



February 16, 2024
Kleinfelder Project No.: 24004611.001A

Mr. Blair Rollins
Caerus Piceance, LLC
143 Diamond Avenue
Parachute, Colorado 81635

**SUBJECT: Site Investigation Report
 Remediation Project Number: 31518
 Love Ranch 8 Off-Location Flowline Release
 Rio Blanco County, Colorado**

Dear Mr. Rollins:

Kleinfelder Inc. (Kleinfelder) performed investigation activities at the Love Ranch 8 Off-Location Flowline Release site in Rio Blanco County, Colorado under contract by Caerus Piceance LLC (Caerus). Enclosed is the report of work complete for this effort.

Please do not hesitate to contact me at (970) 309-6553 or by email at JVeith@kleinfelder.com should you have questions or concerns.

Respectfully submitted,

KLEINFELDER, INC.

A handwritten signature in black ink that reads "Jordan Veith". The signature is written in a cursive, flowing style.

Jordan Veith
Project Manager I



**SITE INVESTIGATION REPORT
REMEDATION PROJECT NUMBER: 31518
LOVE RANCH 8 OFF-LOCATION FLOWLINE RELEASE
RIO BLANCO COUNTY, COLORADO
KLEINFELDER PROJECT NO. 24004611.001A**

FEBRUARY 16, 2024

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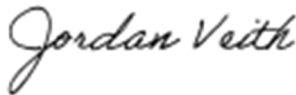
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REPORT WAS PREPARED.**

A Report Prepared for:

Mr. Blair Rollins
Caerus Piceance, LLC
143 Diamond Avenue
Parachute, CO 81635


**SITE INVESTIGATION REPORT
REMEDIATION PROJECT NUMBER: 31518
LOVE RANCH 8 OFF-LOCATION FLOWLINE RELEASE
RIO BLANCO COUNTY, COLORADO**

Prepared by:



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Project Manager I

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February 16, 2024
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SITE INVESTIGATION REPORT
REMEDATION PROJECT NUMBER: 31518
LOVE RANCH 8 OFF-LOCATION FLOWLINE RELEASE
RIO BLANCO COUNTY, COLORADO

1 INTRODUCTION

This document was prepared by Kleinfelder Inc. (Kleinfelder) on behalf of Caerus Piceance, LLC (Caerus) to provide documentation of recent investigation and sampling support services conducted at the Love Ranch 8 Off-Location Flowline Release Site (the Site) located in Rio Blanco County, Colorado (**Figure 1**).

1.1 BACKGROUND

Kleinfelder has been contracted by Caerus to perform surface water, groundwater, and soil sampling support services to provide necessary information to complete the Colorado Energy and Carbon Management Commission (ECMC) Form 27 for Caerus' upstream oil and gas production facilities located in the Piceance Basin. According to the approved ECMC Form 19 Spill/Release Report (Initial) (document #403391282) and approved Form 19 Spill/Release Report (Supplemental) (document # 403398312) provided to Kleinfelder by Caerus, Caerus identified the Love Ranch 8 Off-Location Flowline Release (the Site) by observing a sheen emanating on Piceance Creek along a known pipeline corridor on May 2, 2023.

1.2 INITIAL RESPONSE ACTIVITIES (MAY 2023 – JULY 2023)

Initial response activities completed at the site are detailed under the Form 27 Site Investigation and Remediation Workplan (Initial) (document #403479868).

1.3 SURFACE WATER MONITORING ACTIVITIES

Previous surface water monitoring and sampling activities are detailed under the Form 27 Site Investigation and Remediation Workplan (Initial) (document #403479868) and Form 27 Site Investigation and Remediation Workplan (Supplemental) (document #403615334) and subsequent attachments.

Caerus continued monthly surface water monitoring and sampling activities from October through December 2023. A summary of the surface water samples collected by Kleinfelder from October through December 2023 is included in **Table 1**. Laboratory analytical results for Site surface water samples are detailed in **Table 2**.

1.4 GROUNDWATER MONITORING ACTIVITIES

Caerus continued quarterly groundwater monitoring and sampling activities in December 2023, including:

- Sampling the five (5) existing piezometers, and
- Sampling the four (4) existing permanent monitoring wells.

