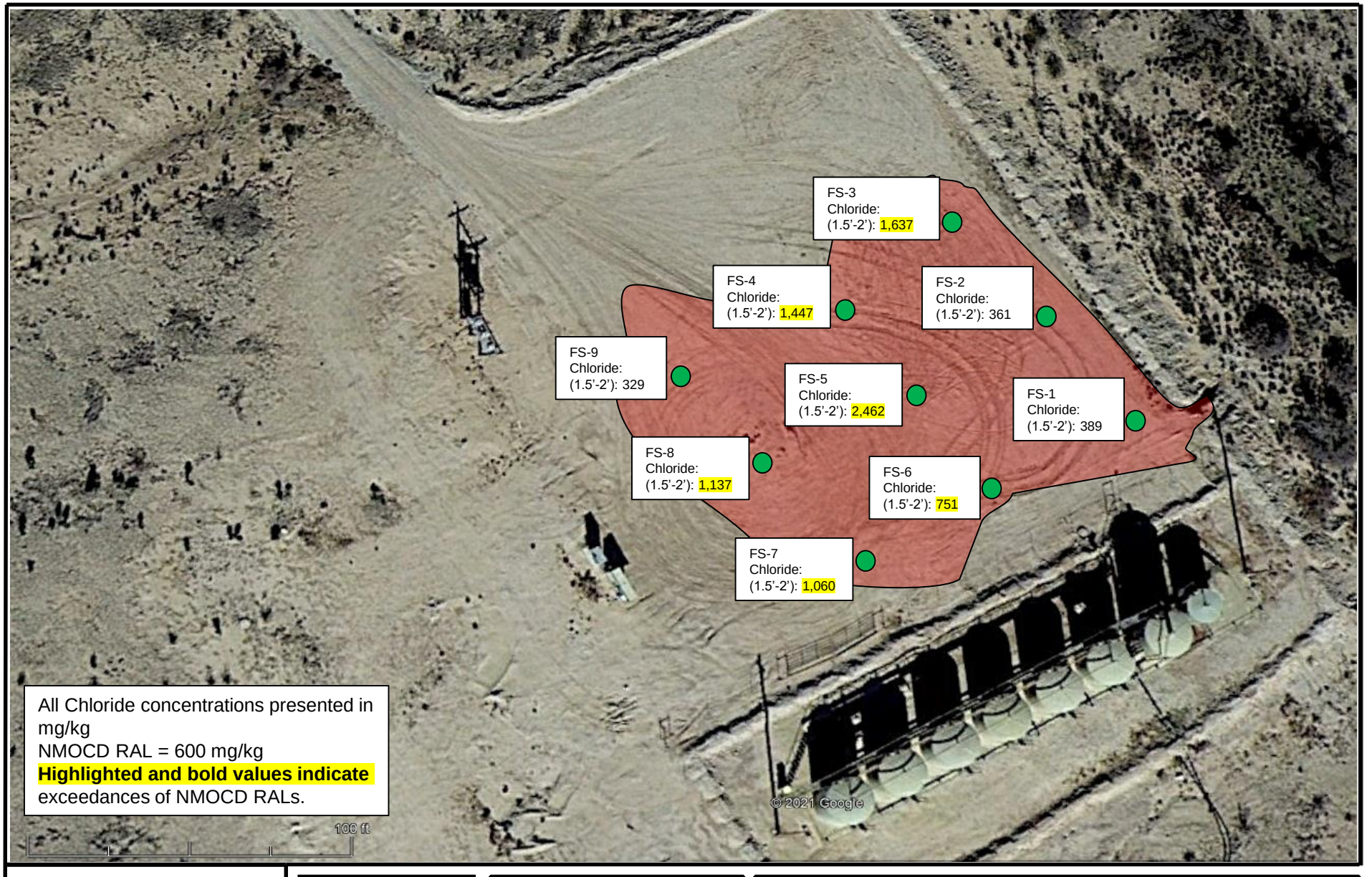
N

Project No.	AR217019
Scale:	1" : 100'
Source:	Google Earth
Date:	3/9/2021

Terracon
Consulting Engineers & Scientists
5847 50th Street Lubbock, Texas 79424
PH. (806) 300 -0140 FAX. (806) 797 -0947

Figure 2 – Site Diagram

Osage SWD
32.662800,-104.474800
Eddy County, New Mexico



Inferred Release

Sample Location

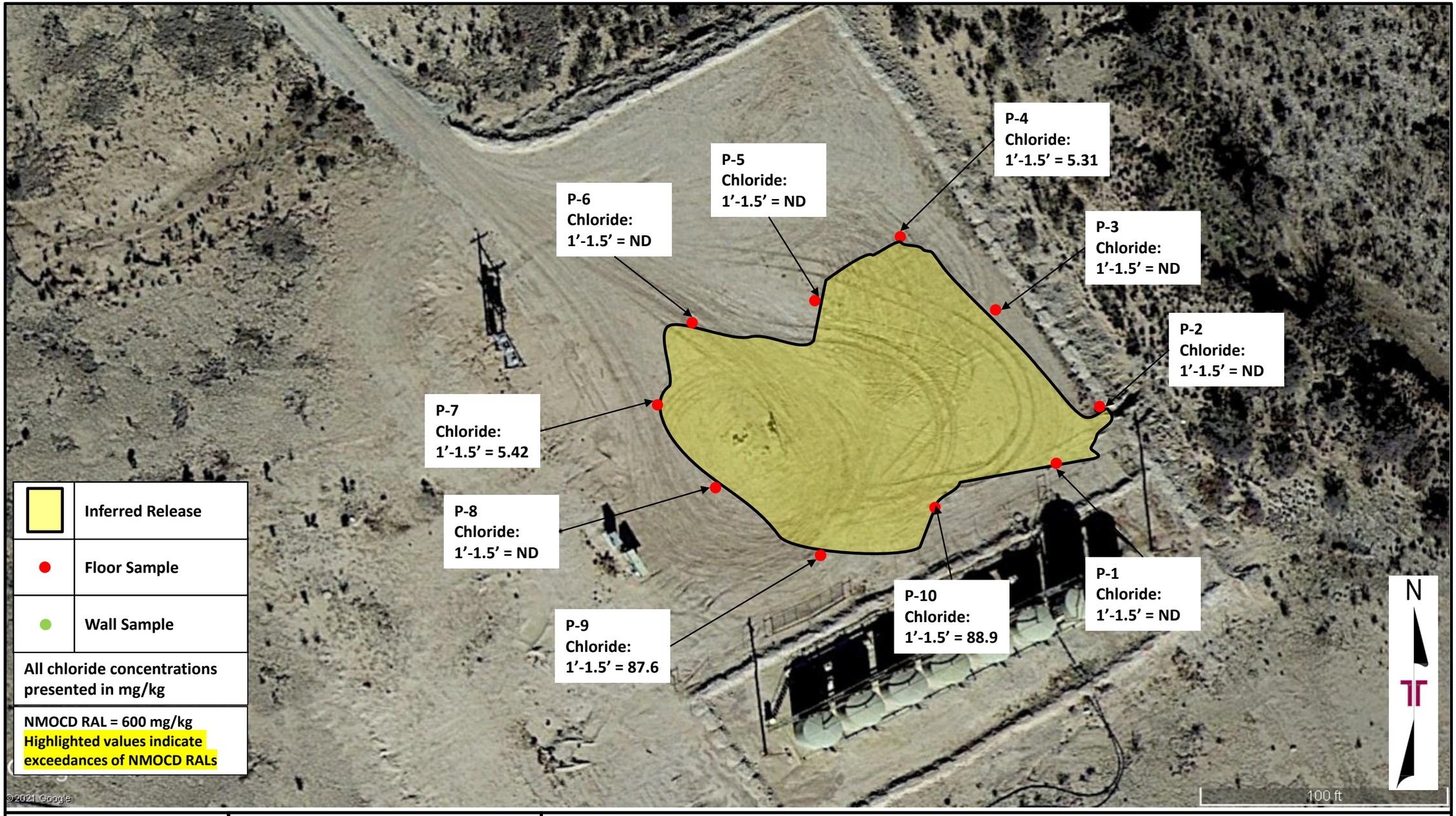
N

Project No.	AR217019
Scale:	1" : 100'
Source:	Google Earth
Date:	3/9/2021

Terracon
Consulting Engineers & Scientists
5847 50th Street Lubbock, Texas 79424
PH. (806) 300 -0140 FAX. (806) 797 -0947

Figure 3 – Contamination Concentration Map

Osage SWD
32.662800,-104.474800
Eddy County, New Mexico

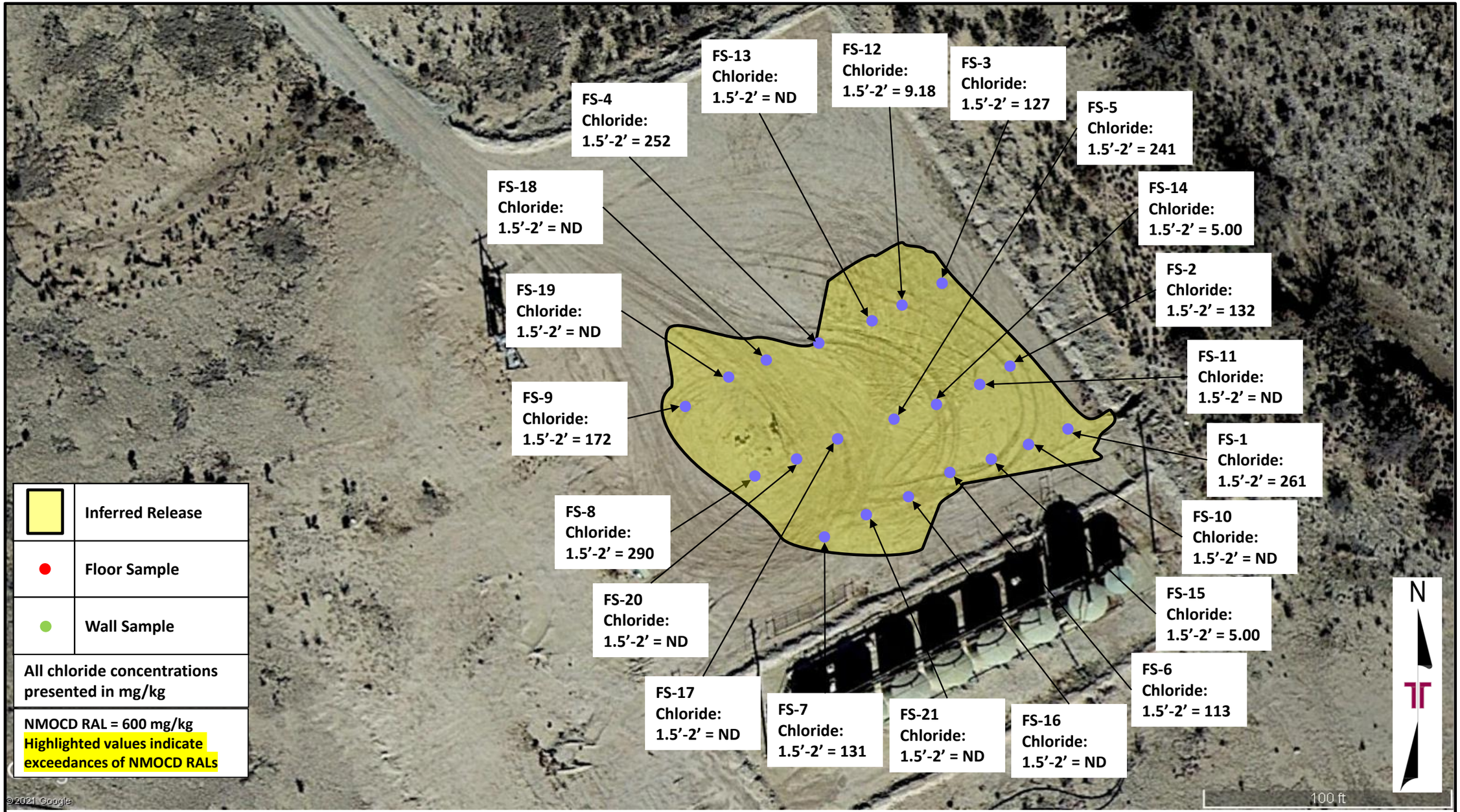


Project No.	AR217019
Scale:	As Shown
Source:	Google Earth
Date:	2018

Terracon
Consulting Engineers & Scientists
5847 50th St. Lubbock, Texas 79424
PH. (806) 300-0104 FAX. (806) 797 0947

Figure 4 – Confirmation Concentration Map (Wall)

Osage SWD
32.662800°, -104.474800°
Eddy County, New Mexico



Project No.	AR217019
Scale:	As Shown
Source:	Google Earth
Date:	2018

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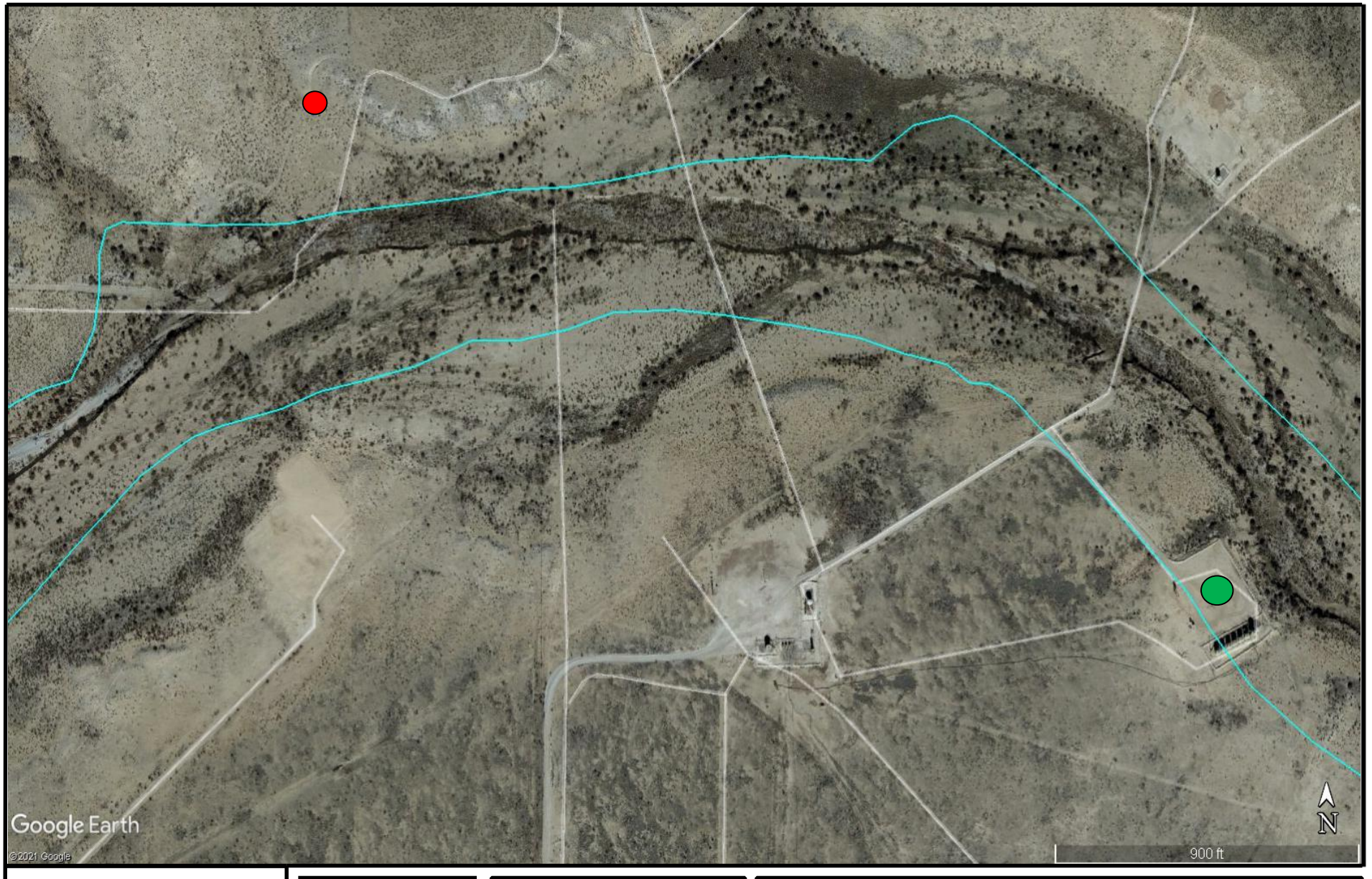
Consulting Engineers & Scientists
5847 50th St. Lubbock, Texas 79424
PH. (806) 300-0104 FAX. (806) 797 0947

Figure 4.1 – Confirmation Concentration Map (Floor)

Osage SWD
32.662800°, -104.474800°
Eddy County, New Mexico



Site Location

NMOSE POD Location

N

Project No.	AR217019
Scale:	1" : 300'
Source:	Google Earth
Date:	3/9/2021

Terracon
Consulting Engineers & Scientists
5847 50th Street Lubbock, Texas 79424
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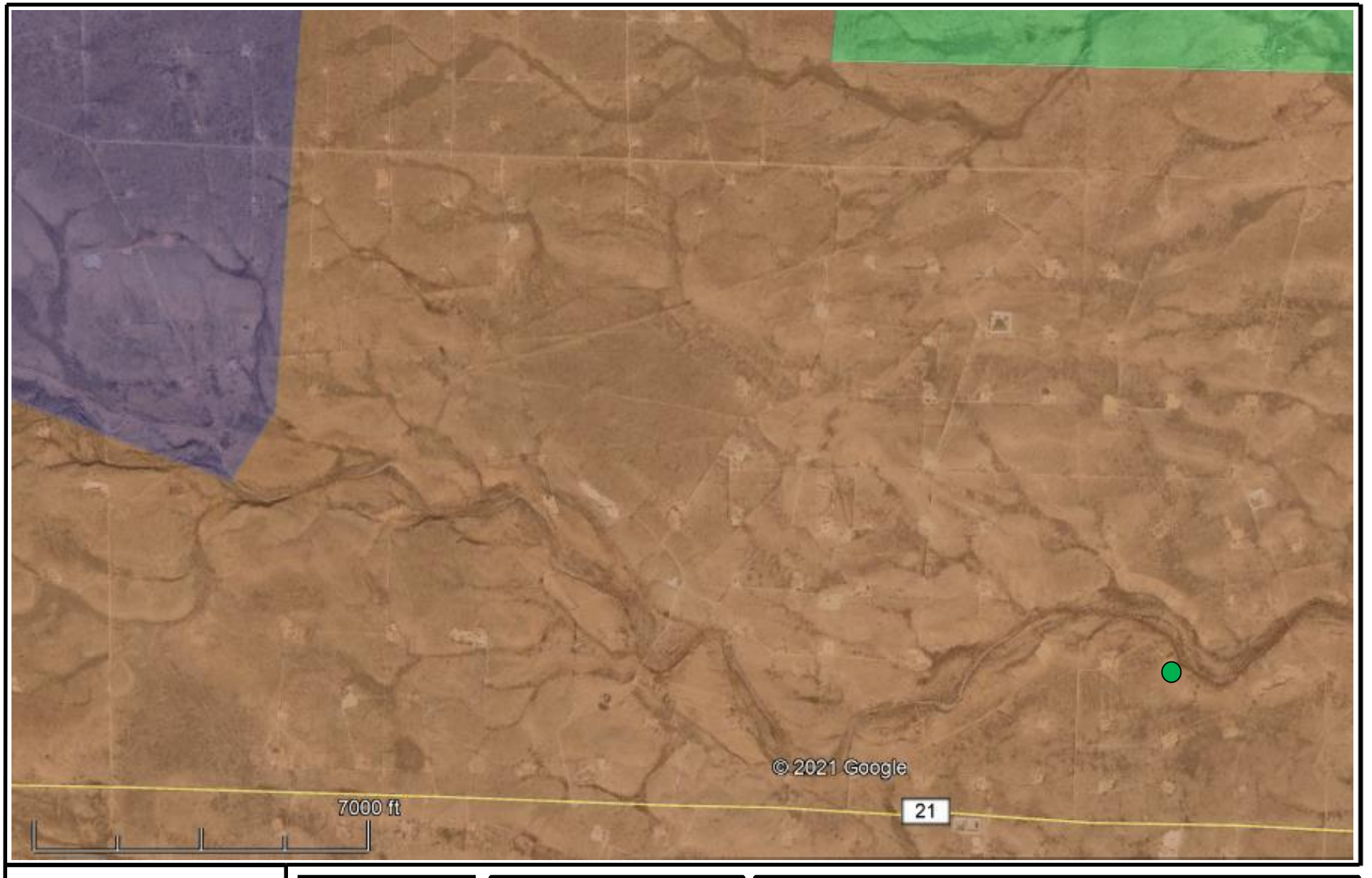
Figure 5 – NMOSE POD Location Map

Osage SWD
32.662800,-104.474800
Eddy County, New Mexico



Site Location
Low Karst
Medium Karst
High Karst
N

Project No.	AR217019
Scale:	1" : 3,500'
Source:	Google Earth
Date:	3/9/2021

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Consulting Engineers & Scientists
5847 50th Street Lubbock, Texas 79424
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Figure 6 – Cave Karst Public UCP

Osage SWD
32.662800,-104.474800
Eddy County, New Mexico

APPENDIX B – TABLES & PROCEDURES

Exhibit 1 – Soil Sampling Procedures
Table 1 – Closure Criteria for Soils Impacted by a Release
Table 2 – Soil Sample Analytical Results
Chloride & TPH Field Screening Summary

EXHIBIT 1

SOIL SAMPLING PROCEDURES

Soil Sampling Procedures

Soil sampling for laboratory analysis was conducted according to NMOCD-approved industry standards or other NMOCD-approved procedures. Accepted NMOCD soil sampling procedures and laboratory analytical methods are as follows:

- Collect samples in clean, air-tight glass jars supplied by the laboratory which will conduct the analysis or from a reliable laboratory equipment supplier.
- Label the samples with a unique code for each sample.
- Cool and store samples with cold packs or on ice.
- Promptly ship sample to the lab for analysis following chain of custody procedures.
- All samples must be analyzed within the holding times for the laboratory analytical method specified by EPA.

Analytical Methods

All soil samples must be analyzed using EPA methods, or by other NMOCD-approved methods and must be analyzed within the holding time specified by the method. Below are laboratory analytical methods the selected laboratory will use for analysis of soil samples analyzed for petroleum related constituents.

- Chloride – EPA Method 300.0
- Total Petroleum Hydrocarbons – TPH (GRO+DRO+MRO) – EPA Method 8015M
- Benzene, toluene, ethylbenzene and total xylenes (BTEX) – EPA Method 8021B
- Benzene – EPA Method 8021B

Table 1 Closure Criteria for Soils Impacted by a Release			
Minimum depth below any point within the horizontal boundary of the release to ground water less than 10,000 mg/L TDS	**Constituent**	**Method***	**Limit****
≤50 feet	Chloride***	EPA 300.0 or SM4500 Cl B	600 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015 M	100 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg
51 feet-100 feet	Chloride***	EPA 300.0 or SM4500 Cl B	10,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015 M	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015 M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg
>100 feet	Chloride***	EPA 300.0 or SM4500 Cl B	20,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015 M	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015 M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg

***Numerical limits or natural background level, whichever is greater*

****This applies to releases of produced water or other fluids, which may contain chloride*

TABLE 2
SOIL SAMPLE ANALYTICAL RESULTS - BTEX[1], Chloride[2], and TPH[3]
Osage SWD
Terracon Project No. AR217019

Sample I.D.	Sample Depth (bgs)	Sample Type	Sample Date	BTEX (mg/kg)	Chloride (mg/kg)	TPH (8015M) (mg/kg)			
						GRO	DRO	ORO	TOTAL
Confirmation Samples									
FS-1	1.5' - 2'	Confirmation	02/23/21	Benzene - ND Toluene - ND Ethylbenzene - ND Total Xylenes - ND Total BTEX - ND	261	ND	ND	ND	ND
FS-2	1.5' - 2'	Confirmation	02/23/21	Benzene - ND Toluene - ND Ethylbenzene - ND Total Xylenes - ND Total BTEX - ND	132	ND	ND	ND	ND
FS-3	1.5' - 2'	Confirmation	03/08/21	Benzene - ND Toluene - ND Ethylbenzene - ND Total Xylenes - ND Total BTEX - ND	127	ND	ND	ND	ND
FS-4	1.5' - 2'	Confirmation	03/08/21	Benzene - ND Toluene - ND Ethylbenzene - ND Total Xylenes - ND Total BTEX - ND	252	ND	ND	ND	ND
FS-5	1.5' - 2'	Confirmation	03/08/21	Benzene - ND Toluene - ND Ethylbenzene - ND Total Xylenes - ND Total BTEX - ND	241	ND	ND	ND	ND
FS-6	1.5' - 2'	Confirmation	03/08/21	Benzene - ND Toluene - ND Ethylbenzene - ND Total Xylenes - ND Total BTEX - ND	113	ND	ND	ND	ND
FS-7	1.5' - 2'	Confirmation	03/08/21	Benzene - ND Toluene - ND Ethylbenzene - ND Total Xylenes - ND Total BTEX - ND	131	ND	ND	ND	ND
FS-8	1.5' - 2'	Confirmation	03/08/21	Benzene - ND Toluene - ND Ethylbenzene - ND Total Xylenes - ND Total BTEX - ND	290	ND	ND	ND	ND
FS-9	1.5' - 2'	Confirmation	02/23/21	Benzene - ND Toluene - ND Ethylbenzene - ND Total Xylenes - ND Total BTEX - ND	172	ND	ND	ND	ND
New Mexico Oil Conservation Division (NMOCD) Remediation and Delineation Standards*				**Benzene - 10 Toluene - N/A Ethylbenzene - N/A Total Xylenes - N/A Total BTEX - 50**	**600**	**N/A**			**100**
NMOCD Remediation and Delineation Standards[5] (Applicable for Soils at Depths Greater than 4 ft. Below Grade Surface)				**Benzene - 10 Toluene - N/A Ethylbenzene - N/A Total Xylenes - N/A Total BTEX - 50**	**600**	**N/A**			**100**

1. BTEX = Benzene, toluene, ethylbenzene, total xylenes analyzed by EPA Method 8021B
2. Chloride = Chloride analyzed by EPA Method 300.
3. TPH = Total petroleum hydrocarbons analyzed by EPA Method 8015M (GRO/DRO/ORO)
* = NMOCD Remediation and Delineation Standards are proposed in 19.15.29.12 NMAC - N, 8/14/2018
< = Constituent not detected above the indicated laboratory SDL
NA = Not Analyzed
N/A= No Applicable reporting standards
Bold denotes concentrations that exceed the New Mexico Oil Conservation Division (NMOCD) Remediation and Delineation Standards.

TABLE 2
SOIL SAMPLE ANALYTICAL RESULTS - BTEX[1], Chloride[2], and TPH[3]
Osage SWD
Terracon Project No. AR217019

Sample I.D.	Sample Depth (bgs)	Sample Type	Sample Date	BTEX (mg/kg)	Chloride (mg/kg)	TPH (8015M) (mg/kg)			
						GRO	DRO	ORO	TOTAL
Confirmation Samples									
FS-1	1.5' - 2'	Composite	02/23/21	Benzene - <0.00201 Toluene - <0.00201 Ethylbenzene - <0.00201 Total Xylenes - <0.00201 Total BTEX - <0.00201	261	<50.0	<50.0	<50.0	<50.0
FS-2	1.5' - 2'	Composite	02/23/21	Benzene - <0.00200 Toluene - <0.00200 Ethylbenzene - <0.00200 Total Xylenes - <0.00200 Total BTEX - <0.00200	132	<49.8	<49.8	<49.8	<49.8
FS-3	1.5' - 2'	Composite	03/08/21	Benzene - <0.00198 Toluene - <0.00198 Ethylbenzene - <0.00198 Total Xylenes - <0.00198 Total BTEX - <0.00198	127	<50.0	<50.0	<50.0	<50.0
FS-4	1.5' - 2'	Composite	03/08/21	Benzene - <0.00200 Toluene - <0.00200 Ethylbenzene - <0.00200 Total Xylenes - <0.00200 Total BTEX - <0.00200	252	<49.9	<49.9	<49.9	<49.9
FS-5	1.5' - 2'	Composite	03/08/21	Benzene - <0.00199 Toluene - <0.00199 Ethylbenzene - <0.00199 Total Xylenes - <0.00199 Total BTEX - <0.00199	241	<50.0	<50.0	<50.0	<50.0
FS-6	1.5' - 2'	Composite	03/08/21	Benzene - <0.00199 Toluene - <0.00199 Ethylbenzene - <0.00199 Total Xylenes - <0.00199 Total BTEX - <0.00199	113	<49.9	<49.9	<49.9	<49.9
FS-7	1.5' - 2'	Composite	03/08/21	Benzene - <0.00199 Toluene - <0.00199 Ethylbenzene - <0.00199 Total Xylenes - <0.00199 Total BTEX - <0.00199	131	<49.9	<49.9	<49.9	<49.9
FS-8	1.5' - 2'	Composite	03/08/21	Benzene - <0.00199 Toluene - <0.00199 Ethylbenzene - <0.00199 Total Xylenes - <0.00199 Total BTEX - <0.00199	290	<49.9	<49.9	<49.9	<49.9
FS-9	1.5' - 2'	Composite	02/23/21	Benzene - <0.00199 Toluene - <0.00199 Ethylbenzene - <0.00199 Total Xylenes - <0.00199 Total BTEX - <0.00199	172	<50.0	<50.0	<50.0	<50.0
New Mexico Oil Conservation Division (NMOCD) Remediation and Delineation Standards*				**Benzene - 10** **Toluene - N/A** **Ethylbenzene - N/A** **Total Xylenes - N/A** **Total BTEX - 50**	**600**	**N/A**			**100**
NMOCD Remediation and Delineation Standards[5] (Applicable for Soils at Depths Greater than 4 ft. Below Grade Surface)				**Benzene - 10** **Toluene - N/A** **Ethylbenzene - N/A** **Total Xylenes - N/A** **Total BTEX - 50**	**600**	**N/A**			**100**

1. BTEX = Benzene, toluene, ethylbenzene, total xylenes analyzed by EPA Method 8021B
2. Chloride = Chloride analyzed by EPA Method 300.
3. TPH = Total petroleum hydrocarbons analyzed by EPA Method 8015M (GRO/DRO/ORO)
* = NMOCD Remediation and Delineation Standards are proposed in 19.15.29.12 NMAC - N, 8/14/2018
< = Constituent not detected above the indicated laboratory SDL
NA = Not Analyzed
N/A= No Applicable reporting standards
Bold denotes concentrations that exceed the New Mexico Oil Conservation Division (NMOCD) Remediation and Delineation Standards.

TABLE 2
SOIL SAMPLE ANALYTICAL RESULTS - BTEX[1], Chloride[2], and TPH[3]
Osage SWD
Terracon Project No. AR217019

Sample I.D.	Sample Depth (bgs)	Sample Type	Sample Date	BTEX (mg/kg)	Chloride (mg/kg)	TPH (8015M) (mg/kg)			
						GRO	DRO	ORO	TOTAL
Confirmation Samples									
FS-10	1.5' - 2'	Composite	07/17/21	Benzene - <0.00199 Toluene - <0.00199 Ethylbenzene - 0.00231 Total Xylenes - <0.00398 Total BTEX - <0.00398	<4.97	<50.0	<50.0	<50.0	<50.0
FS-11	1.5' - 2'	Composite	07/17/21	Benzene - <0.00198 Toluene - <0.00198 Ethylbenzene - <0.00198 Total Xylenes - <0.00396 Total BTEX - <0.00396	<4.95	<50.0	<50.0	<50.0	<50.0
FS-12	1.5' - 2'	Composite	07/17/21	Benzene - <0.00198 Toluene - <0.00198 Ethylbenzene - <0.00198 Total Xylenes - <0.00396 Total BTEX - <0.00396	9.18	<49.9	<49.9	<49.9	<49.9
FS-13	1.5' - 2'	Composite	07/17/21	Benzene - <0.00202 Toluene - <0.00202 Ethylbenzene - <0.00202 Total Xylenes - <0.00403 Total BTEX - <0.00403	<4.95	<49.9	<49.9	<49.9	<49.9
FS-14	1.5' - 2'	Composite	07/17/21	Benzene - <0.00200 Toluene - <0.00200 Ethylbenzene - <0.00200 Total Xylenes - <0.00399 Total BTEX - <0.00399	5.00	<49.9	<49.9	<49.9	<49.9
FS-15	1.5' - 2'	Composite	07/17/21	Benzene - <0.00199 Toluene - <0.00199 Ethylbenzene - <0.00199 Total Xylenes - <0.00398 Total BTEX - <0.00398	5.00	<50.0	<50.0	<50.0	<50.0
FS-16	1.5' - 2'	Composite	07/17/21	Benzene - <0.00200 Toluene - <0.00200 Ethylbenzene - <0.00200 Total Xylenes - <0.00400 Total BTEX - <0.00400	<4.99	<50.0	<50.0	<50.0	<50.0
FS-17	1.5' - 2'	Composite	07/17/21	Benzene - <0.00201 Toluene - <0.00201 Ethylbenzene - <0.00201 Total Xylenes - <0.00402 Total BTEX - <0.00402	<4.99	<49.9	<49.9	<49.9	<49.9
FS-18	1.5' - 2'	Composite	07/17/21	Benzene - 0.00213 Toluene - <0.00201 Ethylbenzene - <0.00201 Total Xylenes - <0.00402 Total BTEX - <0.00402	<4.98	<49.9	<49.9	<49.9	<49.9
FS-19	1.5' - 2'	Composite	07/17/21	Benzene - <0.00201 Toluene - <0.00201 Ethylbenzene - <0.00201 Total Xylenes - <0.00402 Total BTEX - <0.00402	<5.04	<50.0	<50.0	<50.0	<50.0
New Mexico Oil Conservation Division (NMOCD) Remediation and Delineation Standards*				**Benzene - 10 Toluene - N/A Ethylbenzene - N/A Total Xylenes - N/A Total BTEX - 50**	**600**	**N/A**			**100**
NMOCD Remediation and Delineation Standards[5] (Applicable for Soils at Depths Greater than 4 ft. Below Grade Surface)				**Benzene - 10 Toluene - N/A Ethylbenzene - N/A Total Xylenes - N/A Total BTEX - 50**	**600**	**N/A**			**100**

1. BTEX = Benzene, toluene, ethylbenzene, total xylenes analyzed by EPA Method 8021B
2. Chloride = Chloride analyzed by EPA Method 300.
3. TPH = Total petroleum hydrocarbons analyzed by EPA Method 8015M (GRO/DRO/ORO)
* = NMOCD Remediation and Delineation Standards are proposed in 19.15.29.12 NMAC - N, 8/14/2018
< = Constituent not detected above the indicated laboratory SDL
NA = Not Analyzed
N/A= No Applicable reporting standards
Bold denotes concentrations that exceed the New Mexico Oil Conservation Division (NMOCD) Remediation and Delineation Standards.

TABLE 2
SOIL SAMPLE ANALYTICAL RESULTS - BTEX[1], Chloride[2], and TPH[3]
Osage SWD
Terracon Project No. AR217019

Sample I.D.	Sample Depth (bgs)	Sample Type	Sample Date	BTEX (mg/kg)	Chloride (mg/kg)	TPH (8015M) (mg/kg)			
						GRO	DRO	ORO	TOTAL
Confirmation Samples									
FS-20	1.5' - 2'	Composite	07/17/21	Benzene - <0.00199 Toluene - <0.00199 Ethylbenzene - <0.00199 Total Xylenes - <0.00398 Total BTEX - <0.00398	<24.8	<49.7	<49.7	<49.7	<49.7
FS-21	1.5' - 2'	Composite	07/17/21	Benzene - <0.00200 Toluene - <0.00200 Ethylbenzene - <0.00200 Total Xylenes - <0.00399 Total BTEX - <0.00399	5.22	<49.9	<49.9	<49.9	<49.9
P-1	1'-1.5'	Composite	07/17/21	Benzene - <0.00200 Toluene - <0.00200 Ethylbenzene - <0.00200 Total Xylenes - <0.00399 Total BTEX - <0.00399	<5.05	<50.0	<50.0	<50.0	<50.0
P-2	1'-1.5'	Composite	07/17/21	Benzene - 0.00201 Toluene - <0.00201 Ethylbenzene - <0.00201 Total Xylenes - <0.00402 Total BTEX - <0.00402	<4.99	<49.8	<49.8	<49.8	<49.8
P-3	1'-1.5'	Composite	07/17/21	Benzene - 0.00199 Toluene - <0.00199 Ethylbenzene - <0.00199 Total Xylenes - <0.00398 Total BTEX - <0.00398	<4.95	<50.0	<50.0	<50.0	<50.0
P-4	1'-1.5'	Composite	07/17/21	Benzene - <0.00200 Toluene - <0.00200 Ethylbenzene - <0.00200 Total Xylenes - <0.00400 Total BTEX - <0.00400	5.31	<50.0	<50.0	<50.0	<50.0
P-5	1'-1.5'	Composite	07/17/21	Benzene - <0.00199 Toluene - <0.00199 Ethylbenzene - <0.00199 Total Xylenes - <0.00398 Total BTEX - <0.00398	<5.04	<49.8	<49.8	<49.8	<49.8
P-6	1'-1.5'	Composite	07/17/21	Benzene - <0.00198 Toluene - <0.00198 Ethylbenzene - <0.00198 Total Xylenes - <0.00396 Total BTEX - <0.00396	<5.05	<49.7	<49.7	<49.7	<49.7
P-7	1'-1.5'	Composite	07/17/21	Benzene - <0.00200 Toluene - <0.00200 Ethylbenzene - 0.00389 Total Xylenes - <0.00399 Total BTEX - 0.00641	5.42	<49.9	<49.9	<49.9	<49.9
P-8	1'-1.5'	Composite	07/17/21	Benzene - <0.00198 Toluene - <0.00198 Ethylbenzene - <0.00198 Total Xylenes - <0.00396 Total BTEX - <0.00396	<5.02	<50.0	<50.0	<50.0	<50.0
P-9	1'-1.5'	Composite	07/17/21	Benzene - <0.00200 Toluene - <0.00200 Ethylbenzene - <0.00200 Total Xylenes - <0.00400 Total BTEX - <0.00400	87.6	<50.0	<50.0	<50.0	<50.0
P-10	1'-1.5'	Composite	07/17/21	Benzene - <0.00201 Toluene - <0.00201 Ethylbenzene - <0.00201 Total Xylenes - <0.00402 Total BTEX - <0.00402	88.9	<49.9	79.5	<49.9	79.5
New Mexico Oil Conservation Division (NMOCD) Remediation and Delineation Standards*				**Benzene - 10 Toluene - N/A Ethylbenzene - N/A Total Xylenes - N/A Total BTEX - 50**	**600**	**N/A**			**100**
NMOCD Remediation and Delineation Standards[5] (Applicable for Soils at Depths Greater than 4 ft. Below Grade Surface)				**Benzene - 10 Toluene - N/A Ethylbenzene - N/A Total Xylenes - N/A Total BTEX - 50**	**600**	**N/A**			**100**

1. BTEX = Benzene, toluene, ethylbenzene, total xylenes analyzed by EPA Method 8021B
2. Chloride = Chloride analyzed by EPA Method 300.
3. TPH = Total petroleum hydrocarbons analyzed by EPA Method 8015M (GRO/DRO/ORO)
* = NMOCD Remediation and Delineation Standards are proposed in 19.15.29.12 NMAC - N, 8/14/2018
< = Constituent not detected above the indicated laboratory SDL
NA = Not Analyzed
N/A= No Applicable reporting standards
Bold denotes concentrations that exceed the New Mexico Oil Conservation Division (NMOCD) Remediation and Delineation Standards.

Terracon
Consulting Engineers & Scientists

Project Name: OSAGE SWD RELEASE
Project No.: AR217019
Field Personel: Bryant McBroom
Date: 2/4/2021

Chloride & TPH Field Screening Summary

Sample ID	Depth (ft)	Sample Type (Floor, Wall, HA)	Soil (g)	Water (g)	Soil/Water Ratio	$AgNO_3$ (mL)	Chloride (ppm)	PID
FS-1	2'	Floor	10.01	29.99	3.00	0.13	389	
FS-2	2'	Floor	9.96	29.97	3.01	0.12	361	
FS-3	2'	Floor	10.08	30.02	2.98	0.55	1,637	
FS-4	2'	Floor	10.06	30.34	3.02	0.48	1,447	
FS-5	2'	Floor	10	30.03	3.00	0.82	2,462	
FS-6	2'	Floor	10.02	30.12	3.01	0.25	751	
FS-7	2'	Floor	9.94	30.1	3.03	0.35	1,060	
FS-8	2'	Floor	10.08	30.16	2.99	0.38	1,137	
FS-9	2'	Floor	10.04	30.03	2.99	0.11	329	

≤ 50ft 600

57-100 10,000

> 100 20,000

Nearest Two GW wells measure @ 90' and 80' So we're clear for "On pad" limits.

APPENDIX C – PHOTOGRAPHIC LOG

Osage SWD Spill ■ Eddy County, New Mexico
Date Photos Taken: April 9, 2021 ■ Terracon Project No. AR217019

PHOTO 1: View of the release, site sign and tank battery, facing east. 01/22/2021

PHOTO 2: View of the release, facing northeast. 01/22/2021

Osage Boyd SWD Spill■ Eddy County, New Mexico
Date Photos Taken: April 9, 2021 ■ Terracon Project No. AR217019

PHOTO 3: View of the release, facing north. 1/22/2021

PHOTO 4: View of the release during scraping, facing southwest. 1/22/2021

Osage Boyd SWD Spill■ Eddy County, New Mexico
Date Photos Taken: April 9, 2021 ■ Terracon Project No. AR217019

PHOTO 5: View of the release, facing south. 1/22/2021

PHOTO 6: View of the excavated area and tank battery, facing southeast. 04/09/2021

Osage Boyd SWD Spill■ Eddy County, New Mexico
Date Photos Taken: April 9, 2021 ■ Terracon Project No. AR217019

PHOTO 7: View of the excavated area and tank battery, facing south. 04/09/2021

PHOTO 8: View of the excavated area and tank battery, facing south. 04/09/2021

Osage Boyd SWD Spill■ Eddy County, New Mexico
Date Photos Taken: April 9, 2021 ■ Terracon Project No. AR217019

PHOTO 9: View of the excavated area and tank battery, facing southwest. 04/09/2021

PHOTO 10: View of the excavated area, facing southeast. 04/09/2021

Osage Boyd SWD Spill■ Eddy County, New Mexico
Date Photos Taken: April 9, 2021 ■ Terracon Project No. AR217019

PHOTO 11: View of the excavated area, facing plain. 04/09/2021

PHOTO 12: View of the excavated area, facing north.