Additional details on these activities are explained in Section 3 of this report. A summary of the groundwater samples collected by Kleinfelder in December 2023 is listed in **Table 3**. Laboratory analytical results for Site groundwater samples are detailed in **Table 4**.

2 SITE LOCATION, GEOLOGIC, AND HYDROGEOLOGIC SETTING

The Love Ranch 8 Off-Location Flowline Release Site is located in Rio Blanco County, Colorado (SWNW, Section 9, Township 2 South, Range 97 West) near the northeastern edge of the Piceance Basin, a large structural basin in the Uinta-Piceance geologic province of Colorado and Utah consisting of sandstones and siltstones, containing reserves of coal, natural gas, and oil shale. The Site location and topographical information are shown on **Figure 1**.

The main geologic units in this area (from youngest to oldest) are the Uinta formation, Green River Formation, Wasatch formation, Mesa Verde Group, and Mancos Shale. The Green River Formation is visible along the slopes and ridges on either side of the Piceance Creek valley. The Green River Formation is an Eocene lacustrine formation associated with lake deposits from Lake Uinta, which once covered large areas of northwestern Colorado, northeastern Utah, and southwestern Wyoming. The Green River Formation includes siltstones, sandstones, mudstones, and oil shale, as well as various lacustrine limestones, dolomites, and saline evaporites. The only significant North American deposit of the sodium bicarbonate (i.e., baking soda) mineral Nahcolite is located within Green River deposits. Nahcolite is mined in the region and processed at a facility in the Piceance Creek valley.

The Site is located in a wide, flat valley bottom in the vicinity of Piceance Creek, as shown on **Figure 1**. **Figure 2** shows the localized Site surficial geology, which consists of Quaternary (Holocene) Piney Creek Alluvium. The Piney Creek Alluvium generally consists of mildly calcareous unconsolidated silts, clays, and sands.

Piceance Creek flows from south to north in this valley toward its confluence with the White River, approximately 9 miles north of the Site. Piceance Creek is a meandering perennial stream. The Site is in a high altitude semi-arid region, and runoff is generally associated with snowmelt or summertime short-duration, high-intensity thunderstorms. Maximum flows in Piceance Creek typically occur during spring snowmelt runoff with peak flow commonly occurring in April to May of each year and the lowest flow in the fall, typically in October to November.

In addition to Piceance Creek, there is also a small irrigation ditch to the west of the creek in the valley near where the Site is located. The ditch is used by a local rancher for irrigation. The valley is irrigated to allow for cattle grazing.

Groundwater can be as shallow as a few feet below ground surface (bgs) in the central part of the valley near Piceance Creek. Groundwater depth varies by at least a few feet seasonally as evidenced by the changes in depth to groundwater between May and July as measured at the piezometers installed in at the Site in May 2023. The locations of the piezometers are shown on the groundwater potentiometric surface map for December 2023 (**Figure 3**). The groundwater flow direction is generally to the north-northwest in the vicinity of the site, generally similar to the Piceance Creek flow direction. Considering the shallow depth to groundwater, it may be in hydraulic connection with Piceance Creek, though there is currently insufficient site-specific data (e.g., flux study) to confirm whether Piceance Creek is a gaining or losing stream in the area of the Site or whether this could vary seasonally.

Four permanent groundwater monitoring wells (MW01 – MW04) were installed by Caerus in September 2023 as part of the Site investigation activities to provide additional data on the localized potentiometric surface, groundwater flow direction, groundwater gradient, and groundwater conditions surrounding the Site. The four permanent groundwater monitoring wells have been precisely surveyed and are shown on **Figure 3**.

3 FIELD ACTIVITIES

Surface water monitoring activities completed by Caerus beginning on May 2, 2023, and continuing through September 25, 2023, were previously described, and reported under the Form 27 Site Investigation and Remediation Workplan (Initial) (document #403479868) and Form 27 Site Investigation and Remediation Workplan (Supplemental) (document #403615334) and subsequent attachments. Caerus contracted Kleinfelder to continue surface water monitoring activities on a monthly basis from October through December 2023. Caerus directed Kleinfelder to complete additional quarterly groundwater investigation sampling at the Site in December 2023. Caerus initiated the field activities summarized in this section to investigate and monitor the release at the Site.