Osage Boyd SWD Spill ■ Eddy County, New Mexico
Date Photos Taken: April 9, 2021 ■ Terracon Project No. AR217019

PHOTO 13: View of the excavated area and tank battery, facing west. 04/09/2021

PHOTO 14: View of the excavated area facing west. 04/09/2021

Osage Boyd SWD Spill ■ Eddy County, New Mexico
Date Photos Taken: April 9, 2021 ■ Terracon Project No. AR217019

PHOTO 15: View of the excavated area, facing northeast. 04/09/2021

PHOTO 16: View of the excavated area, facing southwest. 04/09/2021

PHOTO 17: View of the excavated area and tank battery, facing northwest. 04/09/2021

PHOTO 18: View of the excavated area and wellhead, facing northeast. 04/09/2021

Osage Boyd SWD Spill■ Eddy County, New Mexico
Date Photos Taken: April 9, 2021 ■ Terracon Project No. AR217019

PHOTO 19: View of the excavated area, facing northeast. 04/09/2021

APPENDIX D – ANALYTICAL REPORT AND CHAIN OF CUSTODY

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Certificate of Analysis Summary 689019

Terracon-Lubbock, Lubbock, TX

Project Name: Osage SWD Spill

Project Id: AR217019
Contact: Joseph Guesnier
Project Location:

Date Received in Lab: Tue 02.23.2021 17:16
Report Date: 03.01.2021 18:52
Project Manager: Jessica Kramer

Analysis Requested											
	Lab Id:	689019-001		689019-002		689019-003					
	Field Id:	FS-1		FS-2		FS-9					
	Depth:	1.5-2 ft		1.5-2 ft		1.5-2 ft					
	Matrix:	SOIL		SOIL		SOIL					
	Sampled:	02.23.2021 12:00		02.23.2021 12:05		02.23.2021 12:10					
BTEX by EPA 8021B SUB: T104704400-20-21	***Extracted:***	02.26.2021 16:00		02.26.2021 16:00		02.26.2021 16:00					
	Analyzed:	02.27.2021 03:19		02.27.2021 03:45		02.27.2021 04:11					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Benzene		<0.00201	0.00201	<0.00200	0.00200	<0.00199	0.00199				
Toluene		<0.00201	0.00201	<0.00200	0.00200	<0.00199	0.00199				
Ethylbenzene		<0.00201	0.00201	<0.00200	0.00200	<0.00199	0.00199				
m,p-Xylenes		<0.00402	0.00402	<0.00399	0.00399	<0.00398	0.00398				
o-Xylene		<0.00201	0.00201	<0.00200	0.00200	<0.00199	0.00199				
Total Xylenes		<0.00201	0.00201	<0.00200	0.00200	<0.00199	0.00199				
Total BTEX		<0.00201	0.00201	<0.00200	0.00200	<0.00199	0.00199				
Chloride by EPA 300 SUB: T104704400-20-21	***Extracted:***	02.28.2021 17:45		02.28.2021 17:45		02.28.2021 17:45					
	Analyzed:	03.01.2021 14:59		03.01.2021 15:15		03.01.2021 15:20					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		261	5.04	132	5.02	172	4.98				
TPH by Texas1005 SUB: T104704400-20-21	***Extracted:***	02.27.2021 11:00		02.27.2021 11:00		02.27.2021 11:00					
	Analyzed:	02.28.2021 00:42		02.28.2021 01:46		02.28.2021 02:07					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL				
C6-C12 Range Hydrocarbons		<50.0	50.0	<49.8	49.8	<50.0	50.0				
>C12-C28 Range Hydrocarbons		<50.0	50.0	<49.8	49.8	<50.0	50.0				
>C28-C35 Range Hydrocarbons		<50.0	50.0	<49.8	49.8	<50.0	50.0				
Total TPH 1005		<50.0	50.0	<49.8	49.8	<50.0	50.0				

BRL - Below Reporting Limit

Jessica Kramer

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

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Analytical Report 689019

for

Terracon-Lubbock

Project Manager: Joseph Guesnier

Osage SWD Spill

AR217019

03.01.2021

Collected By: Client

6701 Aberdeen, Suite 9 Lubbock, TX 79424

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-38), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2020-014), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-26), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-18)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-24)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-20-21)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-20-8)
Xenco-Tampa: Florida (E87429), North Carolina (483)

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03.01.2021

Project Manager: **Joseph Guesnier**
Terracon-Lubbock
5827 50th st, Suite 1
Lubbock, TX 79424

Reference: Eurofins Xenco, LLC Report No(s): **689019**
Osage SWD Spill
Project Address:

Joseph Guesnier:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the Eurofins Xenco, LLC Report Number(s) 689019. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by Eurofins Xenco, LLC. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 689019 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting Eurofins Xenco, LLC to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Jessica Kramer

Jessica Kramer
Project Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

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Sample Cross Reference 689019

Terracon-Lubbock, Lubbock, TX

Osage SWD Spill

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
FS-1	S	02.23.2021 12:00	1.5 - 2 ft	689019-001
FS-2	S	02.23.2021 12:05	1.5 - 2 ft	689019-002
FS-9	S	02.23.2021 12:10	1.5 - 2 ft	689019-003

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CASE NARRATIVE

Client Name: Terracon-Lubbock

Project Name: Osage SWD Spill

Project ID: *AR217019*
Work Order Number(s): *689019*

Report Date: *03.01.2021*
Date Received: *02.23.2021*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

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Certificate of Analytical Results 689019

Terracon-Lubbock, Lubbock, TX

Osage SWD Spill

Sample Id: **FS-1** Matrix: Soil Date Received:02.23.2021 17:16

Lab Sample Id: 689019-001 Date Collected: 02.23.2021 12:00 Sample Depth: 1.5 - 2 ft

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: SPC

Analyst: CHE Date Prep: 02.28.2021 17:45 % Moisture:

Seq Number: 3152112 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**261**	5.04	mg/kg	03.01.2021 14:59		1

Analytical Method: TPH by Texas1005 Prep Method: TX1005P

Tech: DVM

Analyst: ARM Date Prep: 02.27.2021 11:00 % Moisture:

Seq Number: 3152056 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C12 Range Hydrocarbons	PHC612	<50.0	50.0	mg/kg	02.28.2021 00:42	U	1
>C12-C28 Range Hydrocarbons	PHCG1228	<50.0	50.0	mg/kg	02.28.2021 00:42	U	1
>C28-C35 Range Hydrocarbons	PHCG2835	<50.0	50.0	mg/kg	02.28.2021 00:42	U	1
Total TPH 1005	PHC635	<50.0	50.0	mg/kg	02.28.2021 00:42	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
o-Terphenyl	84-15-1	122	%	70-130	02.28.2021 00:42	
1-Chlorooctane	111-85-3	110	%	70-130	02.28.2021 00:42	

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Certificate of Analytical Results 689019

Terracon-Lubbock, Lubbock, TX

Osage SWD Spill

Sample Id: **FS-1**
Matrix: Soil
Date Received:02.23.2021 17:16
Lab Sample Id: 689019-001
Date Collected: 02.23.2021 12:00
Sample Depth: 1.5 - 2 ft

Analytical Method: BTEX by EPA 8021B
Prep Method: SW5035A
Tech: MNR
Analyst: MNR
Seq Number: 3151973
Date Prep: 02.26.2021 16:00
% Moisture:
Basis: Wet Weight
SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	02.27.2021 03:19	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	02.27.2021 03:19	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	02.27.2021 03:19	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	02.27.2021 03:19	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	02.27.2021 03:19	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	02.27.2021 03:19	U	1
Total BTEX		<0.00201	0.00201	mg/kg	02.27.2021 03:19	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	76	%	70-130	02.27.2021 03:19	
4-Bromofluorobenzene	460-00-4	113	%	70-130	02.27.2021 03:19	

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Certificate of Analytical Results 689019

Terracon-Lubbock, Lubbock, TX

Osage SWD Spill

Sample Id: **FS-2** Matrix: Soil Date Received:02.23.2021 17:16

Lab Sample Id: 689019-002 Date Collected: 02.23.2021 12:05 Sample Depth: 1.5 - 2 ft

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: SPC

Analyst: CHE Date Prep: 02.28.2021 17:45 % Moisture:

Seq Number: 3152112 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**132**	5.02	mg/kg	03.01.2021 15:15		1

Analytical Method: TPH by Texas1005 Prep Method: TX1005P

Tech: DVM

Analyst: ARM Date Prep: 02.27.2021 11:00 % Moisture:

Seq Number: 3152056 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C12 Range Hydrocarbons	PHC612	<49.8	49.8	mg/kg	02.28.2021 01:46	U	1
>C12-C28 Range Hydrocarbons	PHCG1228	<49.8	49.8	mg/kg	02.28.2021 01:46	U	1
>C28-C35 Range Hydrocarbons	PHCG2835	<49.8	49.8	mg/kg	02.28.2021 01:46	U	1
Total TPH 1005	PHC635	<49.8	49.8	mg/kg	02.28.2021 01:46	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
o-Terphenyl	84-15-1	129	%	70-130	02.28.2021 01:46	
1-Chlorooctane	111-85-3	115	%	70-130	02.28.2021 01:46	

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Certificate of Analytical Results 689019

Terracon-Lubbock, Lubbock, TX

Osage SWD Spill

Sample Id: **FS-2**
Matrix: Soil
Date Received:02.23.2021 17:16
Lab Sample Id: 689019-002
Date Collected: 02.23.2021 12:05
Sample Depth: 1.5 - 2 ft

Analytical Method: BTEX by EPA 8021B
Prep Method: SW5035A
Tech: MNR
Analyst: MNR
Seq Number: 3151973
Date Prep: 02.26.2021 16:00
% Moisture:
Basis: Wet Weight
SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	02.27.2021 03:45	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	02.27.2021 03:45	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	02.27.2021 03:45	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	02.27.2021 03:45	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	02.27.2021 03:45	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	02.27.2021 03:45	U	1
Total BTEX		<0.00200	0.00200	mg/kg	02.27.2021 03:45	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	97	%	70-130	02.27.2021 03:45	
4-Bromofluorobenzene	460-00-4	101	%	70-130	02.27.2021 03:45	

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Certificate of Analytical Results 689019

Terracon-Lubbock, Lubbock, TX

Osage SWD Spill

Sample Id: **FS-9** Matrix: Soil Date Received:02.23.2021 17:16

Lab Sample Id: 689019-003 Date Collected: 02.23.2021 12:10 Sample Depth: 1.5 - 2 ft

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: SPC

Analyst: CHE Date Prep: 02.28.2021 17:45 % Moisture:

Seq Number: 3152112 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**172**	4.98	mg/kg	03.01.2021 15:20		1

Analytical Method: TPH by Texas1005 Prep Method: TX1005P

Tech: DVM

Analyst: ARM Date Prep: 02.27.2021 11:00 % Moisture:

Seq Number: 3152056 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C12 Range Hydrocarbons	PHC612	<50.0	50.0	mg/kg	02.28.2021 02:07	U	1
>C12-C28 Range Hydrocarbons	PHCG1228	<50.0	50.0	mg/kg	02.28.2021 02:07	U	1
>C28-C35 Range Hydrocarbons	PHCG2835	<50.0	50.0	mg/kg	02.28.2021 02:07	U	1
Total TPH 1005	PHC635	<50.0	50.0	mg/kg	02.28.2021 02:07	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
o-Terphenyl	84-15-1	126	%	70-130	02.28.2021 02:07	
1-Chlorooctane	111-85-3	113	%	70-130	02.28.2021 02:07	

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Certificate of Analytical Results 689019

Terracon-Lubbock, Lubbock, TX

Osage SWD Spill

Sample Id: **FS-9**
Matrix: Soil
Date Received:02.23.2021 17:16
Lab Sample Id: 689019-003
Date Collected: 02.23.2021 12:10
Sample Depth: 1.5 - 2 ft

Analytical Method: BTEX by EPA 8021B
Prep Method: SW5035A
Tech: MNR
Analyst: MNR
Seq Number: 3151973
Date Prep: 02.26.2021 16:00
% Moisture:
Basis: Wet Weight
SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	02.27.2021 04:11	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	02.27.2021 04:11	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	02.27.2021 04:11	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	02.27.2021 04:11	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	02.27.2021 04:11	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	02.27.2021 04:11	U	1
Total BTEX		<0.00199	0.00199	mg/kg	02.27.2021 04:11	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	116	%	70-130	02.27.2021 04:11	
1,4-Difluorobenzene	540-36-3	103	%	70-130	02.27.2021 04:11	

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Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit. **ND** Not Detected.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

QC Summary 689019

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Terracon-Lubbock

Osage SWD Spill

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3152112 — Matrix: Solid — Date Prep: 02.28.2021
MB Sample Id: 7722222-1-BLK — LCS Sample Id: 7722222-1-BKS — LCSD Sample Id: 7722222-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	254	102	255	102	90-110	0	20	mg/kg	03.01.2021 14:48	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3152112 — Matrix: Soil — Date Prep: 02.28.2021
Parent Sample Id: 689019-001 — MS Sample Id: 689019-001 S — MSD Sample Id: 689019-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	261	252	507	98	504	96	90-110	1	20	mg/kg	03.01.2021 15:04	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3152112 — Matrix: Soil — Date Prep: 02.28.2021
Parent Sample Id: 689357-017 — MS Sample Id: 689357-017 S — MSD Sample Id: 689357-017 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	119	248	359	97	358	96	90-110	0	20	mg/kg	03.01.2021 16:19	

Analytical Method: TPH by Texas1005 — Prep Method: TX1005P
Seq Number: 3152056 — Matrix: Solid — Date Prep: 02.27.2021
MB Sample Id: 7722179-1-BLK — LCS Sample Id: 7722179-1-BKS — LCSD Sample Id: 7722179-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
C6-C12 Range Hydrocarbons	<50.0	1000	1130	113	1180	118	75-125	4	20	mg/kg	02.27.2021 23:59	
>C12-C28 Range Hydrocarbons	<50.0	1000	1110	111	1190	119	75-125	7	20	mg/kg	02.27.2021 23:59	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
o-Terphenyl	127		125		126		70-130	%	02.27.2021 23:59
1-Chlorooctane	114		124		124		70-130	%	02.27.2021 23:59

Analytical Method: TPH by Texas1005 — Prep Method: TX1005P
Seq Number: 3152056 — Matrix: Solid — Date Prep: 02.27.2021
MB Sample Id: 7722179-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
>C28-C35 Range Hydrocarbons	<50.0	mg/kg	02.27.2021 23:37	

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

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QC Summary 689019

Terracon-Lubbock

Osage SWD Spill

Analytical Method: **TPH by Texas1005** Prep Method: TX1005P
Seq Number: 3152056 Matrix: Soil Date Prep: 02.27.2021
Parent Sample Id: 689019-001 MS Sample Id: 689019-001 S MSD Sample Id: 689019-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
C6-C12 Range Hydrocarbons	<49.9	998	1220	122	1180	118	75-125	3	30	mg/kg	02.28.2021 01:03	
>C12-C28 Range Hydrocarbons	<49.9	998	1220	122	1150	115	75-125	6	30	mg/kg	02.28.2021 01:03	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
o-Terphenyl	127		129		70-130	%	02.28.2021 01:03
1-Chlorooctane	127		129		70-130	%	02.28.2021 01:03

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5035A
Seq Number: 3151973 Matrix: Solid Date Prep: 02.26.2021
MB Sample Id: 7722133-1-BLK LCS Sample Id: 7722133-1-BKS LCSD Sample Id: 7722133-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.105	105	0.105	105	70-130	0	35	mg/kg	02.27.2021 00:15	
Toluene	<0.00200	0.100	0.102	102	0.103	103	70-130	1	35	mg/kg	02.27.2021 00:15	
Ethylbenzene	<0.00200	0.100	0.0974	97	0.0979	98	70-130	1	35	mg/kg	02.27.2021 00:15	
m,p-Xylenes	<0.00400	0.200	0.199	100	0.202	101	70-130	1	35	mg/kg	02.27.2021 00:15	
o-Xylene	<0.00200	0.100	0.0922	92	0.0950	95	70-130	3	35	mg/kg	02.27.2021 00:15	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	79		102		100		70-130	%	02.27.2021 00:15
4-Bromofluorobenzene	79		93		101		70-130	%	02.27.2021 00:15

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5035A
Seq Number: 3151973 Matrix: Soil Date Prep: 02.26.2021
Parent Sample Id: 689019-001 MS Sample Id: 689019-001 S MSD Sample Id: 689019-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0860	86	0.0908	91	70-130	5	35	mg/kg	02.27.2021 01:08	
Toluene	<0.00200	0.100	0.0829	83	0.0888	89	70-130	7	35	mg/kg	02.27.2021 01:08	
Ethylbenzene	<0.00200	0.100	0.0792	79	0.0845	85	70-130	6	35	mg/kg	02.27.2021 01:08	
m,p-Xylenes	<0.00401	0.200	0.160	80	0.172	86	70-130	7	35	mg/kg	02.27.2021 01:08	
o-Xylene	<0.00200	0.100	0.0739	74	0.0799	80	70-130	8	35	mg/kg	02.27.2021 01:08	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	101		100		70-130	%	02.27.2021 01:08
4-Bromofluorobenzene	107		103		70-130	%	02.27.2021 01:08

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

G89019

CHAIN OF CUSTODY RECORD

Terracon

Office Location	Lubbock	Laboratory:	Xenco
		Address:	6701 Aberdeen, Lubbock, Texas 79424
Project Manager	Joseph Guesnier	Phone: / Contact:	Joeph Guesnier (806) 544-9276
Sampler's Name	Bryant McBrayer	SRS #: / Sampler's Signature	
Project Number	AR217019	Project Name	Osage SWD Spill

ANALYSIS REQUESTED

LAB USE ONLY
DUE DATE:
TEMP OF COOLER WHEN RECEIVED (°C): 6-6/8-58
Page 1 of 1

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	No. Type of Containers: 2 oz Glass	4 oz Glass	5035 kit	40 ml VOA	Chloride (EPA Method 300)	TPH (TCEQ Method TX1005)	BTEX (EPA Method 8021B)	Lab Sample ID
S	2/23/2021	12:00		X	FS-1	1.5'	2'		X			X	X	X	G89019-001
S	2/23/2021	12:05		X	FS-2	1.5'	2'		X			X	X	X	-002
S	2/23/2021	12:10		X	FS-9	1.5'	2'		X			X	X	X	-003

TURNAROUND TIME: ☑ Normal ☐ 48-Hour Rush ☐ 24-Hour Rush

TRRP Laboratory Review Checklist ☐ Yes ☐ No

Relinquished by (Signature)	Date:	Time:	Received by (Signature)	Date: 2/23/21	Time: 17:16
Relinquished by (Signature)	Date:	Time:	Received by (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by (Signature)	Date:	Time:

NOTES: Client: Spur

e-mail results to:
bryant.mcbrayer@terracon.com
erin.loyd@terracon.com
jrguesnier@terracon.com

Matrix: WW-Wastewater; W - Water; S - Soil; L - Liquid; A - Air Bag; C - Charcoal tube; SL - Sludge
Container: VOA - 40 ml vial; A/G - Amber Glass 1L; 250 ml = Glass wide mouth; P/O - Plastic or other: _____

Inter-Office Shipment

IOS Number : 78399

Date/Time: 02.25.2021
Lab# From: **Lubbock**
Lab# To: **Midland**

Created by: Michael J Turner
Delivery Priority:
Air Bill No.:

Please send report to: Jessica Kramer
Address: 6701 Aberdeen, Suite 9 Lubbock, TX 79424
E-Mail: jessica.kramer@eurofinset.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
689019-001	S	FS-1	02.23.2021 12:00	TX1005	TPH by Texas1005	03.01.2021	03.09.2021	JKR	PHCC12C28 PHCC28C3	
689019-001	S	FS-1	02.23.2021 12:00	SW8015MOD_NM	TPH by SW8015 Mod	HOLD	03.09.2021	JKR	PHCC10C28 PHCC28C3	
689019-001	S	FS-1	02.23.2021 12:00	E300_CL	Chloride by EPA 300	03.01.2021	03.23.2021	JKR	CL	
689019-001	S	FS-1	02.23.2021 12:00	SW8021B	BTEX by EPA 8021B	03.01.2021	03.09.2021	JKR	BR4FBZ BZ BZME EBZ	
689019-002	S	FS-2	02.23.2021 12:05	SW8021B	BTEX by EPA 8021B	03.01.2021	03.09.2021	JKR	BR4FBZ BZ BZME EBZ	
689019-002	S	FS-2	02.23.2021 12:05	SW8015MOD_NM	TPH by SW8015 Mod	HOLD	03.09.2021	JKR	PHCC10C28 PHCC28C3	
689019-002	S	FS-2	02.23.2021 12:05	E300_CL	Chloride by EPA 300	03.01.2021	03.23.2021	JKR	CL	
689019-002	S	FS-2	02.23.2021 12:05	TX1005	TPH by Texas1005	03.01.2021	03.09.2021	JKR	PHCC12C28 PHCC28C3	
689019-003	S	FS-9	02.23.2021 12:10	E300_CL	Chloride by EPA 300	03.01.2021	03.23.2021	JKR	CL	
689019-003	S	FS-9	02.23.2021 12:10	TX1005	TPH by Texas1005	03.01.2021	03.09.2021	JKR	PHCC12C28 PHCC28C3	
689019-003	S	FS-9	02.23.2021 12:10	SW8021B	BTEX by EPA 8021B	03.01.2021	03.09.2021	JKR	BR4FBZ BZ BZME EBZ	
689019-003	S	FS-9	02.23.2021 12:10	SW8015MOD_NM	TPH by SW8015 Mod	HOLD	03.09.2021	JKR	PHCC10C28 PHCC28C3	

Inter Office Shipment or Sample Comments:

Relinquished By: Jessica Kramer
Jessica Kramer

Date Relinquished: 02.25.2021

Received By: Jessica Kramer
Jessica Kramer

Date Received: 02.25.2021

Cooler Temperature: 1.0

Eurofins Xenco, LLC

Environment Testing Xenco

Inter Office Report- Sample Receipt Checklist

Sent To: Midland

IOS #: 78399

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient
Temperature Measuring device used :

Sent By: Michael J Turner **Date Sent:** 02.25.2021 09.50 AM

Received By: Jessica Kramer **Date Received:** 02.25.2021 02.25 PM

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	1	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received with appropriate temperature?	**Yes**	
#4 *Custody Seals intact on shipping container/ cooler?	**Yes**	
#5 *Custody Seals Signed and dated for Containers/coolers	**Yes**	
#6 *IOS present?	**Yes**	
#7 Any missing/extra samples?	**No**	
#8 IOS agrees with sample label(s)/matrix?	**Yes**	
#9 Sample matrix/ properties agree with IOS?	**Yes**	
#10 Samples in proper container/ bottle?	**Yes**	
#11 Samples properly preserved?	**Yes**	
#12 Sample container(s) intact?	**Yes**	
#13 Sufficient sample amount for indicated test(s)?	**Yes**	
#14 All samples received within hold time?	**Yes**	

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

NonConformance:

Corrective Action Taken:

Nonconformance Documentation

Contact: _____ **Contacted by :** _____ **Date:** _____

Checklist reviewed by: Jessica Kramer Date: 02.25.2021

Jessica Kramer

Eurofins Xenco, LLC

Prelogin/Nonconformance Report- Sample Log-In

Client: Terracon-Lubbock

Date/ Time Received: 02.23.2021 05.16.00 PM

Work Order #: 689019

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : IR-4

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	8.6	
#2 *Shipping container in good condition?	**N/A**	
#3 *Samples received on ice?	**No**	
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**	
#5 Custody Seals intact on sample bottles?	**N/A**	
#6*Custody Seals Signed and dated?	**N/A**	
#7 *Chain of Custody present?	**Yes**	
#8 Any missing/extra samples?	**No**	
#9 Chain of Custody signed when relinquished/ received?	**Yes**	
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**	
#11 Container label(s) legible and intact?	**Yes**	
#12 Samples in proper container/ bottle?	**Yes**	
#13 Samples properly preserved?	**Yes**	
#14 Sample container(s) intact?	**Yes**	
#15 Sufficient sample amount for indicated test(s)?	**Yes**	
#16 All samples received within hold time?	**Yes**	
#17 Subcontract of sample(s)?	**Yes**	Xenco Midland
#18 Water VOC samples have zero headspace?	**N/A**	

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: PH Device/Lot#:

Checklist completed by: Michael J Turner Date: 02.24.2021

Checklist reviewed by: Jessica Kramer Date: 02.26.2021

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Certificate of Analysis Summary 690916

Terracon-Lubbock, Lubbock, TX

Project Name: GENERAL NEW MEXICO PROJECT

Project Id: AR217019
Contact: Joseph Guesnier
Project Location: Osage SWD

Date Received in Lab: Mon 03.08.2021 16:50
Report Date: 03.15.2021 16:33
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	690916-001		690916-002		690916-003		690916-004		690916-005		690916-006	
	Field Id:	FS-3 (1.5-2)		FS-4 (1.5-2)		FS-5 (1.5-2)		FS-6 (1.5-2)		FS-7 (1.5-2)		FS-8 (1.5-2)	
	Depth:	1.5-2 ft		1.5-2 ft		1.5-2 ft		1.5-2 ft		1.5-2 ft		1.5-2 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	03.08.2021 10:00		03.08.2021 10:10		03.08.2021 10:20		03.08.2021 10:30		03.08.2021 10:40		03.08.2021 10:50	
BTEX by EPA 8021B SUB: T104704400-20-21	***Extracted:***	03.13.2021 10:15		03.13.2021 10:15		03.13.2021 10:15		03.13.2021 10:15		03.13.2021 10:15		03.13.2021 10:15	
	Analyzed:	03.13.2021 23:04		03.13.2021 23:24		03.13.2021 23:45		03.14.2021 00:05		03.14.2021 00:25		03.14.2021 00:46	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		<0.00198	0.00198	<0.00200	0.00200	<0.00199	0.00199	<0.00199	0.00199	<0.00199	0.00199	<0.00199	0.00199
Toluene		<0.00198	0.00198	<0.00200	0.00200	<0.00199	0.00199	<0.00199	0.00199	<0.00199	0.00199	<0.00199	0.00199
Ethylbenzene		<0.00198	0.00198	<0.00200	0.00200	<0.00199	0.00199	<0.00199	0.00199	<0.00199	0.00199	<0.00199	0.00199
m,p-Xylenes		<0.00397	0.00397	<0.00400	0.00400	<0.00398	0.00398	<0.00398	0.00398	<0.00398	0.00398	<0.00398	0.00398
o-Xylene		<0.00198	0.00198	<0.00200	0.00200	<0.00199	0.00199	<0.00199	0.00199	<0.00199	0.00199	<0.00199	0.00199
Xylenes, Total		<0.00198	0.00198	<0.00200	0.00200	<0.00199	0.00199	<0.00199	0.00199	<0.00199	0.00199	<0.00199	0.00199
Total BTEX		<0.00198	0.00198	<0.00200	0.00200	<0.00199	0.00199	<0.00199	0.00199	<0.00199	0.00199	<0.00199	0.00199
Chloride by EPA 300 SUB: T104704400-20-21	***Extracted:***	03.12.2021 16:00		03.12.2021 16:00		03.12.2021 16:00		03.12.2021 16:00		03.12.2021 16:00		03.12.2021 16:00	
	Analyzed:	03.12.2021 20:07		03.12.2021 20:13		03.12.2021 20:18		03.12.2021 20:24		03.12.2021 20:29		03.12.2021 20:35	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		127	5.00	252	25.2	241	24.8	113	25.2	131	24.8	290	24.8
TPH by SW8015 Mod SUB: T104704400-20-21	***Extracted:***	03.10.2021 17:00		03.10.2021 17:00		03.10.2021 17:00		03.10.2021 17:00		03.10.2021 17:00		03.10.2021 17:00	
	Analyzed:	03.11.2021 03:50		03.11.2021 04:11		03.11.2021 04:32		03.11.2021 04:53		03.11.2021 05:13		03.11.2021 05:34	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		<50.0	50.0	<49.9	49.9	<50.0	50.0	<49.9	49.9	<49.9	49.9	<49.9	49.9
Diesel Range Organics (DRO)		<50.0	50.0	<49.9	49.9	<50.0	50.0	<49.9	49.9	<49.9	49.9	<49.9	49.9
Motor Oil Range Hydrocarbons (MRO)		<50.0	50.0	<49.9	49.9	<50.0	50.0	<49.9	49.9	<49.9	49.9	<49.9	49.9
Total TPH		<50.0	50.0	<49.9	49.9	<50.0	50.0	<49.9	49.9	<49.9	49.9	<49.9	49.9

BRL - Below Reporting Limit

Jessica Kramer

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Analytical Report 690916

for

Terracon-Lubbock

Project Manager: Joseph Guesnier

GENERAL NEW MEXICO PROJECT

AR217019

03.15.2021

Collected By: Client

6701 Aberdeen, Suite 9 Lubbock, TX 79424

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-38), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2020-014), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-26), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-18)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-24)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-20-21)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-20-8)
Xenco-Tampa: Florida (E87429), North Carolina (483)

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03.15.2021

Project Manager: **Joseph Guesnier**
Terracon-Lubbock
5827 50th st, Suite 1
Lubbock, TX 79424

Reference: Eurofins Xenco, LLC Report No(s): **690916**
GENERAL NEW MEXICO PROJECT
Project Address: Osage SWD

Joseph Guesnier:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the Eurofins Xenco, LLC Report Number(s) 690916. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by Eurofins Xenco, LLC. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 690916 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting Eurofins Xenco, LLC to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Jessica Kramer

Jessica Kramer
Project Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

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Sample Cross Reference 690916

Terracon-Lubbock, Lubbock, TX

GENERAL NEW MEXICO PROJECT

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
FS-3 (1.5-2)	S	03.08.2021 10:00	1.5 - 2 ft	690916-001
FS-4 (1.5-2)	S	03.08.2021 10:10	1.5 - 2 ft	690916-002
FS-5 (1.5-2)	S	03.08.2021 10:20	1.5 - 2 ft	690916-003
FS-6 (1.5-2)	S	03.08.2021 10:30	1.5 - 2 ft	690916-004
FS-7 (1.5-2)	S	03.08.2021 10:40	1.5 - 2 ft	690916-005
FS-8 (1.5-2)	S	03.08.2021 10:50	1.5 - 2 ft	690916-006

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CASE NARRATIVE

Client Name: Terracon-Lubbock

Project Name: GENERAL NEW MEXICO PROJECT

Project ID: *AR217019*
Work Order Number(s): *690916*

Report Date: *03.15.2021*
Date Received: *03.08.2021*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

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Certificate of Analytical Results 690916

Terracon-Lubbock, Lubbock, TX

GENERAL NEW MEXICO PROJECT

Sample Id: **FS-3 (1.5-2)** Matrix: Soil Date Received:03.08.2021 16:50

Lab Sample Id: 690916-001 Date Collected: 03.08.2021 10:00 Sample Depth: 1.5 - 2 ft

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE

Analyst: CHE Date Prep: 03.12.2021 16:00 % Moisture:

Seq Number: 3153623 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**127**	5.00	mg/kg	03.12.2021 20:07		1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P

Tech: DVM

Analyst: ARM Date Prep: 03.10.2021 17:00 % Moisture:

Seq Number: 3153290 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	03.11.2021 03:50	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	03.11.2021 03:50	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	03.11.2021 03:50	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	03.11.2021 03:50	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	107	%	70-130	03.11.2021 03:50	
o-Terphenyl	84-15-1	97	%	70-130	03.11.2021 03:50	

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Certificate of Analytical Results 690916

Terracon-Lubbock, Lubbock, TX

GENERAL NEW MEXICO PROJECT

Sample Id: **FS-3 (1.5-2)**
Lab Sample Id: 690916-001
Matrix: Soil
Date Collected: 03.08.2021 10:00
Date Received: 03.08.2021 16:50
Sample Depth: 1.5 - 2 ft

Analytical Method: BTEX by EPA 8021B
Tech: KTL
Analyst: KTL
Seq Number: 3153561
Date Prep: 03.13.2021 10:15
Prep Method: SW5035A
% Moisture:
Basis: Wet Weight
SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	03.13.2021 23:04	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	03.13.2021 23:04	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	03.13.2021 23:04	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	03.13.2021 23:04	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	03.13.2021 23:04	U	1
Xylenes, Total	1330-20-7	<0.00198	0.00198	mg/kg	03.13.2021 23:04	U	1
Total BTEX		<0.00198	0.00198	mg/kg	03.13.2021 23:04	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	103	%	70-130	03.13.2021 23:04	
4-Bromofluorobenzene	460-00-4	110	%	70-130	03.13.2021 23:04	

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Certificate of Analytical Results 690916

Terracon-Lubbock, Lubbock, TX

GENERAL NEW MEXICO PROJECT

Sample Id: **FS-4 (1.5-2)** Matrix: Soil Date Received:03.08.2021 16:50

Lab Sample Id: 690916-002 Date Collected: 03.08.2021 10:10 Sample Depth: 1.5 - 2 ft

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE

Analyst: CHE Date Prep: 03.12.2021 16:00 % Moisture:

Seq Number: 3153623 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**252**	25.2	mg/kg	03.12.2021 20:13		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P

Tech: DVM

Analyst: ARM Date Prep: 03.10.2021 17:00 % Moisture:

Seq Number: 3153290 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	03.11.2021 04:11	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	03.11.2021 04:11	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	03.11.2021 04:11	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	03.11.2021 04:11	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	109	%	70-130	03.11.2021 04:11	
o-Terphenyl	84-15-1	99	%	70-130	03.11.2021 04:11	

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Certificate of Analytical Results 690916

Terracon-Lubbock, Lubbock, TX

GENERAL NEW MEXICO PROJECT

Sample Id: **FS-4 (1.5-2)** Matrix: Soil Date Received:03.08.2021 16:50

Lab Sample Id: 690916-002 Date Collected: 03.08.2021 10:10 Sample Depth: 1.5 - 2 ft

Analytical Method: BTEX by EPA 8021B Prep Method: SW5035A

Tech: KTL

Analyst: KTL Date Prep: 03.13.2021 10:15 % Moisture:

Seq Number: 3153561 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	03.13.2021 23:24	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	03.13.2021 23:24	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	03.13.2021 23:24	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	03.13.2021 23:24	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	03.13.2021 23:24	U	1
Xylenes, Total	1330-20-7	<0.00200	0.00200	mg/kg	03.13.2021 23:24	U	1
Total BTEX		<0.00200	0.00200	mg/kg	03.13.2021 23:24	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	110	%	70-130	03.13.2021 23:24	
1,4-Difluorobenzene	540-36-3	103	%	70-130	03.13.2021 23:24	

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Certificate of Analytical Results 690916

Terracon-Lubbock, Lubbock, TX

GENERAL NEW MEXICO PROJECT

Sample Id: **FS-5 (1.5-2)** Matrix: Soil Date Received:03.08.2021 16:50

Lab Sample Id: 690916-003 Date Collected: 03.08.2021 10:20 Sample Depth: 1.5 - 2 ft

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE

Analyst: CHE Date Prep: 03.12.2021 16:00 % Moisture:

Seq Number: 3153623 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**241**	24.8	mg/kg	03.12.2021 20:18		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P

Tech: DVM

Analyst: ARM Date Prep: 03.10.2021 17:00 % Moisture:

Seq Number: 3153290 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	03.11.2021 04:32	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	03.11.2021 04:32	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	03.11.2021 04:32	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	03.11.2021 04:32	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	110	%	70-130	03.11.2021 04:32	
o-Terphenyl	84-15-1	98	%	70-130	03.11.2021 04:32	

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Certificate of Analytical Results 690916

Terracon-Lubbock, Lubbock, TX

GENERAL NEW MEXICO PROJECT

Sample Id: **FS-5 (1.5-2)**
Lab Sample Id: 690916-003
Matrix: Soil
Date Collected: 03.08.2021 10:20
Date Received: 03.08.2021 16:50
Sample Depth: 1.5 - 2 ft

Analytical Method: BTEX by EPA 8021B
Tech: KTL
Analyst: KTL
Seq Number: 3153561
Date Prep: 03.13.2021 10:15
Prep Method: SW5035A
% Moisture:
Basis: Wet Weight
SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	03.13.2021 23:45	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	03.13.2021 23:45	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	03.13.2021 23:45	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	03.13.2021 23:45	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	03.13.2021 23:45	U	1
Xylenes, Total	1330-20-7	<0.00199	0.00199	mg/kg	03.13.2021 23:45	U	1
Total BTEX		<0.00199	0.00199	mg/kg	03.13.2021 23:45	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	112	%	70-130	03.13.2021 23:45	
1,4-Difluorobenzene	540-36-3	104	%	70-130	03.13.2021 23:45	

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Certificate of Analytical Results 690916

Terracon-Lubbock, Lubbock, TX

GENERAL NEW MEXICO PROJECT

Sample Id: **FS-6 (1.5-2)** Matrix: Soil Date Received:03.08.2021 16:50

Lab Sample Id: 690916-004 Date Collected: 03.08.2021 10:30 Sample Depth: 1.5 - 2 ft

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE

Analyst: CHE Date Prep: 03.12.2021 16:00 % Moisture:

Seq Number: 3153623 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**113**	25.2	mg/kg	03.12.2021 20:24		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P

Tech: DVM

Analyst: ARM Date Prep: 03.10.2021 17:00 % Moisture:

Seq Number: 3153290 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	03.11.2021 04:53	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	03.11.2021 04:53	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	03.11.2021 04:53	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	03.11.2021 04:53	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	108	%	70-130	03.11.2021 04:53	
o-Terphenyl	84-15-1	97	%	70-130	03.11.2021 04:53	

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Certificate of Analytical Results 690916

Terracon-Lubbock, Lubbock, TX

GENERAL NEW MEXICO PROJECT

Sample Id: **FS-6 (1.5-2)**
Lab Sample Id: 690916-004
Matrix: Soil
Date Collected: 03.08.2021 10:30
Date Received: 03.08.2021 16:50
Sample Depth: 1.5 - 2 ft

Analytical Method: BTEX by EPA 8021B
Tech: KTL
Analyst: KTL
Seq Number: 3153561
Date Prep: 03.13.2021 10:15
Prep Method: SW5035A
% Moisture:
Basis: Wet Weight
SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	03.14.2021 00:05	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	03.14.2021 00:05	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	03.14.2021 00:05	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	03.14.2021 00:05	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	03.14.2021 00:05	U	1
Xylenes, Total	1330-20-7	<0.00199	0.00199	mg/kg	03.14.2021 00:05	U	1
Total BTEX		<0.00199	0.00199	mg/kg	03.14.2021 00:05	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	110	%	70-130	03.14.2021 00:05	
1,4-Difluorobenzene	540-36-3	105	%	70-130	03.14.2021 00:05	

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Certificate of Analytical Results 690916

Terracon-Lubbock, Lubbock, TX

GENERAL NEW MEXICO PROJECT

Sample Id: **FS-7 (1.5-2)** Matrix: Soil Date Received:03.08.2021 16:50

Lab Sample Id: 690916-005 Date Collected: 03.08.2021 10:40 Sample Depth: 1.5 - 2 ft

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE

Analyst: CHE Date Prep: 03.12.2021 16:00 % Moisture:

Seq Number: 3153623 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**131**	24.8	mg/kg	03.12.2021 20:29		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P

Tech: DVM

Analyst: ARM Date Prep: 03.10.2021 17:00 % Moisture:

Seq Number: 3153290 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	03.11.2021 05:13	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	03.11.2021 05:13	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	03.11.2021 05:13	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	03.11.2021 05:13	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-130	03.11.2021 05:13	
o-Terphenyl	84-15-1	96	%	70-130	03.11.2021 05:13	

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Certificate of Analytical Results 690916

Terracon-Lubbock, Lubbock, TX

GENERAL NEW MEXICO PROJECT

Sample Id: **FS-7 (1.5-2)**
Lab Sample Id: 690916-005
Matrix: Soil
Date Collected: 03.08.2021 10:40
Date Received: 03.08.2021 16:50
Sample Depth: 1.5 - 2 ft

Analytical Method: BTEX by EPA 8021B
Tech: KTL
Analyst: KTL
Seq Number: 3153561
Date Prep: 03.13.2021 10:15
Prep Method: SW5035A
% Moisture:
Basis: Wet Weight
SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	03.14.2021 00:25	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	03.14.2021 00:25	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	03.14.2021 00:25	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	03.14.2021 00:25	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	03.14.2021 00:25	U	1
Xylenes, Total	1330-20-7	<0.00199	0.00199	mg/kg	03.14.2021 00:25	U	1
Total BTEX		<0.00199	0.00199	mg/kg	03.14.2021 00:25	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	104	%	70-130	03.14.2021 00:25	
4-Bromofluorobenzene	460-00-4	109	%	70-130	03.14.2021 00:25	

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Certificate of Analytical Results 690916

Terracon-Lubbock, Lubbock, TX

GENERAL NEW MEXICO PROJECT

Sample Id: **FS-8 (1.5-2)** Matrix: Soil Date Received:03.08.2021 16:50

Lab Sample Id: 690916-006 Date Collected: 03.08.2021 10:50 Sample Depth: 1.5 - 2 ft

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE

Analyst: CHE Date Prep: 03.12.2021 16:00 % Moisture:

Seq Number: 3153623 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**290**	24.8	mg/kg	03.12.2021 20:35		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P

Tech: DVM

Analyst: ARM Date Prep: 03.10.2021 17:00 % Moisture:

Seq Number: 3153290 Basis: Wet Weight

SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	03.11.2021 05:34	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	03.11.2021 05:34	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	03.11.2021 05:34	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	03.11.2021 05:34	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	105	%	70-130	03.11.2021 05:34	
o-Terphenyl	84-15-1	93	%	70-130	03.11.2021 05:34	

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Certificate of Analytical Results 690916

Terracon-Lubbock, Lubbock, TX

GENERAL NEW MEXICO PROJECT

Sample Id: **FS-8 (1.5-2)**
Lab Sample Id: 690916-006
Matrix: Soil
Date Collected: 03.08.2021 10:50
Date Received: 03.08.2021 16:50
Sample Depth: 1.5 - 2 ft

Analytical Method: BTEX by EPA 8021B
Tech: KTL
Analyst: KTL
Seq Number: 3153561
Date Prep: 03.13.2021 10:15
Prep Method: SW5035A
% Moisture:
Basis: Wet Weight
SUB: T104704400-20-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	03.14.2021 00:46	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	03.14.2021 00:46	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	03.14.2021 00:46	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	03.14.2021 00:46	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	03.14.2021 00:46	U	1
Xylenes, Total	1330-20-7	<0.00199	0.00199	mg/kg	03.14.2021 00:46	U	1
Total BTEX		<0.00199	0.00199	mg/kg	03.14.2021 00:46	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	104	%	70-130	03.14.2021 00:46	
4-Bromofluorobenzene	460-00-4	113	%	70-130	03.14.2021 00:46	

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Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit. **ND** Not Detected.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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QC Summary 690916

Terracon-Lubbock

GENERAL NEW MEXICO PROJECT

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3153623 — Matrix: Solid — Date Prep: 03.12.2021
MB Sample Id: 7723214-1-BLK — LCS Sample Id: 7723214-1-BKS — LCSD Sample Id: 7723214-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	250	100	250	100	90-110	0	20	mg/kg	03.12.2021 18:00	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3153623 — Matrix: Soil — Date Prep: 03.12.2021
Parent Sample Id: 691113-003 — MS Sample Id: 691113-003 S — MSD Sample Id: 691113-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	179	250	434	102	433	102	90-110	0	20	mg/kg	03.12.2021 18:17	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3153623 — Matrix: Soil — Date Prep: 03.12.2021
Parent Sample Id: 691113-013 — MS Sample Id: 691113-013 S — MSD Sample Id: 691113-013 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	56.1	249	314	104	314	104	90-110	0	20	mg/kg	03.12.2021 19:34	

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3153290 — Matrix: Solid — Date Prep: 03.10.2021
MB Sample Id: 7723045-1-BLK — LCS Sample Id: 7723045-1-BKS — LCSD Sample Id: 7723045-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<50.0	1000	1080	108	1090	109	70-130	1	20	mg/kg	03.10.2021 21:59	
Diesel Range Organics (DRO)	<50.0	1000	1000	100	1030	103	70-130	3	20	mg/kg	03.10.2021 21:59	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	116		113		112		70-130	%	03.10.2021 21:59
o-Terphenyl	104		86		89		70-130	%	03.10.2021 21:59

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3153290 — Matrix: Solid — Date Prep: 03.10.2021
MB Sample Id: 7723045-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	03.10.2021 21:38	

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

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QC Summary 690916

Terracon-Lubbock

GENERAL NEW MEXICO PROJECT

Analytical Method: **TPH by SW8015 Mod** Prep Method: SW8015P
Seq Number: 3153290 Matrix: Soil Date Prep: 03.10.2021
Parent Sample Id: 691112-001 MS Sample Id: 691112-001 S MSD Sample Id: 691112-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<49.8	996	1020	102	1040	104	70-130	2	20	mg/kg	03.10.2021 23:01	
Diesel Range Organics (DRO)	<49.8	996	947	95	970	97	70-130	2	20	mg/kg	03.10.2021 23:01	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	101		102		70-130	%	03.10.2021 23:01
o-Terphenyl	76		76		70-130	%	03.10.2021 23:01

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5035A
Seq Number: 3153561 Matrix: Solid Date Prep: 03.13.2021
MB Sample Id: 7723269-1-BLK LCS Sample Id: 7723269-1-BKS LCSD Sample Id: 7723269-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.111	111	0.100	100	70-130	10	35	mg/kg	03.13.2021 19:35	
Toluene	<0.00200	0.100	0.128	128	0.113	113	70-130	12	35	mg/kg	03.13.2021 19:35	
Ethylbenzene	<0.00200	0.100	0.115	115	0.108	108	70-130	6	35	mg/kg	03.13.2021 19:35	
m,p-Xylenes	<0.00400	0.200	0.234	117	0.221	111	70-130	6	35	mg/kg	03.13.2021 19:35	
o-Xylene	<0.00200	0.100	0.124	124	0.112	112	70-130	10	35	mg/kg	03.13.2021 19:35	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	96		103		100		70-130	%	03.13.2021 19:35
4-Bromofluorobenzene	103		102		98		70-130	%	03.13.2021 19:35

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5035A
Seq Number: 3153561 Matrix: Soil Date Prep: 03.13.2021
Parent Sample Id: 690846-013 MS Sample Id: 690846-013 S MSD Sample Id: 690846-013 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0953	95	0.0897	90	70-130	6	35	mg/kg	03.13.2021 20:16	
Toluene	<0.00200	0.100	0.0976	98	0.0968	97	70-130	1	35	mg/kg	03.13.2021 20:16	
Ethylbenzene	<0.00200	0.100	0.0956	96	0.0944	94	70-130	1	35	mg/kg	03.13.2021 20:16	
m,p-Xylenes	<0.00401	0.200	0.193	97	0.193	97	70-130	0	35	mg/kg	03.13.2021 20:16	
o-Xylene	<0.00200	0.100	0.0984	98	0.0968	97	70-130	2	35	mg/kg	03.13.2021 20:16	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	103		102		70-130	%	03.13.2021 20:16
4-Bromofluorobenzene	104		102		70-130	%	03.13.2021 20:16

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

690916

CHAIN OF CUSTODY RECORD

Terracon

Laboratory: Xenco
Address: 6701 Aberdeen
Lubbock, Texas 79424

Office Location: Lubbock
Phone:
Project Manager: J. Guesnier
Contact: J. Guesnier 806-544-9276
Sampler's Name: Bryant McBrayer
SRS #:
Sampler's Signature