3.1 CONTINUED SURFACE WATER MONITORING – OCTOBER THROUGH DECEMBER 2023

Caerus continued monthly surface water monitoring and sampling at six (6) defined points at the Site. The surface water samples up-gradient from the release are denoted with “UG” in the sample identification name. Surface water sample results down gradient from the release are denoted with “DG” in the sample identification name. Kleinfelder completed the surface water sampling as summarized below.

- Kleinfelder completed monthly surface water sampling on October 31, 2023, November 29, 2023, and December 18, 2023 at UG02, Point of Release (POR), DG14, DG13, DG12, and DG11 as depicted on **Figure 4**.
- Eighteen (18) total surface water samples were collected from the Locations depicted on **Figure 4** in October through December 2023.
- Laboratory analytical results for these surface water samples are detailed in **Table 2**.
- All surface water samples were submitted to Pace Analytical National Laboratory (Pace) for full ECMC Table 915-1 water parameters, as well as 1-methylnaphthalene and 2-methylnaphthalene per the Conditions of Approval (COA) in the approved Form 27 Site Investigation and Remediation Workplan (Initial) (document #403479868).

3.2 CONTINUED GROUNDWATER MONITORING – DECEMBER 2023

Caerus continued quarterly groundwater sampling from the five (5) previously installed piezometers and four (4) previously installed permanent monitoring wells at the Site. Kleinfelder completed the groundwater sampling as summarized below.

- Kleinfelder collected one groundwater sample from each permanent monitoring well (MW01-MW04) using a peristaltic pump and polyethylene tubing directly from the monitoring wells. Groundwater quality parameters were measured using a YSI Multi-parameter meter to characterize the groundwater conditions. Groundwater sampling parameters and notes for these permanent monitoring wells are depicted in **Appendix A**. The groundwater sample summary is detailed in **Table 3** and the laboratory analytical results of the groundwater samples are detailed in **Table 4**.
- Kleinfelder also collected groundwater samples from the five (5) piezometers previously installed at the Site in May 2023 as depicted in **Figure 5**. One groundwater sample was collected from each piezometer using a peristaltic pump. Groundwater quality parameters were measured using a YSI Multi-parameter meter to characterize the groundwater conditions. Groundwater sampling parameters for these piezometers are depicted in **Appendix A**. The groundwater sample summary is detailed in **Table 3** and the laboratory analytical results of the groundwater samples are detailed in **Table 4**.
- Kleinfelder collected a total of nine (9) groundwater samples from the site on December 19, 2023. Laboratory analytical results for these groundwater samples are summarized in **Table 4**. The locations of these groundwater samples are depicted on **Figure 5**.

Kleinfelder used an EOS Arrow 100 Submeter Global Navigation Satellite System (GNSS) receiver to record latitude and longitude at each sample location and the sample locations are shown on **Figure 4** and **Figure 5**.

Surface water samples were collected via grab sampling directly from Piceance Creek using seven laboratory-supplied sample bottles. All samples were immediately placed on ice in a cooler. Standard chain-of-custody (COC) procedures were used during sampling and transportation to Pace in Mount Juliet, Tennessee (via FEDEX). The surface water samples were analyzed for full ECMC Table 915-1 analytes as well as 1-methylnaphthalene and 2-methylnaphthalene.

Groundwater samples were collected via a peristaltic pump and polyethylene tubing directly from the piezometer and permanent monitoring wells and placed directly into the seven laboratory-supplied sample bottles. All samples were immediately placed on ice in a cooler. Standard COC procedures were used during sampling and transportation to Pace in Mount Juliet, Tennessee (via FEDEX). The groundwater samples were analyzed for full ECMC Table 915-1 analytes and 1-methylnaphthalene and 2-methylnaphthalene.

4 RESULTS

All laboratory analytical results were compared to ECMC Table 915-1 cleanup concentrations for surface water and groundwater. 1-methylnaphthalene and 2-methylnaphthalene laboratory analytical results were compared to the narrative groundwater quality standards listed in the COA in the approved Form 27 Site Investigation and Remediation Workplan (Initial) (document #403479868). Laboratory Analytical Reports from Pace are provided in **Appendix B**.

4.1 SURFACE WATER

All surface water samples are summarized in **Table 1**. Laboratory analytical results for the surface water samples are presented in **Table 2**. The surface water sample locations are depicted on **Figure 4**. Total dissolved solids (TDS) and chloride were detected at similar concentrations in the upstream and downstream surface water samples. Sulfate was detected above ECMC Table 915-1 thresholds in all surface water sample results. The December 18, 2023, sample result collected from the POR indicated exceedances for sulfate, benzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, and 2-methylnaphthalene.

4.2 GROUNDWATER

All groundwater samples are summarized in **Table 3**. Laboratory analytical results for the groundwater samples are presented in **Table 4**. The groundwater sample locations are depicted on **Figure 5**. Groundwater sampling parameters for the permanent monitoring wells and piezometers are depicted in **Appendix A**. Excluding sulfate, all December 2023 groundwater samples were either non-detect results or were below cleanup concentrations for ECMC Table 915-1. Sulfate was detected above ECMC Table 915-1 cleanup concentrations in all groundwater sample results.

5 SUMMARY AND RECOMMENDATIONS

5.1 SUMMARY

Below is a summary of the main findings and conclusions from the supplemental site characterization activities at the Site from October through December 2023.

- Sulfate was detected above ECMC Table 915-1 cleanup concentrations in all surface water and groundwater sample results.
- The December 18, 2023 POR surface water sample exceeded ECMC Table 915-1 cleanup concentrations for sulfate, benzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, and 2-methylnaphthalene.

5.2 RECOMMENDATIONS

Based on the findings presented herein, Kleinfelder recommends Caerus continue monthly surface water monitoring and sampling at the six (6) points previously sampled at the Site. Kleinfelder recommends Caerus continue quarterly groundwater monitoring and sampling of the five (5) piezometers and four (4) monitoring wells previously sampled at the Site.

6 LIMITATIONS

Kleinfelder offers various levels of investigative and engineering services to suit the varying needs of different clients. It should be recognized that definition and evaluation of geologic and environmental conditions are a difficult and inexact science. Judgments leading to conclusions and recommendations are generally made with incomplete knowledge of the subsurface conditions present due to the limitations of data from field studies. Although risk can never be eliminated, more detailed and extensive studies yield more information, which may help understand and manage the level of risk. Since detailed study and analysis involves greater expense, our clients participate in determining levels of service that provide adequate information for their purposes at acceptable levels of risk. More extensive studies, including subsurface studies or field tests, should be performed to reduce uncertainties. Acceptance of this report will indicate that Caerus has reviewed the document and determined that it does not need or want a greater level of service than provided.

During the course of the performance of Kleinfelder's services, hazardous materials may have been discovered. Kleinfelder assumes no responsibility or liability whatsoever for any claim, loss of property value, damage, or injury that results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials. Nothing contained in this report should be construed or interpreted as requiring Kleinfelder to assume the status of an owner, operator, or generator, or person who arranges for disposal, transport, storage, or treatment of hazardous materials within the meaning of any governmental statute, regulation, or order. Caerus is solely responsible for directing notification of all governmental agencies, and the public at large, of the existence, release, treatment, or disposal of any hazardous materials observed at the project site, either before or during performance of Kleinfelder's services. Caerus is responsible for directing all arrangements to lawfully store, treat, recycle, dispose, or otherwise handle hazardous materials, including cuttings and samples resulting from Kleinfelder's services.

TABLES



TABLE 1 - SURFACE WATER SAMPLE SUMMARY
CAERUS PICEANCE, LLC
SITE INVESTIGATION REPORT
REMEDIATION PROJECT NUMBER: 31518
LOVE RANCH 8 OFF-LOCATION FLOWLINE RELEASE
RIO BLANCO COUNTY, COLORADO