ANALYSIS REQUESTED

LAB USE ONLY
DUE DATE:
TEMP OF COOLER WHEN RECEIVED (°C): 21.6/21.5 IR-4

Project Number: AR217019
Project Name: Osage SWD

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	No. Type of Containers: 4 oz Glass	40 ml VOA	60 ml VOA	5035 kit	Chloride (EPA Method 300)	TPH Extended 8015	BTEX (EPA Method 8021B)	Lab Sample ID
S	3/8/2021	10:00	X		FS-3 (1.5-2)	1.5'	2'	X				X	X	X	690916-001
S	3/8/2021	10:10	X		FS-4 (1.5-2)	1.5'	2'	X				X	X	X	-002
S	3/8/2021	10:20	X		FS-5 (1.5-2)	1.5'	2'	X				X	X	X	-003
S	3/8/2021	10:30	X		FS-6 (1.5-2)	1.5'	2'	X				X	X	X	-004
S	3/8/2021	10:40	X		FS-7 (1.5-2)	1.5'	2'	X				X	X	X	-005
S	3/8/2021	10:50	X		FS-8 (1.5-2)	1.5'	2'	X				X	X	X	-006

TURNAROUND TIME: ☒ Normal ☐ 48-Hour Rush ☐ 24-Hour Rush

TRRP Laboratory Review Checklist ☐ Yes ☐ No

Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time
	3/8/21	1650	Holly Taylor	3/8/21	1650

NOTES: Client: Spur Energy Partners

e-mail results to:

bryant.mcbrayer@terracon.com
erin.loyd@terracon.com
jrguesnier@terracon.com

Matrix: WW-Wastewater; W - Water; S - Soil; L - Liquid; A - Air Bag; C - Charcoal tube; SL - Sludge
Container: VOA - 40 ml vial; A/G - Amber Glass 1L; 250 ml = Glass wide mouth; P/O - Plastic or other _____

Inter-Office Shipment

IOS Number : 79161

Date/Time: 03.09.2021
Lab# From: **Lubbock**
Lab# To: **Midland**

Created by: Michael J Turner
Delivery Priority:
Air Bill No.:

Please send report to: Jessica Kramer
Address: 6701 Aberdeen, Suite 9 Lubbock, TX 79424
E-Mail: jessica.kramer@eurofinset.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
690916-001	S	FS-3 (1.5-2)	03.08.2021 10:00	SW8021B	BTEX by EPA 8021B	03.12.2021	03.22.2021	JKR	BR4FBZ BZ BZME EBZ	
690916-001	S	FS-3 (1.5-2)	03.08.2021 10:00	E300_CL	Chloride by EPA 300	03.12.2021	04.05.2021	JKR	CL	
690916-002	S	FS-4 (1.5-2)	03.08.2021 10:10	SW8021B	BTEX by EPA 8021B	03.12.2021	03.22.2021	JKR	BR4FBZ BZ BZME EBZ	
690916-002	S	FS-4 (1.5-2)	03.08.2021 10:10	E300_CL	Chloride by EPA 300	03.12.2021	04.05.2021	JKR	CL	
690916-003	S	FS-5 (1.5-2)	03.08.2021 10:20	E300_CL	Chloride by EPA 300	03.12.2021	04.05.2021	JKR	CL	
690916-003	S	FS-5 (1.5-2)	03.08.2021 10:20	SW8021B	BTEX by EPA 8021B	03.12.2021	03.22.2021	JKR	BR4FBZ BZ BZME EBZ	
690916-004	S	FS-6 (1.5-2)	03.08.2021 10:30	SW8021B	BTEX by EPA 8021B	03.12.2021	03.22.2021	JKR	BR4FBZ BZ BZME EBZ	
690916-004	S	FS-6 (1.5-2)	03.08.2021 10:30	E300_CL	Chloride by EPA 300	03.12.2021	04.05.2021	JKR	CL	
690916-005	S	FS-7 (1.5-2)	03.08.2021 10:40	E300_CL	Chloride by EPA 300	03.12.2021	04.05.2021	JKR	CL	
690916-005	S	FS-7 (1.5-2)	03.08.2021 10:40	SW8021B	BTEX by EPA 8021B	03.12.2021	03.22.2021	JKR	BR4FBZ BZ BZME EBZ	
690916-006	S	FS-8 (1.5-2)	03.08.2021 10:50	E300_CL	Chloride by EPA 300	03.12.2021	04.05.2021	JKR	CL	
690916-006	S	FS-8 (1.5-2)	03.08.2021 10:50	SW8021B	BTEX by EPA 8021B	03.12.2021	03.22.2021	JKR	BR4FBZ BZ BZME EBZ	

Inter Office Shipment or Sample Comments:

Relinquished By: Michael J Turner

Date Relinquished: 03.09.2021

Received By: Jessica Kramer

Date Received: 03.10.2021

Cooler Temperature: 2.6

Eurofins Xenco, LLC

Environment Testing Xenco

Inter Office Report- Sample Receipt Checklist

Sent To: Midland

IOS #: 79161

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient
Temperature Measuring device used :

Sent By: Michael J Turner **Date Sent:** 03.09.2021 10.28 AM

Received By: Jessica Kramer **Date Received:** 03.10.2021 11.54 AM

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	2.6	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received with appropriate temperature?	**Yes**	
#4 *Custody Seals intact on shipping container/ cooler?	**Yes**	
#5 *Custody Seals Signed and dated for Containers/coolers	**Yes**	
#6 *IOS present?	**Yes**	
#7 Any missing/extra samples?	**No**	
#8 IOS agrees with sample label(s)/matrix?	**Yes**	
#9 Sample matrix/ properties agree with IOS?	**Yes**	
#10 Samples in proper container/ bottle?	**Yes**	
#11 Samples properly preserved?	**Yes**	
#12 Sample container(s) intact?	**Yes**	
#13 Sufficient sample amount for indicated test(s)?	**Yes**	
#14 All samples received within hold time?	**Yes**	

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

NonConformance:

Corrective Action Taken:

Nonconformance Documentation

Contact: _____ **Contacted by :** _____ **Date:** _____

Checklist reviewed by: Jessica Kramer Date: 03.10.2021

Jessica Kramer

Eurofins Xenco, LLC

Prelogin/Nonconformance Report- Sample Log-In

Client: Terracon-Lubbock

Date/ Time Received: 03.08.2021 04.50.00 PM

Work Order #: 690916

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : IR-4

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	21.6	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received on ice?	**Yes**	
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**	
#5 Custody Seals intact on sample bottles?	**N/A**	
#6*Custody Seals Signed and dated?	**N/A**	
#7 *Chain of Custody present?	**Yes**	
#8 Any missing/extra samples?	**No**	
#9 Chain of Custody signed when relinquished/ received?	**Yes**	
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**	
#11 Container label(s) legible and intact?	**Yes**	
#12 Samples in proper container/ bottle?	**Yes**	
#13 Samples properly preserved?	**Yes**	
#14 Sample container(s) intact?	**Yes**	
#15 Sufficient sample amount for indicated test(s)?	**Yes**	
#16 All samples received within hold time?	**Yes**	
#17 Subcontract of sample(s)?	**Yes**	Xenco Midland
#18 Water VOC samples have zero headspace?	**N/A**	

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: PH Device/Lot#:

Checklist completed by: Michael J Turner Date: 03.08.2021

Checklist reviewed by: Jessica Kramer Date: 03.09.2021

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ANALYTICAL REPORT

Eurofins Xenco, Lubbock
6701 Aberdeen Ave.
Suite 8
Lubbock, TX 79424
Tel: (806)794-1296

Laboratory Job ID: 820-1357-1
Client Project/Site: Osage SWD

For:
Terracon Consulting Eng & Scientists
5827 50th St
Suite 1
Lubbock, Texas 79424

Attn: Joseph Guesnier

JKramer

Authorized for release by:
7/26/2021 5:53:10 PM

Jessica Kramer, Project Manager
(432)704-5440
jessica.kramer@eurofinset.com

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD,and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments. QC data that exceed the upper limits and are associated with non-detect samples are qualified but no further narration is needed since the bias is high and does not change a non-detect result. Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Coliform MCLs
· Based on the EPA primary drinking water standard MCL for total coliforms, a water supply is considered bacteriologically “SAFE” if no coliform bacteria are detected. To be considered “SAFE” your report should indicate “<1 cfu/100mL” or “NEG” for the coliform test. If you report indicates a positive result “POS” or a value greater than or equal to one, then your supply is “UNSAFE FOR DRINKING” contact your local health department.

Warranties, Terms, and Conditions
· Analyses for Field Parameters are performed by EQC field staff. Locations and certifications are identified on the Chain of Custody as follows:
ERF = field staff performs tests under NJ State certification #02015
VL = field staff performs tests under NJ State certification #06005
WG = field staff performs tests under NJ State certification #PA001
H = field staff performs tests under NJ NELAP certification #PA093, PA NELAP certification # 46-05499

· Test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.

· The report shall not be reproduced, except in full, without the written consent of the laboratory

· All samples are collected as “grab” samples unless otherwise identified.

· Reported results related only to the samples as tested. EQC is not responsible for sample integrity unless sampling has been performed by a member of our staff.

· EQC is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance.

· Eurofins’ online data portal “TotalAccess” will provide you with real-time access to collection dates and testing results. Please contact Client Services for further information.

· The following personnel or their deputies have approved the results of the tests performed by EQC: Nicki Smith (Environmental Chemistry) and Zachary Smith (Water Microbiology).

JKramer

Jessica Kramer
Project Manager
7/26/2021 5:53:10 PM

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Laboratory Job ID: 820-1357-1

Table of Contents

Definitions/Glossary

Client: Terracon Consulting Eng & Scientists Job ID: 820-1357-1
Project/Site: Osage SWD

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
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: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Job ID: 820-1357-1

Laboratory: Eurofins Xenco, Lubbock

Narrative

Job Narrative
820-1357-1

Receipt
The samples were received on 7/19/2021 3:02 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 -14.4°C

GC VOA
Method 8021B: Surrogate recovery for the following samples were outside control limits: P-2 (820-1357-2) and P-9 (820-1357-9). 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 880-5421 and analytical batch 880-5426 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
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: Terracon Consulting Eng & Scientists
Job ID: 820-1357-1
Project/Site: Osage SWD

Client Sample ID: P-1
Lab Sample ID: 820-1357-1
Date Collected: 07/17/21 12:00
Matrix: Solid
Date Received: 07/19/21 15:02
Sample Depth: 1' - 1.5'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:15	07/20/21 22:07	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:15	07/20/21 22:07	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:15	07/20/21 22:07	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		07/20/21 11:15	07/20/21 22:07	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:15	07/20/21 22:07	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		07/20/21 11:15	07/20/21 22:07	1
Total BTEX	<0.00399	U	0.00399		mg/Kg		07/20/21 11:15	07/20/21 22:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*142*	*S1+*	*70 - 130*	*07/20/21 11:15*	*07/20/21 22:07*	*1*
1,4-Difluorobenzene (Surr)	*114*		*70 - 130*	*07/20/21 11:15*	*07/20/21 22:07*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/25/21 21:56	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/25/21 21:56	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/25/21 21:56	1
Total TPH	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/25/21 21:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*94*		*70 - 130*	*07/20/21 14:33*	*07/25/21 21:56*	*1*
o-Terphenyl	*109*		*70 - 130*	*07/20/21 14:33*	*07/25/21 21:56*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.05	U	5.05		mg/Kg			07/22/21 17:11	1

Client Sample ID: P-2
Lab Sample ID: 820-1357-2
Date Collected: 07/17/21 12:05
Matrix: Solid
Date Received: 07/19/21 15:02
Sample Depth: 1' - 1.5'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.00201**		0.00201		mg/Kg		07/20/21 11:15	07/20/21 22:28	1
Toluene	<0.00201	U	0.00201		mg/Kg		07/20/21 11:15	07/20/21 22:28	1
Ethylbenzene	<0.00201	U	0.00201		mg/Kg		07/20/21 11:15	07/20/21 22:28	1
m-Xylene & p-Xylene	<0.00402	U	0.00402		mg/Kg		07/20/21 11:15	07/20/21 22:28	1
o-Xylene	<0.00201	U	0.00201		mg/Kg		07/20/21 11:15	07/20/21 22:28	1
Xylenes, Total	<0.00402	U	0.00402		mg/Kg		07/20/21 11:15	07/20/21 22:28	1
Total BTEX	<0.00402	U	0.00402		mg/Kg		07/20/21 11:15	07/20/21 22:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*114*		*70 - 130*	*07/20/21 11:15*	*07/20/21 22:28*	*1*
1,4-Difluorobenzene (Surr)	*94*		*70 - 130*	*07/20/21 11:15*	*07/20/21 22:28*	*1*

Client Sample Results

Client: Terracon Consulting Eng & Scientists Job ID: 820-1357-1
Project/Site: Osage SWD

Client Sample ID: P-2 Lab Sample ID: 820-1357-2

Date Collected: 07/17/21 12:05 **Matrix: Solid**
Date Received: 07/19/21 15:02
Sample Depth: 1' - 1.5'

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8		mg/Kg		07/20/21 14:33	07/25/21 22:59	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8		mg/Kg		07/20/21 14:33	07/25/21 22:59	1
Oil Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		07/20/21 14:33	07/25/21 22:59	1
Total TPH	<49.8	U	49.8		mg/Kg		07/20/21 14:33	07/25/21 22:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*98*		*70 - 130*	*07/20/21 14:33*	*07/25/21 22:59*	*1*
o-Terphenyl	*114*		*70 - 130*	*07/20/21 14:33*	*07/25/21 22:59*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<4.99	U	4.99		mg/Kg			07/22/21 17:27	1

Client Sample ID: P-3 Lab Sample ID: 820-1357-3

Date Collected: 07/17/21 12:10 **Matrix: Solid**
Date Received: 07/19/21 15:02
Sample Depth: 1' - 1.5'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		07/20/21 11:15	07/20/21 22:48	1
Toluene	<0.00199	U	0.00199		mg/Kg		07/20/21 11:15	07/20/21 22:48	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		07/20/21 11:15	07/20/21 22:48	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		07/20/21 11:15	07/20/21 22:48	1
o-Xylene	**0.00372**		0.00199		mg/Kg		07/20/21 11:15	07/20/21 22:48	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		07/20/21 11:15	07/20/21 22:48	1
Total BTEX	<0.00398	U	0.00398		mg/Kg		07/20/21 11:15	07/20/21 22:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*119*		*70 - 130*	*07/20/21 11:15*	*07/20/21 22:48*	*1*
1,4-Difluorobenzene (Surr)	*92*		*70 - 130*	*07/20/21 11:15*	*07/20/21 22:48*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/25/21 23:20	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/25/21 23:20	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/25/21 23:20	1
Total TPH	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/25/21 23:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*99*		*70 - 130*	*07/20/21 14:33*	*07/25/21 23:20*	*1*
o-Terphenyl	*112*		*70 - 130*	*07/20/21 14:33*	*07/25/21 23:20*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<4.95	U	4.95		mg/Kg			07/22/21 17:33	1

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Job ID: 820-1357-1
Project/Site: Osage SWD

Client Sample ID: P-4
Lab Sample ID: 820-1357-4
Date Collected: 07/17/21 12:15
Matrix: Solid
Date Received: 07/19/21 15:02
Sample Depth: 1' - 1.5'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:15	07/20/21 23:09	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:15	07/20/21 23:09	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:15	07/20/21 23:09	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		07/20/21 11:15	07/20/21 23:09	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:15	07/20/21 23:09	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		07/20/21 11:15	07/20/21 23:09	1
Total BTEX	<0.00400	U	0.00400		mg/Kg		07/20/21 11:15	07/20/21 23:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*126*		*70 - 130*	*07/20/21 11:15*	*07/20/21 23:09*	*1*
1,4-Difluorobenzene (Surr)	*102*		*70 - 130*	*07/20/21 11:15*	*07/20/21 23:09*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/25/21 23:41	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/25/21 23:41	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/25/21 23:41	1
Total TPH	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/25/21 23:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*96*		*70 - 130*	*07/20/21 14:33*	*07/25/21 23:41*	*1*
o-Terphenyl	*110*		*70 - 130*	*07/20/21 14:33*	*07/25/21 23:41*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**5.31**		5.03		mg/Kg			07/23/21 10:28	1

Client Sample ID: P-5
Lab Sample ID: 820-1357-5
Date Collected: 07/17/21 12:20
Matrix: Solid
Date Received: 07/19/21 15:02
Sample Depth: 1' - 1.5'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		07/20/21 11:15	07/20/21 23:30	1
Toluene	<0.00199	U	0.00199		mg/Kg		07/20/21 11:15	07/20/21 23:30	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		07/20/21 11:15	07/20/21 23:30	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		07/20/21 11:15	07/20/21 23:30	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		07/20/21 11:15	07/20/21 23:30	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		07/20/21 11:15	07/20/21 23:30	1
Total BTEX	<0.00398	U	0.00398		mg/Kg		07/20/21 11:15	07/20/21 23:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*125*		*70 - 130*	*07/20/21 11:15*	*07/20/21 23:30*	*1*
1,4-Difluorobenzene (Surr)	*107*		*70 - 130*	*07/20/21 11:15*	*07/20/21 23:30*	*1*

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Client Sample ID: P-5

Lab Sample ID: 820-1357-5
Matrix: Solid
Date Collected: 07/17/21 12:20
Date Received: 07/19/21 15:02
Sample Depth: 1' - 1.5'

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.8	U	49.8		mg/Kg		07/20/21 14:33	07/26/21 00:02	1
Diesel Range Organics (Over C10-C28)	<49.8	U	49.8		mg/Kg		07/20/21 14:33	07/26/21 00:02	1
Oil Range Organics (Over C28-C36)	<49.8	U	49.8		mg/Kg		07/20/21 14:33	07/26/21 00:02	1
Total TPH	<49.8	U	49.8		mg/Kg		07/20/21 14:33	07/26/21 00:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*95*		*70 - 130*	*07/20/21 14:33*	*07/26/21 00:02*	*1*
o-Terphenyl	*109*		*70 - 130*	*07/20/21 14:33*	*07/26/21 00:02*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.04	U	5.04		mg/Kg			07/23/21 10:33	1

Client Sample ID: P-6

Lab Sample ID: 820-1357-6
Matrix: Solid
Date Collected: 07/17/21 12:25
Date Received: 07/19/21 15:02
Sample Depth: 1' - 1.5'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00198	U	0.00198		mg/Kg		07/20/21 11:15	07/20/21 23:50	1
Toluene	<0.00198	U	0.00198		mg/Kg		07/20/21 11:15	07/20/21 23:50	1
Ethylbenzene	<0.00198	U	0.00198		mg/Kg		07/20/21 11:15	07/20/21 23:50	1
m-Xylene & p-Xylene	<0.00396	U	0.00396		mg/Kg		07/20/21 11:15	07/20/21 23:50	1
o-Xylene	<0.00198	U	0.00198		mg/Kg		07/20/21 11:15	07/20/21 23:50	1
Xylenes, Total	<0.00396	U	0.00396		mg/Kg		07/20/21 11:15	07/20/21 23:50	1
Total BTEX	<0.00396	U	0.00396		mg/Kg		07/20/21 11:15	07/20/21 23:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*127*		*70 - 130*	*07/20/21 11:15*	*07/20/21 23:50*	*1*
1,4-Difluorobenzene (Surr)	*118*		*70 - 130*	*07/20/21 11:15*	*07/20/21 23:50*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.7	U	49.7		mg/Kg		07/20/21 14:33	07/26/21 00:22	1
Diesel Range Organics (Over C10-C28)	<49.7	U	49.7		mg/Kg		07/20/21 14:33	07/26/21 00:22	1
Oil Range Organics (Over C28-C36)	<49.7	U	49.7		mg/Kg		07/20/21 14:33	07/26/21 00:22	1
Total TPH	<49.7	U	49.7		mg/Kg		07/20/21 14:33	07/26/21 00:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*103*		*70 - 130*	*07/20/21 14:33*	*07/26/21 00:22*	*1*
o-Terphenyl	*117*		*70 - 130*	*07/20/21 14:33*	*07/26/21 00:22*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.05	U	5.05		mg/Kg			07/23/21 10:39	1

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Job ID: 820-1357-1
Project/Site: Osage SWD

Client Sample ID: P-7
Lab Sample ID: 820-1357-7
Date Collected: 07/17/21 12:30
Matrix: Solid
Date Received: 07/19/21 15:02
Sample Depth: 1' - 1.5'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U F2 F1	0.00200		mg/Kg		07/20/21 11:29	07/21/21 03:13	1
Toluene	<0.00200	U F2 F1	0.00200		mg/Kg		07/20/21 11:29	07/21/21 03:13	1
Ethylbenzene	**0.00389**	**F1**	0.00200		mg/Kg		07/20/21 11:29	07/21/21 03:13	1
m-Xylene & p-Xylene	<0.00399	U F1	0.00399		mg/Kg		07/20/21 11:29	07/21/21 03:13	1
o-Xylene	**0.00252**	**F1**	0.00200		mg/Kg		07/20/21 11:29	07/21/21 03:13	1
Xylenes, Total	<0.00399	U F1	0.00399		mg/Kg		07/20/21 11:29	07/21/21 03:13	1
Total BTEX	**0.00641**	**F2 F1**	0.00399		mg/Kg		07/20/21 11:29	07/21/21 03:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*127*		*70 - 130*	*07/20/21 11:29*	*07/21/21 03:13*	*1*
1,4-Difluorobenzene (Surr)	*90*		*70 - 130*	*07/20/21 11:29*	*07/21/21 03:13*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 00:43	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 00:43	1
OII Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 00:43	1
Total TPH	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 00:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*97*		*70 - 130*	*07/20/21 14:33*	*07/26/21 00:43*	*1*
o-Terphenyl	*111*		*70 - 130*	*07/20/21 14:33*	*07/26/21 00:43*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**5.42**		5.01		mg/Kg			07/22/21 18:06	1

Client Sample ID: P-8
Lab Sample ID: 820-1357-8
Date Collected: 07/17/21 12:35
Matrix: Solid
Date Received: 07/19/21 15:02
Sample Depth: 1' - 1.5'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00198	U	0.00198		mg/Kg		07/20/21 11:29	07/21/21 03:34	1
Toluene	<0.00198	U	0.00198		mg/Kg		07/20/21 11:29	07/21/21 03:34	1
Ethylbenzene	<0.00198	U	0.00198		mg/Kg		07/20/21 11:29	07/21/21 03:34	1
m-Xylene & p-Xylene	<0.00396	U	0.00396		mg/Kg		07/20/21 11:29	07/21/21 03:34	1
o-Xylene	<0.00198	U	0.00198		mg/Kg		07/20/21 11:29	07/21/21 03:34	1
Xylenes, Total	<0.00396	U	0.00396		mg/Kg		07/20/21 11:29	07/21/21 03:34	1
Total BTEX	<0.00396	U	0.00396		mg/Kg		07/20/21 11:29	07/21/21 03:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*120*		*70 - 130*	*07/20/21 11:29*	*07/21/21 03:34*	*1*
1,4-Difluorobenzene (Surr)	*103*		*70 - 130*	*07/20/21 11:29*	*07/21/21 03:34*	*1*

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Client Sample ID: P-8

Lab Sample ID: 820-1357-8
Matrix: Solid
Date Collected: 07/17/21 12:35
Date Received: 07/19/21 15:02
Sample Depth: 1' - 1.5'

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 01:04	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 01:04	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 01:04	1
Total TPH	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 01:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*93*		*70 - 130*	*07/20/21 14:33*	*07/26/21 01:04*	*1*
o-Terphenyl	*101*		*70 - 130*	*07/20/21 14:33*	*07/26/21 01:04*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.02	U	5.02		mg/Kg			07/22/21 18:11	1

Client Sample ID: P-9

Lab Sample ID: 820-1357-9
Matrix: Solid
Date Collected: 07/17/21 12:40
Date Received: 07/19/21 15:02
Sample Depth: 1' - 1.5'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 03:55	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 03:55	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 03:55	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		07/20/21 11:29	07/21/21 03:55	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 03:55	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		07/20/21 11:29	07/21/21 03:55	1
Total BTEX	<0.00400	U	0.00400		mg/Kg		07/20/21 11:29	07/21/21 03:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*133*	*S1+*	*70 - 130*	*07/20/21 11:29*	*07/21/21 03:55*	*1*
1,4-Difluorobenzene (Surr)	*97*		*70 - 130*	*07/20/21 11:29*	*07/21/21 03:55*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 01:25	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 01:25	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 01:25	1
Total TPH	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 01:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*97*		*70 - 130*	*07/20/21 14:33*	*07/26/21 01:25*	*1*
o-Terphenyl	*111*		*70 - 130*	*07/20/21 14:33*	*07/26/21 01:25*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**87.6**		5.01		mg/Kg			07/22/21 18:17	1

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Client Sample ID: P-10

Lab Sample ID: 820-1357-10
Matrix: Solid
Date Collected: 07/17/21 12:45
Date Received: 07/19/21 15:02
Sample Depth: 1' - 1.5'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00201	U	0.00201		mg/Kg		07/20/21 11:29	07/21/21 04:15	1
Toluene	<0.00201	U	0.00201		mg/Kg		07/20/21 11:29	07/21/21 04:15	1
Ethylbenzene	<0.00201	U	0.00201		mg/Kg		07/20/21 11:29	07/21/21 04:15	1
m-Xylene & p-Xylene	<0.00402	U	0.00402		mg/Kg		07/20/21 11:29	07/21/21 04:15	1
o-Xylene	<0.00201	U	0.00201		mg/Kg		07/20/21 11:29	07/21/21 04:15	1
Xylenes, Total	<0.00402	U	0.00402		mg/Kg		07/20/21 11:29	07/21/21 04:15	1
Total BTEX	<0.00402	U	0.00402		mg/Kg		07/20/21 11:29	07/21/21 04:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*129*		*70 - 130*	*07/20/21 11:29*	*07/21/21 04:15*	*1*
1,4-Difluorobenzene (Surr)	*106*		*70 - 130*	*07/20/21 11:29*	*07/21/21 04:15*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 01:46	1
Diesel Range Organics (Over C10-C28)	**79.5**		49.9		mg/Kg		07/20/21 14:33	07/26/21 01:46	1
OII Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 01:46	1
Total TPH	**79.5**		49.9		mg/Kg		07/20/21 14:33	07/26/21 01:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*97*		*70 - 130*	*07/20/21 14:33*	*07/26/21 01:46*	*1*
o-Terphenyl	*112*		*70 - 130*	*07/20/21 14:33*	*07/26/21 01:46*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**88.9**		4.99		mg/Kg			07/23/21 11:14	1

Client Sample ID: FS-10

Lab Sample ID: 820-1357-11
Matrix: Solid
Date Collected: 07/17/21 12:50
Date Received: 07/19/21 15:02
Sample Depth: 1.5' - 2'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		07/20/21 11:29	07/21/21 04:36	1
Toluene	<0.00199	U	0.00199		mg/Kg		07/20/21 11:29	07/21/21 04:36	1
Ethylbenzene	**0.00231**		0.00199		mg/Kg		07/20/21 11:29	07/21/21 04:36	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		07/20/21 11:29	07/21/21 04:36	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		07/20/21 11:29	07/21/21 04:36	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		07/20/21 11:29	07/21/21 04:36	1
Total BTEX	<0.00398	U	0.00398		mg/Kg		07/20/21 11:29	07/21/21 04:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*128*		*70 - 130*	*07/20/21 11:29*	*07/21/21 04:36*	*1*
1,4-Difluorobenzene (Surr)	*107*		*70 - 130*	*07/20/21 11:29*	*07/21/21 04:36*	*1*

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Client Sample ID: FS-10

Lab Sample ID: 820-1357-11
Matrix: Solid
Date Collected: 07/17/21 12:50
Date Received: 07/19/21 15:02
Sample Depth: 1.5' - 2'

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 02:27	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 02:27	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 02:27	1
Total TPH	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 02:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*94*		*70 - 130*	*07/20/21 14:33*	*07/26/21 02:27*	*1*
o-Terphenyl	*106*		*70 - 130*	*07/20/21 14:33*	*07/26/21 02:27*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<4.97	U	4.97		mg/Kg			07/23/21 11:19	1

Client Sample ID: FS-11

Lab Sample ID: 820-1357-12
Matrix: Solid
Date Collected: 07/17/21 12:55
Date Received: 07/19/21 15:02
Sample Depth: 1.5' - 2'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00198	U	0.00198		mg/Kg		07/20/21 11:29	07/21/21 04:57	1
Toluene	<0.00198	U	0.00198		mg/Kg		07/20/21 11:29	07/21/21 04:57	1
Ethylbenzene	<0.00198	U	0.00198		mg/Kg		07/20/21 11:29	07/21/21 04:57	1
m-Xylene & p-Xylene	<0.00396	U	0.00396		mg/Kg		07/20/21 11:29	07/21/21 04:57	1
o-Xylene	<0.00198	U	0.00198		mg/Kg		07/20/21 11:29	07/21/21 04:57	1
Xylenes, Total	<0.00396	U	0.00396		mg/Kg		07/20/21 11:29	07/21/21 04:57	1
Total BTEX	<0.00396	U	0.00396		mg/Kg		07/20/21 11:29	07/21/21 04:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*116*		*70 - 130*	*07/20/21 11:29*	*07/21/21 04:57*	*1*
1,4-Difluorobenzene (Surr)	*116*		*70 - 130*	*07/20/21 11:29*	*07/21/21 04:57*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 02:48	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 02:48	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 02:48	1
Total TPH	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 02:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*99*		*70 - 130*	*07/20/21 14:33*	*07/26/21 02:48*	*1*
o-Terphenyl	*115*		*70 - 130*	*07/20/21 14:33*	*07/26/21 02:48*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<4.95	U	4.95		mg/Kg			07/23/21 11:36	1

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Client Sample ID: FS-12

Lab Sample ID: 820-1357-13
Matrix: Solid
Date Collected: 07/17/21 13:00
Date Received: 07/19/21 15:02
Sample Depth: 1.5' - 2'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00198	U	0.00198		mg/Kg		07/20/21 11:29	07/21/21 05:17	1
Toluene	<0.00198	U	0.00198		mg/Kg		07/20/21 11:29	07/21/21 05:17	1
Ethylbenzene	<0.00198	U	0.00198		mg/Kg		07/20/21 11:29	07/21/21 05:17	1
m-Xylene & p-Xylene	<0.00396	U	0.00396		mg/Kg		07/20/21 11:29	07/21/21 05:17	1
o-Xylene	<0.00198	U	0.00198		mg/Kg		07/20/21 11:29	07/21/21 05:17	1
Xylenes, Total	<0.00396	U	0.00396		mg/Kg		07/20/21 11:29	07/21/21 05:17	1
Total BTEX	<0.00396	U	0.00396		mg/Kg		07/20/21 11:29	07/21/21 05:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*120*		*70 - 130*	*07/20/21 11:29*	*07/21/21 05:17*	*1*
1,4-Difluorobenzene (Surr)	*111*		*70 - 130*	*07/20/21 11:29*	*07/21/21 05:17*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 03:09	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 03:09	1
OII Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 03:09	1
Total TPH	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 03:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*93*		*70 - 130*	*07/20/21 14:33*	*07/26/21 03:09*	*1*
o-Terphenyl	*108*		*70 - 130*	*07/20/21 14:33*	*07/26/21 03:09*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**9.18**		4.97		mg/Kg			07/23/21 11:41	1

Client Sample ID: FS-13

Lab Sample ID: 820-1357-14
Matrix: Solid
Date Collected: 07/17/21 13:05
Date Received: 07/19/21 15:02
Sample Depth: 1.5 - 2'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00202	U	0.00202		mg/Kg		07/20/21 11:29	07/21/21 05:38	1
Toluene	<0.00202	U	0.00202		mg/Kg		07/20/21 11:29	07/21/21 05:38	1
Ethylbenzene	<0.00202	U	0.00202		mg/Kg		07/20/21 11:29	07/21/21 05:38	1
m-Xylene & p-Xylene	<0.00403	U	0.00403		mg/Kg		07/20/21 11:29	07/21/21 05:38	1
o-Xylene	<0.00202	U	0.00202		mg/Kg		07/20/21 11:29	07/21/21 05:38	1
Xylenes, Total	<0.00403	U	0.00403		mg/Kg		07/20/21 11:29	07/21/21 05:38	1
Total BTEX	<0.00403	U	0.00403		mg/Kg		07/20/21 11:29	07/21/21 05:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*70 - 130*	*07/20/21 11:29*	*07/21/21 05:38*	*1*
1,4-Difluorobenzene (Surr)	*99*		*70 - 130*	*07/20/21 11:29*	*07/21/21 05:38*	*1*

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Client Sample ID: FS-13

Lab Sample ID: 820-1357-14
Matrix: Solid
Date Collected: 07/17/21 13:05
Date Received: 07/19/21 15:02
Sample Depth: 1.5 - 2'

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 03:30	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 03:30	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 03:30	1
Total TPH	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 03:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*97*		*70 - 130*	*07/20/21 14:33*	*07/26/21 03:30*	*1*
o-Terphenyl	*114*		*70 - 130*	*07/20/21 14:33*	*07/26/21 03:30*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<4.95	U	4.95		mg/Kg			07/23/21 09:50	1

Client Sample ID: FS-14

Lab Sample ID: 820-1357-15
Matrix: Solid
Date Collected: 07/17/21 13:10
Date Received: 07/19/21 15:02
Sample Depth: 1.5' - 2'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 05:58	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 05:58	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 05:58	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		07/20/21 11:29	07/21/21 05:58	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 05:58	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		07/20/21 11:29	07/21/21 05:58	1
Total BTEX	<0.00399	U	0.00399		mg/Kg		07/20/21 11:29	07/21/21 05:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*131*	*S1+*	*70 - 130*	*07/20/21 11:29*	*07/21/21 05:58*	*1*
1,4-Difluorobenzene (Surr)	*101*		*70 - 130*	*07/20/21 11:29*	*07/21/21 05:58*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 03:50	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 03:50	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 03:50	1
Total TPH	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 03:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*111*		*70 - 130*	*07/20/21 14:33*	*07/26/21 03:50*	*1*
o-Terphenyl	*129*		*70 - 130*	*07/20/21 14:33*	*07/26/21 03:50*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			07/23/21 09:55	1

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Client Sample ID: FS-15

Lab Sample ID: 820-1357-16
Matrix: Solid
Date Collected: 07/17/21 13:15
Date Received: 07/19/21 15:02
Sample Depth: 1.5' - 2'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		07/20/21 11:29	07/21/21 06:19	1
Toluene	<0.00199	U	0.00199		mg/Kg		07/20/21 11:29	07/21/21 06:19	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		07/20/21 11:29	07/21/21 06:19	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		07/20/21 11:29	07/21/21 06:19	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		07/20/21 11:29	07/21/21 06:19	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		07/20/21 11:29	07/21/21 06:19	1
Total BTEX	<0.00398	U	0.00398		mg/Kg		07/20/21 11:29	07/21/21 06:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*116*		*70 - 130*	*07/20/21 11:29*	*07/21/21 06:19*	*1*
1,4-Difluorobenzene (Surr)	*91*		*70 - 130*	*07/20/21 11:29*	*07/21/21 06:19*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 04:11	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 04:11	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 04:11	1
Total TPH	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 04:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*97*		*70 - 130*	*07/20/21 14:33*	*07/26/21 04:11*	*1*
o-Terphenyl	*113*		*70 - 130*	*07/20/21 14:33*	*07/26/21 04:11*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			07/23/21 10:01	1

Client Sample ID: FS-16

Lab Sample ID: 820-1357-17
Matrix: Solid
Date Collected: 07/17/21 13:20
Date Received: 07/19/21 15:02
Sample Depth: 1.5' - 2'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 07:42	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 07:42	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 07:42	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		07/20/21 11:29	07/21/21 07:42	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 07:42	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		07/20/21 11:29	07/21/21 07:42	1
Total BTEX	<0.00400	U	0.00400		mg/Kg		07/20/21 11:29	07/21/21 07:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*124*		*70 - 130*	*07/20/21 11:29*	*07/21/21 07:42*	*1*
1,4-Difluorobenzene (Surr)	*100*		*70 - 130*	*07/20/21 11:29*	*07/21/21 07:42*	*1*

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Job ID: 820-1357-1
Project/Site: Osage SWD

Client Sample ID: FS-16
Lab Sample ID: 820-1357-17
Date Collected: 07/17/21 13:20
Matrix: Solid
Date Received: 07/19/21 15:02
Sample Depth: 1.5' - 2'

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 04:32	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 04:32	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 04:32	1
Total TPH	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 04:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*106*		*70 - 130*	*07/20/21 14:33*	*07/26/21 04:32*	*1*
o-Terphenyl	*123*		*70 - 130*	*07/20/21 14:33*	*07/26/21 04:32*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<4.99	U	4.99		mg/Kg			07/23/21 10:06	1

Client Sample ID: FS-17
Lab Sample ID: 820-1357-18
Date Collected: 07/17/21 13:25
Matrix: Solid
Date Received: 07/19/21 15:02
Sample Depth: 1.5' - 2'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00201	U	0.00201		mg/Kg		07/20/21 11:29	07/21/21 08:03	1
Toluene	<0.00201	U	0.00201		mg/Kg		07/20/21 11:29	07/21/21 08:03	1
Ethylbenzene	<0.00201	U	0.00201		mg/Kg		07/20/21 11:29	07/21/21 08:03	1
m-Xylene & p-Xylene	<0.00402	U	0.00402		mg/Kg		07/20/21 11:29	07/21/21 08:03	1
o-Xylene	**0.00249**		0.00201		mg/Kg		07/20/21 11:29	07/21/21 08:03	1
Xylenes, Total	<0.00402	U	0.00402		mg/Kg		07/20/21 11:29	07/21/21 08:03	1
Total BTEX	<0.00402	U	0.00402		mg/Kg		07/20/21 11:29	07/21/21 08:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*108*		*70 - 130*	*07/20/21 11:29*	*07/21/21 08:03*	*1*
1,4-Difluorobenzene (Surr)	*102*		*70 - 130*	*07/20/21 11:29*	*07/21/21 08:03*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 04:53	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 04:53	1
Oil Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 04:53	1
Total TPH	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 04:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*94*		*70 - 130*	*07/20/21 14:33*	*07/26/21 04:53*	*1*
o-Terphenyl	*107*		*70 - 130*	*07/20/21 14:33*	*07/26/21 04:53*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<4.99	U	4.99		mg/Kg			07/23/21 10:12	1

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Job ID: 820-1357-1
Project/Site: Osage SWD

Client Sample ID: FS-18
Lab Sample ID: 820-1357-19
Date Collected: 07/17/21 13:30
Matrix: Solid
Date Received: 07/19/21 15:02
Sample Depth: 1.5' - 2'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**0.00213**		0.00201		mg/Kg		07/20/21 11:29	07/21/21 08:24	1
Toluene	<0.00201	U	0.00201		mg/Kg		07/20/21 11:29	07/21/21 08:24	1
Ethylbenzene	<0.00201	U	0.00201		mg/Kg		07/20/21 11:29	07/21/21 08:24	1
m-Xylene & p-Xylene	<0.00402	U	0.00402		mg/Kg		07/20/21 11:29	07/21/21 08:24	1
o-Xylene	<0.00201	U	0.00201		mg/Kg		07/20/21 11:29	07/21/21 08:24	1
Xylenes, Total	<0.00402	U	0.00402		mg/Kg		07/20/21 11:29	07/21/21 08:24	1
Total BTEX	<0.00402	U	0.00402		mg/Kg		07/20/21 11:29	07/21/21 08:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*108*		*70 - 130*	*07/20/21 11:29*	*07/21/21 08:24*	*1*
1,4-Difluorobenzene (Surr)	*96*		*70 - 130*	*07/20/21 11:29*	*07/21/21 08:24*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 05:14	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 05:14	1
OII Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 05:14	1
Total TPH	<49.9	U	49.9		mg/Kg		07/20/21 14:33	07/26/21 05:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*96*		*70 - 130*	*07/20/21 14:33*	*07/26/21 05:14*	*1*
o-Terphenyl	*110*		*70 - 130*	*07/20/21 14:33*	*07/26/21 05:14*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<4.98	U	4.98		mg/Kg			07/23/21 10:17	1

Client Sample ID: FS-19
Lab Sample ID: 820-1357-20
Date Collected: 07/17/21 13:35
Matrix: Solid
Date Received: 07/19/21 15:02
Sample Depth: 1.5' - 2'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00201	U	0.00201		mg/Kg		07/20/21 11:29	07/21/21 08:44	1
Toluene	<0.00201	U	0.00201		mg/Kg		07/20/21 11:29	07/21/21 08:44	1
Ethylbenzene	<0.00201	U	0.00201		mg/Kg		07/20/21 11:29	07/21/21 08:44	1
m-Xylene & p-Xylene	<0.00402	U	0.00402		mg/Kg		07/20/21 11:29	07/21/21 08:44	1
o-Xylene	<0.00201	U	0.00201		mg/Kg		07/20/21 11:29	07/21/21 08:44	1
Xylenes, Total	<0.00402	U	0.00402		mg/Kg		07/20/21 11:29	07/21/21 08:44	1
Total BTEX	<0.00402	U	0.00402		mg/Kg		07/20/21 11:29	07/21/21 08:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*119*		*70 - 130*	*07/20/21 11:29*	*07/21/21 08:44*	*1*
1,4-Difluorobenzene (Surr)	*105*		*70 - 130*	*07/20/21 11:29*	*07/21/21 08:44*	*1*

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Job ID: 820-1357-1
Project/Site: Osage SWD

Client Sample ID: FS-19
Lab Sample ID: 820-1357-20
Date Collected: 07/17/21 13:35
Matrix: Solid
Date Received: 07/19/21 15:02
Sample Depth: 1.5' - 2'

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 05:35	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 05:35	1
Oil Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 05:35	1
Total TPH	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/26/21 05:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*95*		*70 - 130*	*07/20/21 14:33*	*07/26/21 05:35*	*1*
o-Terphenyl	*107*		*70 - 130*	*07/20/21 14:33*	*07/26/21 05:35*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.04	U	5.04		mg/Kg			07/23/21 10:23	1

Client Sample ID: FS-20
Lab Sample ID: 820-1357-21
Date Collected: 07/17/21 13:40
Matrix: Solid
Date Received: 07/19/21 15:02
Sample Depth: 1.5' - 2'

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199		mg/Kg		07/20/21 11:29	07/21/21 09:05	1
Toluene	<0.00199	U	0.00199		mg/Kg		07/20/21 11:29	07/21/21 09:05	1
Ethylbenzene	<0.00199	U	0.00199		mg/Kg		07/20/21 11:29	07/21/21 09:05	1
m-Xylene & p-Xylene	<0.00398	U	0.00398		mg/Kg		07/20/21 11:29	07/21/21 09:05	1
o-Xylene	<0.00199	U	0.00199		mg/Kg		07/20/21 11:29	07/21/21 09:05	1
Xylenes, Total	<0.00398	U	0.00398		mg/Kg		07/20/21 11:29	07/21/21 09:05	1
Total BTEX	<0.00398	U	0.00398		mg/Kg		07/20/21 11:29	07/21/21 09:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*114*		*70 - 130*	*07/20/21 11:29*	*07/21/21 09:05*	*1*
1,4-Difluorobenzene (Surr)	*98*		*70 - 130*	*07/20/21 11:29*	*07/21/21 09:05*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.7	U	49.7		mg/Kg		07/20/21 15:40	07/26/21 16:07	1
Diesel Range Organics (Over C10-C28)	<49.7	U	49.7		mg/Kg		07/20/21 15:40	07/26/21 16:07	1
Oil Range Organics (Over C28-C36)	<49.7	U	49.7		mg/Kg		07/20/21 15:40	07/26/21 16:07	1
Total TPH	<49.7	U	49.7		mg/Kg		07/20/21 15:40	07/26/21 16:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*115*		*70 - 130*	*07/20/21 15:40*	*07/26/21 16:07*	*1*
o-Terphenyl	*124*		*70 - 130*	*07/20/21 15:40*	*07/26/21 16:07*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<24.8	U	24.8		mg/Kg			07/22/21 18:48	5

Client Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Client Sample ID: FS-21

Date Collected: 07/17/21 13:45
Date Received: 07/19/21 15:02
Sample Depth: 1.5' - 2'

Lab Sample ID: 820-1357-22

Matrix: Solid

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 09:26	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 09:26	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 09:26	1
m-Xylene & p-Xylene	<0.00399	U	0.00399		mg/Kg		07/20/21 11:29	07/21/21 09:26	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 09:26	1
Xylenes, Total	<0.00399	U	0.00399		mg/Kg		07/20/21 11:29	07/21/21 09:26	1
Total BTEX	<0.00399	U	0.00399		mg/Kg		07/20/21 11:29	07/21/21 09:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*125*		*70 - 130*	*07/20/21 11:29*	*07/21/21 09:26*	*1*
1,4-Difluorobenzene (Surr)	*114*		*70 - 130*	*07/20/21 11:29*	*07/21/21 09:26*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.9	U	49.9		mg/Kg		07/20/21 15:40	07/26/21 16:28	1
Diesel Range Organics (Over C10-C28)	<49.9	U	49.9		mg/Kg		07/20/21 15:40	07/26/21 16:28	1
OII Range Organics (Over C28-C36)	<49.9	U	49.9		mg/Kg		07/20/21 15:40	07/26/21 16:28	1
Total TPH	<49.9	U	49.9		mg/Kg		07/20/21 15:40	07/26/21 16:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*101*		*70 - 130*	*07/20/21 15:40*	*07/26/21 16:28*	*1*
o-Terphenyl	*111*		*70 - 130*	*07/20/21 15:40*	*07/26/21 16:28*	*1*