Sample ID	Sample Matrix	Latitude	Longitude	PID Reading (PPM)	Hydrocarbon Odor Detected (Y/N)	Soil Staining or Surface Sheen Observed (Y/N)	Objective	Comments
20231031-Love Ranch 8-(ST-PC-UG02)	Surface Water	39.890997	-108.292920	NM	N	N	Surface water monitoring.	None
20231031-Love Ranch 8-(ST-PC-POR)	Surface Water	39.891282	-108.292728	NM	Y	Y	Surface water monitoring.	Sheen on water
20231031-Love Ranch 8-(ST-PC-DG14)	Surface Water	39.891345	-108.292819	NM	N	N	Surface water monitoring.	None
20231031-Love Ranch 8-(ST-PC-DG13)	Surface Water	39.891421	-108.292880	NM	N	N	Surface water monitoring.	None
20231031-Love Ranch 8-(ST-PC-DG12)	Surface Water	39.891864	-108.293013	NM	N	N	Surface water monitoring.	None
20231031-Love Ranch 8-(ST-PC-DG11)	Surface Water	39.892314	-108.292833	NM	N	N	Surface water monitoring.	None
20231129-XTWP-(LR8-ST-PC-UG02)	Surface Water	39.890997	-108.292920	NM	N	N	Surface water monitoring.	None
20231129-XTWP-(LR8-ST-PC-POR)	Surface Water	39.891282	-108.292728	NM	N	N	Surface water monitoring.	None
20231129-XTWP-(LR8-ST-PC-DG14)	Surface Water	39.891345	-108.292819	NM	N	N	Surface water monitoring.	None
20231129-XTWP-(LR8-ST-PC-DG13)	Surface Water	39.891421	-108.292880	NM	N	N	Surface water monitoring.	None
20231129-XTWP-(LR8-ST-PC-DG12)	Surface Water	39.891864	-108.293013	NM	N	N	Surface water monitoring.	None
20231129-XTWP-(LR8-ST-PC-DG11)	Surface Water	39.892314	-108.292833	NM	N	N	Surface water monitoring.	None
20231218-XTWP-(LR8-ST-PC-UG02)	Surface Water	39.890997	-108.292920	NM	N	N	Surface water monitoring.	None
20231218-XTWP-(LR8-ST-PC-POR)	Surface Water	39.891282	-108.292728	NM	Y	Y	Surface water monitoring.	None
20231218-XTWP-(LR8-ST-PC-DG14)	Surface Water	39.891345	-108.292819	NM	N	N	Surface water monitoring.	None
20231218-XTWP-(LR8-ST-PC-DG13)	Surface Water	39.891421	-108.292880	NM	N	N	Surface water monitoring.	None
20231218-XTWP-(LR8-ST-PC-DG12)	Surface Water	39.891864	-108.293013	NM	N	N	Surface water monitoring.	None
20231218-XTWP-(LR8-ST-PC-DG11)	Surface Water	39.892314	-108.292833	NM	N	N	Surface water monitoring.	None

NOTES:

DG = Down-Gradient

NM = Not Measured

PC = Piceance Creek

PID = Photo-ionization Detector

POR = Point of Release

PPM = Parts per million

ST = STREAM

UG = Up-Gradient



TABLE 2 - SURFACE WATER ANALYTICAL RESULTS
CAERUS PICEANCE, LLC
REMEDIATION PROJECT NUMBER: 31518
LOVE RANCH 8 OFF-LOCATION FLOWLINE RELEASE
RIO BLANCO COUNTY, COLORADO

Lab ID #		L1672468	L1672468	L1672468	L1672468	L1672468	L1672468
Location ID		(LR8-ST-PC-UG02)	(LR8-ST-PC-POR)	(LR8-ST-PC-DG14)	(LR8-ST-PC-DG13)	(LR8-ST-PC-DG12)	(LR8-ST-PC-DG11)
Sample Date		10/31/2023	10/31/2023	10/31/2023	10/31/2023	10/31/2023	10/31/2023
Sample ID		20231031-LOVE RANCH 8-(ST-PC-UG2)	20231031-LOVE RANCH 8-(ST-PC-POR)	20231031-LOVE RANCH 8-(ST-PC-DG14)	20231031-LOVE RANCH 8-(ST-PC-DG13)	20231031-LOVE RANCH 8-(ST-PC-DG12)	20231031-LOVE RANCH 8-(ST-PC-DG11)
Contaminant of Concern	Cleanup Concentration (mg/l unless otherwise noted)						
Total Dissolved Solids (TDS)	< 1.25X Local Background	1010	998	1010	1000	1010	1020
Chloride	250	18.1	18.3	18.2	18.3	18.1	18.1
Sulfate	250	404	388	385	386	392	379
Benzene	0.005	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
Toluene	1	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
Ethylbenzene	0.7	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
Xylenes (sum of o-, m- and p- isomers = total xylenes)	10	<0.00300 ND	<0.00300 ND	<0.00300 ND	<0.00300 ND	<0.00300 ND	<0.00300 ND
1,2,4-trimethylbenzene	0.067	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
1,3,5-trimethylbenzene	0.067	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
Naphthalene	0.14	<0.00500 ND	<0.00500 ND	<0.00500 ND	<0.00500 ND	<0.00500 ND	<0.00500 ND
1-Methylnaphthalene	0.0011	<0.000250 ND	<0.000250 ND	<0.000250 ND	<0.000250 ND	<0.000250 ND	<0.000250 ND
2-Methylnaphthalene	0.0036	<0.000250 ND	<0.000250 ND	<0.000250 ND	<0.000250 ND	<0.000250 ND	<0.000250 ND

NOTES:

Greater than Table 915-1 Cleanup Concentrations

DG = down-gradient
E = The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J = The identification of the analyte is acceptable: the reported value is an estimate
J3 = The associated batch QC was outside the established quality control range for precision.
J4 = The associated batch QC was outside the established quality control range for accuracy.
mg/L = milligram per liter
MOI = material of interest
ND = Not Detected
NM = Not Measured
POR = Point of release
Q = Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values
SP = spring
ST = stream, surface water
U = Not detected at the Reporting Limit (or MDL where applicable).
V = The sample concentration is too high to evaluate accurate spike recoveries.



TABLE 2 - SURFACE WATER ANALYTICAL RESULTS
CAERUS PICEANCE, LLC
REMEDATION PROJECT NUMBER: 31518
LOVE RANCH 8 OFF-LOCATION FLOWLINE RELEASE
RIO BLANCO COUNTY, COLORADO

Lab ID #		L1682898	L1682898	L1682898	L1682898	L1682898	L1682898
Location ID		(LR8-ST-PC-UG02)	(LR8-ST-PC-POR)	(LR8-ST-PC-DG14)	(LR8-ST-PC-DG13)	(LR8-ST-PC-DG12)	(LR8-ST-PC-DG11)
Sample Date		11/29/2023	11/29/2023	11/29/2023	11/29/2023	11/29/2023	11/29/2023
Sample ID		20231129-XTWP-(LR8-ST-PC-UG02)	20231129-XTWP-(LR8-ST-PC-POR)	20231129-XTWP-(LR8-ST-PC-DG14)	20231129-XTWP-(LR8-ST-PC-DG13)	20231129-XTWP-(LR8-ST-PC-DG12)	20231129-XTWP-(LR8-ST-PC-DG11)
Contaminant of Concern	Cleanup Concentration (mg/l unless otherwise noted)						
Total Dissolved Solids (TDS)	< 1.25X Local Background	868	898	908	900	896	878
Chloride	250	16	16.1	16.4	16.1	16.1	16.1
Sulfate	250	349	355 E V	364 V	357	363	362
Benzene	0.005	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
Toluene	1	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
Ethylbenzene	0.7	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
Xylenes (sum of o-, m- and p- isomers = total xylenes)	10	<0.00300 ND	<0.00300 ND	<0.00300 ND	<0.00300 ND	<0.00300 ND	<0.00300 ND
1,2,4-trimethylbenzene	0.067	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
1,3,5-trimethylbenzene	0.067	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
Naphthalene	0.14	<0.00500 ND J4	<0.00500 ND J4	<0.00500 ND J4	<0.00500 ND J4	<0.00500 ND J4	<0.00500 ND J4
1-Methylnaphthalene	0.0011	<0.000250 ND	<0.000250 ND	<0.000250 ND	<0.000250 ND	<0.000250 ND	<0.000250 ND
2-Methylnaphthalene	0.0036	<0.000250 ND	<0.000250 ND	<0.000250 ND	<0.000250 ND	<0.000250 ND	<0.000250 ND

NOTES:

Greater than Table 915-1 Cleanup Con

DG = down-gradient
E = The analyte concentration exceeds the upper limit of the calibration range of
J = The identification of the analyte is acceptable: the reported value is an estimate
J3 = The associated batch QC was outside the established quality control range for
J4 = The associated batch QC was outside the established quality control range for
mg/L = milligram per liter
MOI = material of interest
ND = Not Detected
NM = Not Measured
POR = Point of release
Q = Sample was prepared and/or analyzed past holding time as defined in the method
SP = spring
ST = stream, surface water
U = Not detected at the Reporting Limit (or MDL where applicable).
V = The sample concentration is too high to evaluate accurate spike recoveries.