Method: 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**5.22**		4.95		mg/Kg			07/23/21 09:18	1

Surrogate Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

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)
820-1357-1	P-1	142 S1+	114
820-1357-2	P-2	114	94
820-1357-3	P-3	119	92
820-1357-4	P-4	126	102
820-1357-5	P-5	125	107
820-1357-6	P-6	127	118
820-1357-7	P-7	127	90
820-1357-7 MS	P-7	129	103
820-1357-7 MSD	P-7	108	91
820-1357-8	P-8	120	103
820-1357-9	P-9	133 S1+	97
820-1357-10	P-10	129	106
820-1357-11	FS-10	128	107
820-1357-12	FS-11	116	116
820-1357-13	FS-12	120	111
820-1357-14	FS-13	111	99
820-1357-15	FS-14	131 S1+	101
820-1357-16	FS-15	116	91
820-1357-17	FS-16	124	100
820-1357-18	FS-17	108	102
820-1357-19	FS-18	108	96
820-1357-20	FS-19	119	105
820-1357-21	FS-20	114	98
820-1357-22	FS-21	125	114
LCS 880-5411/1-A	Lab Control Sample	96	91
LCS 880-5421/1-A	Lab Control Sample	102	93
LCSD 880-5411/2-A	Lab Control Sample Dup	98	100
LCSD 880-5421/2-A	Lab Control Sample Dup	100	97
MB 880-5411/5-A	Method Blank	107	90
MB 880-5421/5-A	Method Blank	104	83

Surrogate Legend

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

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

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

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	1CO1 (70-130)	OTPH1 (70-130)
820-1357-1	P-1	94	109
820-1357-1 MS	P-1	96	102
820-1357-1 MSD	P-1	88	95
820-1357-2	P-2	98	114
820-1357-3	P-3	99	112
820-1357-4	P-4	96	110
820-1357-5	P-5	95	109
820-1357-6	P-6	103	117
820-1357-7	P-7	97	111

Surrogate Summary

Client: Terracon Consulting Eng & Scientists Job ID: 820-1357-1
Project/Site: Osage SWD

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

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

		Percent Surrogate Recovery (Acceptance Limits)									
Lab Sample ID	Client Sample ID	1CO1 (70-130)	OTPH1 (70-130)								
820-1357-8	P-8	93	101								
820-1357-9	P-9	97	111								
820-1357-10	P-10	97	112								
820-1357-11	FS-10	94	106								
820-1357-12	FS-11	99	115								
820-1357-13	FS-12	93	108								
820-1357-14	FS-13	97	114								
820-1357-15	FS-14	111	129								
820-1357-16	FS-15	97	113								
820-1357-17	FS-16	106	123								
820-1357-18	FS-17	94	107								
820-1357-19	FS-18	96	110								
820-1357-20	FS-19	95	107								
820-1357-21	FS-20	115	124								
820-1357-22	FS-21	101	111								
LCS 880-5435/2-A	Lab Control Sample	98	106								
LCS 880-5439/2-A	Lab Control Sample	111	112								
LCSD 880-5435/3-A	Lab Control Sample Dup	96	105								
LCSD 880-5439/3-A	Lab Control Sample Dup	105	104								
MB 880-5435/1-A	Method Blank	94	110								
MB 880-5439/1-A	Method Blank	104	114								

Surrogate Legend

1CO = 1-Chlorooctane

OTPH = o-Terphenyl

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-5411/5-A
Matrix: Solid
Analysis Batch: 5426

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 5411

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:15	07/20/21 15:55	1
Toluene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:15	07/20/21 15:55	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:15	07/20/21 15:55	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		07/20/21 11:15	07/20/21 15:55	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:15	07/20/21 15:55	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		07/20/21 11:15	07/20/21 15:55	1
Total BTEX	<0.00400	U	0.00400		mg/Kg		07/20/21 11:15	07/20/21 15:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*70 - 130*	*07/20/21 11:15*	*07/20/21 15:55*	*1*
1,4-Difluorobenzene (Surr)	*90*		*70 - 130*	*07/20/21 11:15*	*07/20/21 15:55*	*1*

Lab Sample ID: LCS 880-5411/1-A
Matrix: Solid
Analysis Batch: 5426

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 5411

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene			0.100	0.1063		mg/Kg		106	70 - 130		
Toluene			0.100	0.09717		mg/Kg		97	70 - 130		
Ethylbenzene			0.100	0.09761		mg/Kg		98	70 - 130		
m-Xylene & p-Xylene			0.200	0.2042		mg/Kg		102	70 - 130		
o-Xylene			0.100	0.09539		mg/Kg		95	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*70 - 130*
1,4-Difluorobenzene (Surr)	*91*		*70 - 130*

Lab Sample ID: LCSD 880-5411/2-A
Matrix: Solid
Analysis Batch: 5426

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 5411

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene			0.100	0.1088		mg/Kg		109	70 - 130	2	35
Toluene			0.100	0.09815		mg/Kg		98	70 - 130	1	35
Ethylbenzene			0.100	0.09946		mg/Kg		99	70 - 130	2	35
m-Xylene & p-Xylene			0.200	0.2001		mg/Kg		100	70 - 130	2	35
o-Xylene			0.100	0.09277		mg/Kg		93	70 - 130	3	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*
1,4-Difluorobenzene (Surr)	*100*		*70 - 130*

Lab Sample ID: MB 880-5421/5-A
Matrix: Solid
Analysis Batch: 5426

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 5421

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 02:52	1

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

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

Lab Sample ID: MB 880-5421/5-A
Matrix: Solid
Analysis Batch: 5426

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 5421

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 02:52	1
Ethylbenzene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 02:52	1
m-Xylene & p-Xylene	<0.00400	U	0.00400		mg/Kg		07/20/21 11:29	07/21/21 02:52	1
o-Xylene	<0.00200	U	0.00200		mg/Kg		07/20/21 11:29	07/21/21 02:52	1
Xylenes, Total	<0.00400	U	0.00400		mg/Kg		07/20/21 11:29	07/21/21 02:52	1
Total BTEX	<0.00400	U	0.00400		mg/Kg		07/20/21 11:29	07/21/21 02:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*	*07/20/21 11:29*	*07/21/21 02:52*	*1*
1,4-Difluorobenzene (Surr)	*83*		*70 - 130*	*07/20/21 11:29*	*07/21/21 02:52*	*1*

Lab Sample ID: LCS 880-5421/1-A
Matrix: Solid
Analysis Batch: 5426

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 5421

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene			0.100	0.09884		mg/Kg		99	70 - 130		
Toluene			0.100	0.09914		mg/Kg		99	70 - 130		
Ethylbenzene			0.100	0.09047		mg/Kg		90	70 - 130		
m-Xylene & p-Xylene			0.200	0.1966		mg/Kg		98	70 - 130		
o-Xylene			0.100	0.09269		mg/Kg		93	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*70 - 130*
1,4-Difluorobenzene (Surr)	*93*		*70 - 130*

Lab Sample ID: LCSD 880-5421/2-A
Matrix: Solid
Analysis Batch: 5426

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 5421

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene			0.100	0.09650		mg/Kg		96	70 - 130	2	35
Toluene			0.100	0.09249		mg/Kg		92	70 - 130	7	35
Ethylbenzene			0.100	0.09424		mg/Kg		94	70 - 130	4	35
m-Xylene & p-Xylene			0.200	0.1833		mg/Kg		92	70 - 130	7	35
o-Xylene			0.100	0.08583		mg/Kg		86	70 - 130	8	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*70 - 130*
1,4-Difluorobenzene (Surr)	*97*		*70 - 130*

Lab Sample ID: 820-1357-7 MS
Matrix: Solid
Analysis Batch: 5426

Client Sample ID: P-7
Prep Type: Total/NA
Prep Batch: 5421

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene	<0.00200	U F2 F1	0.101	0.08882		mg/Kg		88	70 - 130		
Toluene	<0.00200	U F2 F1	0.101	0.08084		mg/Kg		80	70 - 130		

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

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

Lab Sample ID: 820-1357-7 MS
Matrix: Solid
Analysis Batch: 5426

Client Sample ID: P-7
Prep Type: Total/NA
Prep Batch: 5421

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethylbenzene	0.00389	F1	0.101	0.07483		mg/Kg		71	70 - 130
m-Xylene & p-Xylene	<0.00399	U F1	0.201	0.1543		mg/Kg		77	70 - 130
o-Xylene	0.00252	F1	0.101	0.07602		mg/Kg		73	70 - 130

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

Lab Sample ID: 820-1357-7 MSD
Matrix: Solid
Analysis Batch: 5426

Client Sample ID: P-7
Prep Type: Total/NA
Prep Batch: 5421

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	0.0996	0.05633	F2 F1	mg/Kg		57	70 - 130	45	35
Toluene	<0.00200	U F2 F1	0.0996	0.05498	F2 F1	mg/Kg		55	70 - 130	38	35
Ethylbenzene	0.00389	F1	0.0996	0.06224	F1	mg/Kg		59	70 - 130	18	35
m-Xylene & p-Xylene	<0.00399	U F1	0.199	0.1224	F1	mg/Kg		61	70 - 130	23	35
o-Xylene	0.00252	F1	0.0996	0.05772	F1	mg/Kg		55	70 - 130	27	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*108*		*70 - 130*
1,4-Difluorobenzene (Surr)	*91*		*70 - 130*

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

Lab Sample ID: MB 880-5435/1-A
Matrix: Solid
Analysis Batch: 5629

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 5435

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/25/21 20:54	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/25/21 20:54	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/25/21 20:54	1
Total TPH	<50.0	U	50.0		mg/Kg		07/20/21 14:33	07/25/21 20:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*94*		*70 - 130*	*07/20/21 14:33*	*07/25/21 20:54*	*1*
o-Terphenyl	*110*		*70 - 130*	*07/20/21 14:33*	*07/25/21 20:54*	*1*

Lab Sample ID: LCS 880-5435/2-A
Matrix: Solid
Analysis Batch: 5629

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 5435

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline Range Organics (GRO)-C6-C10	1000	856.4		mg/Kg		86	70 - 130

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

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

Lab Sample ID: LCS 880-5435/2-A
Matrix: Solid
Analysis Batch: 5629

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 5435

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Diesel Range Organics (Over C10-C28)			1000	963.7		mg/Kg		96	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*98*		*70 - 130*
o-Terphenyl	*106*		*70 - 130*

Lab Sample ID: LCSD 880-5435/3-A
Matrix: Solid
Analysis Batch: 5629

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 5435

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	838.2		mg/Kg		84	70 - 130	2	20
Diesel Range Organics (Over C10-C28)			1000	942.2		mg/Kg		94	70 - 130	2	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1-Chlorooctane	*96*		*70 - 130*
o-Terphenyl	*105*		*70 - 130*

Lab Sample ID: 820-1357-1 MS
Matrix: Solid
Analysis Batch: 5629

Client Sample ID: P-1
Prep Type: Total/NA
Prep Batch: 5435

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	996	1019		mg/Kg		102	70 - 130		
Diesel Range Organics (Over C10-C28)	<50.0	U	996	1008		mg/Kg		99	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1-Chlorooctane	*96*		*70 - 130*
o-Terphenyl	*102*		*70 - 130*

Lab Sample ID: 820-1357-1 MSD
Matrix: Solid
Analysis Batch: 5629

Client Sample ID: P-1
Prep Type: Total/NA
Prep Batch: 5435

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	996	870.3		mg/Kg		87	70 - 130	16	20
Diesel Range Organics (Over C10-C28)	<50.0	U	996	943.7		mg/Kg		92	70 - 130	7	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1-Chlorooctane	*88*		*70 - 130*
o-Terphenyl	*95*		*70 - 130*

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

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

Lab Sample ID: MB 880-5439/1-A
Matrix: Solid
Analysis Batch: 5655

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 5439

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0		mg/Kg		07/20/21 15:40	07/26/21 12:32	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0		mg/Kg		07/20/21 15:40	07/26/21 12:32	1
OII Range Organics (Over C28-C36)	<50.0	U	50.0		mg/Kg		07/20/21 15:40	07/26/21 12:32	1
Total TPH	<50.0	U	50.0		mg/Kg		07/20/21 15:40	07/26/21 12:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1-Chlorooctane	*104*		*70 - 130*	*07/20/21 15:40*	*07/26/21 12:32*	*1*
o-Terphenyl	*114*		*70 - 130*	*07/20/21 15:40*	*07/26/21 12:32*	*1*

Lab Sample ID: LCS 880-5439/2-A
Matrix: Solid
Analysis Batch: 5655

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 5439

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Gasoline Range Organics (GRO)-C6-C10			1000	902.6		mg/Kg		90	70 - 130		
Diesel Range Organics (Over C10-C28)			1000	1062		mg/Kg		106	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1-Chlorooctane	*111*		*70 - 130*
o-Terphenyl	*112*		*70 - 130*

Lab Sample ID: LCSD 880-5439/3-A
Matrix: Solid
Analysis Batch: 5655

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 5439

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10			1000	913.1		mg/Kg		91	70 - 130	1	20
Diesel Range Organics (Over C10-C28)			1000	994.1		mg/Kg		99	70 - 130	7	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1-Chlorooctane	*105*		*70 - 130*
o-Terphenyl	*104*		*70 - 130*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-5429/1-A
Matrix: Solid
Analysis Batch: 5549

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			07/22/21 16:38	1

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 880-5429/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 5549

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			250	246.7		mg/Kg		99	90 - 110		

Lab Sample ID: LCSD 880-5429/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 5549

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride			250	246.8		mg/Kg		99	90 - 110	0	20

Lab Sample ID: 820-1357-1 MS — **Client Sample ID: P-1**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 5549

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride	<5.05	U	253	275.5		mg/Kg		108	90 - 110		

Lab Sample ID: 820-1357-1 MSD — **Client Sample ID: P-1**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 5549

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	<5.05	U	253	264.7		mg/Kg		104	90 - 110	4	20

Lab Sample ID: 820-1357-11 MS — **Client Sample ID: FS-10**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 5549

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride	<4.97	U	249	243.4		mg/Kg		98	90 - 110		

Lab Sample ID: 820-1357-11 MSD — **Client Sample ID: FS-10**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 5549

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	<4.97	U	249	243.3		mg/Kg		98	90 - 110	0	20

Lab Sample ID: MB 880-5431/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 5551

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00		mg/Kg			07/22/21 18:31	1

Lab Sample ID: LCS 880-5431/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 5551

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			250	245.6		mg/Kg		98	90 - 110		

QC Sample Results

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: LCSD 880-5431/3-A
Matrix: Solid
Analysis Batch: 5551

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	246.2		mg/Kg		98	90 - 110	0	20

Lab Sample ID: 820-1357-21 MS
Matrix: Solid
Analysis Batch: 5551

Client Sample ID: FS-20
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	<24.8	U	1240	1184		mg/Kg		95	90 - 110

Lab Sample ID: 820-1357-21 MSD
Matrix: Solid
Analysis Batch: 5551

Client Sample ID: FS-20
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	<24.8	U	1240	1184		mg/Kg		95	90 - 110	0	20

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

GC VOA

Prep Batch: 5411

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
820-1357-1	P-1	Total/NA	Solid	5035	
820-1357-2	P-2	Total/NA	Solid	5035	
820-1357-3	P-3	Total/NA	Solid	5035	
820-1357-4	P-4	Total/NA	Solid	5035	
820-1357-5	P-5	Total/NA	Solid	5035	
820-1357-6	P-6	Total/NA	Solid	5035	
MB 880-5411/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-5411/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-5411/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	

Prep Batch: 5421

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
820-1357-7	P-7	Total/NA	Solid	5035	
820-1357-8	P-8	Total/NA	Solid	5035	
820-1357-9	P-9	Total/NA	Solid	5035	
820-1357-10	P-10	Total/NA	Solid	5035	
820-1357-11	FS-10	Total/NA	Solid	5035	
820-1357-12	FS-11	Total/NA	Solid	5035	
820-1357-13	FS-12	Total/NA	Solid	5035	
820-1357-14	FS-13	Total/NA	Solid	5035	
820-1357-15	FS-14	Total/NA	Solid	5035	
820-1357-16	FS-15	Total/NA	Solid	5035	
820-1357-17	FS-16	Total/NA	Solid	5035	
820-1357-18	FS-17	Total/NA	Solid	5035	
820-1357-19	FS-18	Total/NA	Solid	5035	
820-1357-20	FS-19	Total/NA	Solid	5035	
820-1357-21	FS-20	Total/NA	Solid	5035	
820-1357-22	FS-21	Total/NA	Solid	5035	
MB 880-5421/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-5421/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-5421/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
820-1357-7 MS	P-7	Total/NA	Solid	5035	
820-1357-7 MSD	P-7	Total/NA	Solid	5035	

Analysis Batch: 5426

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
820-1357-1	P-1	Total/NA	Solid	8021B	5411
820-1357-2	P-2	Total/NA	Solid	8021B	5411
820-1357-3	P-3	Total/NA	Solid	8021B	5411
820-1357-4	P-4	Total/NA	Solid	8021B	5411
820-1357-5	P-5	Total/NA	Solid	8021B	5411
820-1357-6	P-6	Total/NA	Solid	8021B	5411
820-1357-7	P-7	Total/NA	Solid	8021B	5421
820-1357-8	P-8	Total/NA	Solid	8021B	5421
820-1357-9	P-9	Total/NA	Solid	8021B	5421
820-1357-10	P-10	Total/NA	Solid	8021B	5421
820-1357-11	FS-10	Total/NA	Solid	8021B	5421
820-1357-12	FS-11	Total/NA	Solid	8021B	5421
820-1357-13	FS-12	Total/NA	Solid	8021B	5421
820-1357-14	FS-13	Total/NA	Solid	8021B	5421
820-1357-15	FS-14	Total/NA	Solid	8021B	5421

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

GC VOA (Continued)

Analysis Batch: 5426 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
820-1357-16	FS-15	Total/NA	Solid	8021B	5421
820-1357-17	FS-16	Total/NA	Solid	8021B	5421
820-1357-18	FS-17	Total/NA	Solid	8021B	5421
820-1357-19	FS-18	Total/NA	Solid	8021B	5421
820-1357-20	FS-19	Total/NA	Solid	8021B	5421
820-1357-21	FS-20	Total/NA	Solid	8021B	5421
820-1357-22	FS-21	Total/NA	Solid	8021B	5421
MB 880-5411/5-A	Method Blank	Total/NA	Solid	8021B	5411
MB 880-5421/5-A	Method Blank	Total/NA	Solid	8021B	5421
LCS 880-5411/1-A	Lab Control Sample	Total/NA	Solid	8021B	5411
LCS 880-5421/1-A	Lab Control Sample	Total/NA	Solid	8021B	5421
LCSD 880-5411/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	5411
LCSD 880-5421/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	5421
820-1357-7 MS	P-7	Total/NA	Solid	8021B	5421
820-1357-7 MSD	P-7	Total/NA	Solid	8021B	5421

GC Semi VOA

Prep Batch: 5435

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
820-1357-1	P-1	Total/NA	Solid	8015NM Prep	
820-1357-2	P-2	Total/NA	Solid	8015NM Prep	
820-1357-3	P-3	Total/NA	Solid	8015NM Prep	
820-1357-4	P-4	Total/NA	Solid	8015NM Prep	
820-1357-5	P-5	Total/NA	Solid	8015NM Prep	
820-1357-6	P-6	Total/NA	Solid	8015NM Prep	
820-1357-7	P-7	Total/NA	Solid	8015NM Prep	
820-1357-8	P-8	Total/NA	Solid	8015NM Prep	
820-1357-9	P-9	Total/NA	Solid	8015NM Prep	
820-1357-10	P-10	Total/NA	Solid	8015NM Prep	
820-1357-11	FS-10	Total/NA	Solid	8015NM Prep	
820-1357-12	FS-11	Total/NA	Solid	8015NM Prep	
820-1357-13	FS-12	Total/NA	Solid	8015NM Prep	
820-1357-14	FS-13	Total/NA	Solid	8015NM Prep	
820-1357-15	FS-14	Total/NA	Solid	8015NM Prep	
820-1357-16	FS-15	Total/NA	Solid	8015NM Prep	
820-1357-17	FS-16	Total/NA	Solid	8015NM Prep	
820-1357-18	FS-17	Total/NA	Solid	8015NM Prep	
820-1357-19	FS-18	Total/NA	Solid	8015NM Prep	
820-1357-20	FS-19	Total/NA	Solid	8015NM Prep	
MB 880-5435/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-5435/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-5435/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
820-1357-1 MS	P-1	Total/NA	Solid	8015NM Prep	
820-1357-1 MSD	P-1	Total/NA	Solid	8015NM Prep	

Prep Batch: 5439

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
820-1357-21	FS-20	Total/NA	Solid	8015NM Prep	
820-1357-22	FS-21	Total/NA	Solid	8015NM Prep	
MB 880-5439/1-A	Method Blank	Total/NA	Solid	8015NM Prep	

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

GC Semi VOA (Continued)

Prep Batch: 5439 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 880-5439/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-5439/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	

Analysis Batch: 5629

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
820-1357-1	P-1	Total/NA	Solid	8015B NM	5435
820-1357-2	P-2	Total/NA	Solid	8015B NM	5435
820-1357-3	P-3	Total/NA	Solid	8015B NM	5435
820-1357-4	P-4	Total/NA	Solid	8015B NM	5435
820-1357-5	P-5	Total/NA	Solid	8015B NM	5435
820-1357-6	P-6	Total/NA	Solid	8015B NM	5435
820-1357-7	P-7	Total/NA	Solid	8015B NM	5435
820-1357-8	P-8	Total/NA	Solid	8015B NM	5435
820-1357-9	P-9	Total/NA	Solid	8015B NM	5435
820-1357-10	P-10	Total/NA	Solid	8015B NM	5435
820-1357-11	FS-10	Total/NA	Solid	8015B NM	5435
820-1357-12	FS-11	Total/NA	Solid	8015B NM	5435
820-1357-13	FS-12	Total/NA	Solid	8015B NM	5435
820-1357-14	FS-13	Total/NA	Solid	8015B NM	5435
820-1357-15	FS-14	Total/NA	Solid	8015B NM	5435
820-1357-16	FS-15	Total/NA	Solid	8015B NM	5435
820-1357-17	FS-16	Total/NA	Solid	8015B NM	5435
820-1357-18	FS-17	Total/NA	Solid	8015B NM	5435
820-1357-19	FS-18	Total/NA	Solid	8015B NM	5435
820-1357-20	FS-19	Total/NA	Solid	8015B NM	5435
MB 880-5435/1-A	Method Blank	Total/NA	Solid	8015B NM	5435
LCS 880-5435/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	5435
LCSD 880-5435/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	5435
820-1357-1 MS	P-1	Total/NA	Solid	8015B NM	5435
820-1357-1 MSD	P-1	Total/NA	Solid	8015B NM	5435

Analysis Batch: 5655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
820-1357-21	FS-20	Total/NA	Solid	8015B NM	5439
820-1357-22	FS-21	Total/NA	Solid	8015B NM	5439
MB 880-5439/1-A	Method Blank	Total/NA	Solid	8015B NM	5439
LCS 880-5439/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	5439
LCSD 880-5439/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	5439

HPLC/IC

Leach Batch: 5429

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
820-1357-1	P-1	Soluble	Solid	DI Leach	
820-1357-2	P-2	Soluble	Solid	DI Leach	
820-1357-3	P-3	Soluble	Solid	DI Leach	
820-1357-4	P-4	Soluble	Solid	DI Leach	
820-1357-5	P-5	Soluble	Solid	DI Leach	
820-1357-6	P-6	Soluble	Solid	DI Leach	
820-1357-7	P-7	Soluble	Solid	DI Leach	
820-1357-8	P-8	Soluble	Solid	DI Leach	

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

HPLC/IC (Continued)

Leach Batch: 5429 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
820-1357-9	P-9	Soluble	Solid	DI Leach	
820-1357-10	P-10	Soluble	Solid	DI Leach	
820-1357-11	FS-10	Soluble	Solid	DI Leach	
820-1357-12	FS-11	Soluble	Solid	DI Leach	
820-1357-13	FS-12	Soluble	Solid	DI Leach	
820-1357-14	FS-13	Soluble	Solid	DI Leach	
820-1357-15	FS-14	Soluble	Solid	DI Leach	
820-1357-16	FS-15	Soluble	Solid	DI Leach	
820-1357-17	FS-16	Soluble	Solid	DI Leach	
820-1357-18	FS-17	Soluble	Solid	DI Leach	
820-1357-19	FS-18	Soluble	Solid	DI Leach	
820-1357-20	FS-19	Soluble	Solid	DI Leach	
MB 880-5429/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-5429/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-5429/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
820-1357-1 MS	P-1	Soluble	Solid	DI Leach	
820-1357-1 MSD	P-1	Soluble	Solid	DI Leach	
820-1357-11 MS	FS-10	Soluble	Solid	DI Leach	
820-1357-11 MSD	FS-10	Soluble	Solid	DI Leach	

Leach Batch: 5431

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
820-1357-21	FS-20	Soluble	Solid	DI Leach	
820-1357-22	FS-21	Soluble	Solid	DI Leach	
MB 880-5431/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-5431/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-5431/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
820-1357-21 MS	FS-20	Soluble	Solid	DI Leach	
820-1357-21 MSD	FS-20	Soluble	Solid	DI Leach	

Analysis Batch: 5549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
820-1357-1	P-1	Soluble	Solid	300.0	5429
820-1357-2	P-2	Soluble	Solid	300.0	5429
820-1357-3	P-3	Soluble	Solid	300.0	5429
820-1357-4	P-4	Soluble	Solid	300.0	5429
820-1357-5	P-5	Soluble	Solid	300.0	5429
820-1357-6	P-6	Soluble	Solid	300.0	5429
820-1357-7	P-7	Soluble	Solid	300.0	5429
820-1357-8	P-8	Soluble	Solid	300.0	5429
820-1357-9	P-9	Soluble	Solid	300.0	5429
820-1357-10	P-10	Soluble	Solid	300.0	5429
820-1357-11	FS-10	Soluble	Solid	300.0	5429
820-1357-12	FS-11	Soluble	Solid	300.0	5429
820-1357-13	FS-12	Soluble	Solid	300.0	5429
820-1357-14	FS-13	Soluble	Solid	300.0	5429
820-1357-15	FS-14	Soluble	Solid	300.0	5429
820-1357-16	FS-15	Soluble	Solid	300.0	5429
820-1357-17	FS-16	Soluble	Solid	300.0	5429
820-1357-18	FS-17	Soluble	Solid	300.0	5429
820-1357-19	FS-18	Soluble	Solid	300.0	5429

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

HPLC/IC (Continued)

Analysis Batch: 5549 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
820-1357-20	FS-19	Soluble	Solid	300.0	5429
MB 880-5429/1-A	Method Blank	Soluble	Solid	300.0	5429
LCS 880-5429/2-A	Lab Control Sample	Soluble	Solid	300.0	5429
LCSD 880-5429/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	5429
820-1357-1 MS	P-1	Soluble	Solid	300.0	5429
820-1357-1 MSD	P-1	Soluble	Solid	300.0	5429
820-1357-11 MS	FS-10	Soluble	Solid	300.0	5429
820-1357-11 MSD	FS-10	Soluble	Solid	300.0	5429

Analysis Batch: 5551

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
820-1357-21	FS-20	Soluble	Solid	300.0	5431
820-1357-22	FS-21	Soluble	Solid	300.0	5431
MB 880-5431/1-A	Method Blank	Soluble	Solid	300.0	5431
LCS 880-5431/2-A	Lab Control Sample	Soluble	Solid	300.0	5431
LCSD 880-5431/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	5431
820-1357-21 MS	FS-20	Soluble	Solid	300.0	5431
820-1357-21 MSD	FS-20	Soluble	Solid	300.0	5431

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Client Sample ID: P-1

Lab Sample ID: 820-1357-1
Matrix: Solid
Date Collected: 07/17/21 12:00
Date Received: 07/19/21 15:02

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	5411	07/20/21 11:15	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/20/21 22:07	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/25/21 21:56	AJ	XEN MID
Soluble	Leach	DI Leach			4.95 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/22/21 17:11	CH	XEN MID

Client Sample ID: P-2

Lab Sample ID: 820-1357-2
Matrix: Solid
Date Collected: 07/17/21 12:05
Date Received: 07/19/21 15:02

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	5411	07/20/21 11:15	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/20/21 22:28	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/25/21 22:59	AJ	XEN MID
Soluble	Leach	DI Leach			5.01 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/22/21 17:27	CH	XEN MID

Client Sample ID: P-3

Lab Sample ID: 820-1357-3
Matrix: Solid
Date Collected: 07/17/21 12:10
Date Received: 07/19/21 15:02

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	5411	07/20/21 11:15	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/20/21 22:48	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/25/21 23:20	AJ	XEN MID
Soluble	Leach	DI Leach			5.05 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/22/21 17:33	CH	XEN MID

Client Sample ID: P-4

Lab Sample ID: 820-1357-4
Matrix: Solid
Date Collected: 07/17/21 12:15
Date Received: 07/19/21 15:02

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.00 g	5 mL	5411	07/20/21 11:15	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/20/21 23:09	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/25/21 23:41	AJ	XEN MID
Soluble	Leach	DI Leach			4.97 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/23/21 10:28	CH	XEN MID

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Client Sample ID: P-5

Lab Sample ID: 820-1357-5
Matrix: Solid
Date Collected: 07/17/21 12:20
Date Received: 07/19/21 15:02

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	5411	07/20/21 11:15	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/20/21 23:30	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.04 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/26/21 00:02	AJ	XEN MID
Soluble	Leach	DI Leach			4.96 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/23/21 10:33	CH	XEN MID

Client Sample ID: P-6

Lab Sample ID: 820-1357-6
Matrix: Solid
Date Collected: 07/17/21 12:25
Date Received: 07/19/21 15:02

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.05 g	5 mL	5411	07/20/21 11:15	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/20/21 23:50	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.06 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/26/21 00:22	AJ	XEN MID
Soluble	Leach	DI Leach			4.95 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/23/21 10:39	CH	XEN MID

Client Sample ID: P-7

Lab Sample ID: 820-1357-7
Matrix: Solid
Date Collected: 07/17/21 12:30
Date Received: 07/19/21 15:02

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	5421	07/20/21 11:29	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/21/21 03:13	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/26/21 00:43	AJ	XEN MID
Soluble	Leach	DI Leach			4.99 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/22/21 18:06	CH	XEN MID

Client Sample ID: P-8

Lab Sample ID: 820-1357-8
Matrix: Solid
Date Collected: 07/17/21 12:35
Date Received: 07/19/21 15:02

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.05 g	5 mL	5421	07/20/21 11:29	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/21/21 03:34	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/26/21 01:04	AJ	XEN MID
Soluble	Leach	DI Leach			4.98 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/22/21 18:11	CH	XEN MID

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Client Sample ID: P-9

Lab Sample ID: 820-1357-9

Date Collected: 07/17/21 12:40
Matrix: Solid
Date Received: 07/19/21 15:02

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.00 g	5 mL	5421	07/20/21 11:29	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/21/21 03:55	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/26/21 01:25	AJ	XEN MID
Soluble	Leach	DI Leach			4.99 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/22/21 18:17	CH	XEN MID

Client Sample ID: P-10

Lab Sample ID: 820-1357-10

Date Collected: 07/17/21 12:45
Matrix: Solid
Date Received: 07/19/21 15:02

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.98 g	5 mL	5421	07/20/21 11:29	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/21/21 04:15	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/26/21 01:46	AJ	XEN MID
Soluble	Leach	DI Leach			5.01 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/23/21 11:14	CH	XEN MID

Client Sample ID: FS-10

Lab Sample ID: 820-1357-11

Date Collected: 07/17/21 12:50
Matrix: Solid
Date Received: 07/19/21 15:02

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	5421	07/20/21 11:29	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/21/21 04:36	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/26/21 02:27	AJ	XEN MID
Soluble	Leach	DI Leach			5.03 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/23/21 11:19	CH	XEN MID

Client Sample ID: FS-11

Lab Sample ID: 820-1357-12

Date Collected: 07/17/21 12:55
Matrix: Solid
Date Received: 07/19/21 15:02

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.05 g	5 mL	5421	07/20/21 11:29	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/21/21 04:57	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/26/21 02:48	AJ	XEN MID
Soluble	Leach	DI Leach			5.05 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/23/21 11:36	CH	XEN MID

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Client Sample ID: FS-12
Date Collected: 07/17/21 13:00
Date Received: 07/19/21 15:02

Lab Sample ID: 820-1357-13
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			5.05 g	5 mL	5421	07/20/21 11:29	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/21/21 05:17	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/26/21 03:09	AJ	XEN MID
Soluble	Leach	DI Leach			5.03 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/23/21 11:41	CH	XEN MID

Client Sample ID: FS-13
Date Collected: 07/17/21 13:05
Date Received: 07/19/21 15:02

Lab Sample ID: 820-1357-14
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			4.96 g	5 mL	5421	07/20/21 11:29	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/21/21 05:38	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/26/21 03:30	AJ	XEN MID
Soluble	Leach	DI Leach			5.05 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/23/21 09:50	CH	XEN MID

Client Sample ID: FS-14
Date Collected: 07/17/21 13:10
Date Received: 07/19/21 15:02

Lab Sample ID: 820-1357-15
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	5421	07/20/21 11:29	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/21/21 05:58	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/26/21 03:50	AJ	XEN MID
Soluble	Leach	DI Leach			5 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/23/21 09:55	CH	XEN MID

Client Sample ID: FS-15
Date Collected: 07/17/21 13:15
Date Received: 07/19/21 15:02

Lab Sample ID: 820-1357-16
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	5421	07/20/21 11:29	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/21/21 06:19	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/26/21 04:11	AJ	XEN MID
Soluble	Leach	DI Leach			5 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/23/21 10:01	CH	XEN MID

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Client Sample ID: FS-16
Date Collected: 07/17/21 13:20
Date Received: 07/19/21 15:02

Lab Sample ID: 820-1357-17
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.00 g	5 mL	5421	07/20/21 11:29	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/21/21 07:42	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.01 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/26/21 04:32	AJ	XEN MID
Soluble	Leach	DI Leach			5.01 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/23/21 10:06	CH	XEN MID

Client Sample ID: FS-17
Date Collected: 07/17/21 13:25
Date Received: 07/19/21 15:02

Lab Sample ID: 820-1357-18
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			4.98 g	5 mL	5421	07/20/21 11:29	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/21/21 08:03	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.02 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/26/21 04:53	AJ	XEN MID
Soluble	Leach	DI Leach			5.01 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/23/21 10:12	CH	XEN MID

Client Sample ID: FS-18
Date Collected: 07/17/21 13:30
Date Received: 07/19/21 15:02

Lab Sample ID: 820-1357-19
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			4.98 g	5 mL	5421	07/20/21 11:29	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/21/21 08:24	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/26/21 05:14	AJ	XEN MID
Soluble	Leach	DI Leach			5.02 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/23/21 10:17	CH	XEN MID

Client Sample ID: FS-19
Date Collected: 07/17/21 13:35
Date Received: 07/19/21 15:02

Lab Sample ID: 820-1357-20
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			4.98 g	5 mL	5421	07/20/21 11:29	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/21/21 08:44	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.00 g	10 mL	5435	07/20/21 14:33	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5629	07/26/21 05:35	AJ	XEN MID
Soluble	Leach	DI Leach			4.96 g	50 mL	5429	07/20/21 13:14	CH	XEN MID
Soluble	Analysis	300.0		1	0 mL	1.0 mL	5549	07/23/21 10:23	CH	XEN MID

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Client Sample ID: FS-20

Lab Sample ID: 820-1357-21

Date Collected: 07/17/21 13:40

Matrix: Solid

Date Received: 07/19/21 15:02

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	5421	07/20/21 11:29	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/21/21 09:05	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.06 g	10 mL	5439	07/20/21 15:40	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5655	07/26/21 16:07	AJ	XEN MID
Soluble	Leach	DI Leach			5.04 g	50 mL	5431	07/20/21 13:18	CH	XEN MID
Soluble	Analysis	300.0		5			5551	07/22/21 18:48	CH	XEN MID

Client Sample ID: FS-21

Lab Sample ID: 820-1357-22

Date Collected: 07/17/21 13:45

Matrix: Solid

Date Received: 07/19/21 15:02

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	5421	07/20/21 11:29	KL	XEN MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	5426	07/21/21 09:26	KL	XEN MID
Total/NA	Prep	8015NM Prep			10.03 g	10 mL	5439	07/20/21 15:40	DM	XEN MID
Total/NA	Analysis	8015B NM		1			5655	07/26/21 16:28	AJ	XEN MID
Soluble	Leach	DI Leach			5.05 g	50 mL	5431	07/20/21 13:18	CH	XEN MID
Soluble	Analysis	300.0		1			5551	07/23/21 09:18	CH	XEN MID

Laboratory References:

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

Accreditation/Certification Summary

Client: Terracon Consulting Eng & Scientists
Job ID: 820-1357-1
Project/Site: Osage SWD

Laboratory: Eurofins Xenco, Midland

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

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704400-20-21	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
8015B NM	8015NM Prep	Solid	Total TPH
8021B	5035	Solid	Total BTEX

Method Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (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.

Laboratory References:

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

Sample Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Osage SWD

Job ID: 820-1357-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
820-1357-1	P-1	Solid	07/17/21 12:00	07/19/21 15:02	1' - 1.5'
820-1357-2	P-2	Solid	07/17/21 12:05	07/19/21 15:02	1' - 1.5'
820-1357-3	P-3	Solid	07/17/21 12:10	07/19/21 15:02	1' - 1.5'
820-1357-4	P-4	Solid	07/17/21 12:15	07/19/21 15:02	1' - 1.5'
820-1357-5	P-5	Solid	07/17/21 12:20	07/19/21 15:02	1' - 1.5'
820-1357-6	P-6	Solid	07/17/21 12:25	07/19/21 15:02	1' - 1.5'
820-1357-7	P-7	Solid	07/17/21 12:30	07/19/21 15:02	1' - 1.5'
820-1357-8	P-8	Solid	07/17/21 12:35	07/19/21 15:02	1' - 1.5'
820-1357-9	P-9	Solid	07/17/21 12:40	07/19/21 15:02	1' - 1.5'
820-1357-10	P-10	Solid	07/17/21 12:45	07/19/21 15:02	1' - 1.5'
820-1357-11	FS-10	Solid	07/17/21 12:50	07/19/21 15:02	1.5' - 2'
820-1357-12	FS-11	Solid	07/17/21 12:55	07/19/21 15:02	1.5' - 2'
820-1357-13	FS-12	Solid	07/17/21 13:00	07/19/21 15:02	1.5' - 2'
820-1357-14	FS-13	Solid	07/17/21 13:05	07/19/21 15:02	1.5 - 2'
820-1357-15	FS-14	Solid	07/17/21 13:10	07/19/21 15:02	1.5' - 2'
820-1357-16	FS-15	Solid	07/17/21 13:15	07/19/21 15:02	1.5' - 2'
820-1357-17	FS-16	Solid	07/17/21 13:20	07/19/21 15:02	1.5' - 2'
820-1357-18	FS-17	Solid	07/17/21 13:25	07/19/21 15:02	1.5' - 2'
820-1357-19	FS-18	Solid	07/17/21 13:30	07/19/21 15:02	1.5' - 2'
820-1357-20	FS-19	Solid	07/17/21 13:35	07/19/21 15:02	1.5' - 2'
820-1357-21	FS-20	Solid	07/17/21 13:40	07/19/21 15:02	1.5' - 2'
820-1357-22	FS-21	Solid	07/17/21 13:45	07/19/21 15:02	1.5' - 2'

CHAIN OF CUSTODY RECORD

Terracon

Laboratory: Xenco
Address: 6701 Aberdeen
Lubbock, Texas 79424

Office Location: Lubbock
Phone:
Project Manager: J. Guesnier
Contact: J. Guesnier 806-544-9276
Sampler's Name: J. Guesnier
SRS #:
Sampler's Signature

ANALYSIS REQUESTED

LAB USE ONLY
DUE DATE:
TEMP OF COOLER WHEN RECEIVED (°C): 14/14.4 IR-4

Page 1 of 1

Loc: 820
1357

Project Number: AR217019
Project Name: Osage SWD

No. Type of Containers

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	4 oz Glass	40 ml VOA	250 ml Poly	5035 kit	Chloride (EPA Method 300)	BTEX (EPA Method 8021B)	TPH Extended 8015	Lab Sample ID
S	7/17/2021	12:00		X	P-1	1'	1.5'	X				X	X	X	
S	7/17/2021	12:05		X	P-2	1'	1.5'	X				X	X	X	
S	7/17/2021	12:10		X	P-3	1'	1.5'	X				X	X	X	
	7/17/2021	12:15		X	P-4	1'	1.5'					X	X	X	
	7/17/2021	12:20		X	P-5	1'	1.5'					X	X	X	
	7/17/2021	12:25		X	P-6	1'	1.5'					X	X	X	
	7/17/2021	12:30		X	P-7	1'	1.5'					X	X	X	
	7/17/2021	12:35		X	P-8	1'	1.5'					X	X	X	
	7/17/2021	12:40		X	P-9	1'	1.5'					X	X	X	
	7/17/2021	12:45		X	P-10	1'	1.5'					X	X	X	
	7/17/2021	12:50	X		FS-10	1.5'	2'					X	X	X	
	7/17/2021	12:55	X		FS-11	1.5'	2'					X	X	X	
	7/17/2021	13:00	X		FS-12	1.5'	2'					X	X	X	
	7/17/2021	13:05	X		FS-13	1.5'	2'					X	X	X	
	7/17/2021	13:10	X		FS-14	1.5'	2'					X	X	X	
	7/17/2021	13:15	X		FS-15	1.5'	2'					X	X	X	
	7/17/2021	13:20	X		FS-16	1.5'	2'					X	X	X	
	7/17/2021	13:25	X		FS-17	1.5'	2'					X	X	X	
	7/17/2021	13:30	X		FS-18	1.5'	2'					X	X	X	
	7/17/2021	13:35	X		FS-19	1.5'	2'					X	X	X	
	7/17/2021	13:40	X		FS-20	1.5'	2'					X	X	X	
	7/17/2021	13:45	X		FS-21	1.5'	2'					X	X	X	

TURNAROUND TIME: ☑ Normal ☐ 48-Hour Rush ☐ 24-Hour Rush

TRRP Laboratory Review Checklist: ☐ Yes ☐ No

Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time
	7/19/21	3:02	Teddy Hendricks	7/19	1502

NOTES: Client: Solaris Water Midstream

e-mail results to:
bryant.mcbrayer@terracon.com
erin.loyd@terracon.com
jrguesnier@terracon.com

Matrix: WW-Wastewater; W - Water; S - Soil; L - Liquid; A - Air Bag; C - Charcoal tube; SL - Sludge
Container: VOA - 40 ml vial; A/G - Amber Glass 1L; 250 ml - Glass wide mouth; P/O - Plastic or other: _____

Login Sample Receipt Checklist

Client: Terracon Consulting Eng & Scientists

Job Number: 820-1357-1

Login Number: 1357
List Number: 1
Creator: Teel, Brianna

List Source: Eurofins Xenco, Lubbock

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	

Login Sample Receipt Checklist

Client: Terracon Consulting Eng & Scientists

Job Number: 820-1357-1

Login Number: 1357
List Number: 2
Creator: Teel, Brianna

List Source: Eurofins Xenco, Midland
List Creation: 07/20/21 11:24 AM

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

APPENDIX E – TERRACON STANDARD OF CARE, LIMITATION, AND RELIANCE

Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time. Terracon makes no warranties, either express or implied, regarding the findings, conclusions, or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report. These services were performed in accordance with the scope of work agreed with you, Spur Energy Partnes LLC, as reflected in our proposal.

Additional Scope Limitations

Development of this RAP is based upon information provided by the Client and Terracon's remediation and construction services line. Such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, nondetectable, or not present during these services. We cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those by information provided by the Client. The data, interpretations, findings, and our recommendations are based solely upon reformation executed within the scope of these services.

Reliance

This report has been prepared for the exclusive use of Spur Energy Partners LLC, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of Spur Energy Partners LLC and Terracon. Any unauthorized distribution or reuse is at Spur Energy Partners LLC sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions, and limitations stated in the proposal and Spur Energy Partners and Terracon's Master Services Agreement. The limitation of liability defined in the terms and conditions is the aggregate limit of Terracon's liability to Spur Water Midstream and all relying parties unless otherwise agreed in writing.

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District III
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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 45685

CONDITIONS

Operator: Spur Energy Partners LLC 9655 Katy Freeway Houston, TX 77024	OGRID: 328947
	Action Number: 45685
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
chensley	None	9/29/2021