TABLE 2 - SURFACE WATER ANALYTICAL RESULTS
CAERUS PICEANCE, LLC
REMEDATION PROJECT NUMBER: 31518
LOVE RANCH 8 OFF-LOCATION FLOWLINE RELEASE
RIO BLANCO COUNTY, COLORADO

Lab ID #		L1689727	L1689727	L1689727	L1689727	L1689727	L1689727
Location ID		(LR8-ST-PC-UG02)	(LR8-ST-PC-POR)	(LR8-ST-PC-DG14)	(LR8-ST-PC-DG13)	(LR8-ST-PC-DG12)	(LR8-ST-PC-DG11)
Sample Date		12/18/2023	12/18/2023	12/18/2023	12/18/2023	12/18/2023	12/18/2023
Sample ID		20231218-XTWP-(LR8-ST-PC-UG02)	20231218-XTWP-(LR8-ST-PC-POR)	20231218-XTWP-(LR8-ST-PC-DG14)	20231218-XTWP-(LR8-ST-PC-DG13)	20231218-XTWP-(LR8-ST-PC-DG12)	20231218-XTWP-(LR8-ST-PC-DG11)
Contaminant of Concern	Cleanup Concentration (mg/l unless otherwise noted)						
Total Dissolved Solids (TDS)	< 1.25X Local Background	970	1170	952	984	960	972
Chloride	250	15.8	49.5	15.7	15.6	16.1	16.1
Sulfate	250	337	268	337	334	334	338
Benzene	0.005	<0.00100 ND	0.572	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
Toluene	1	<0.00100 ND	0.411	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
Ethylbenzene	0.7	<0.00100 ND	0.0922	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
Xylenes (sum of o-, m- and p- isomers = total xylenes)	10	<0.00300 ND	1.11	<0.00300 ND	<0.00300 ND	<0.00300 ND	<0.00300 ND
1,2,4-trimethylbenzene	0.067	<0.00100 ND	0.139	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
1,3,5-trimethylbenzene	0.067	<0.00100 ND	0.119	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
Naphthalene	0.14	<0.00500 ND	0.0143	<0.00500 ND	<0.00500 ND	<0.00500 ND	<0.00500 ND
1-Methylnaphthalene	0.0011	<0.000250 ND	0.00591	<0.000250 ND	<0.000250 ND	<0.000250 ND	<0.000250 ND
2-Methylnaphthalene	0.0036	<0.000250 ND	0.0177	<0.000250 ND	<0.000250 ND	<0.000250 ND	<0.000250 ND

NOTES:

Greater than Table 915-1 Cleanup Con

DG = down-gradient
E = The analyte concentration exceeds the upper limit of the calibration range of
J = The identification of the analyte is acceptable: the reported value is an estimate
J3 = The associated batch QC was outside the established quality control range for
J4 = The associated batch QC was outside the established quality control range for
mg/L = milligram per liter
MOI = material of interest
ND = Not Detected
NM = Not Measured
POR = Point of release
Q = Sample was prepared and/or analyzed past holding time as defined in the method
SP = spring
ST = stream, surface water
U = Not detected at the Reporting Limit (or MDL where applicable).
V = The sample concentration is too high to evaluate accurate spike recoveries.



TABLE 3 - GROUNDWATER SAMPLE SUMMARY
CAERUS PICEANCE, LLC
SITE INVESTIGATION REPORT
REMEDIATION PROJECT NUMBER: 31518
LOVE RANCH 8 OFF-LOCATION FLOWLINE RELEASE
RIO BLANCO COUNTY, COLORADO

Sample ID	Sample Matrix	Latitude	Longitude	PID Reading (PPM)	Hydrocarbon Odor Detected (Y/N)	Soil Staining or Surface Sheen Observed (Y/N)	Objective	Comments
20231219-XTWP-(LR8-MW01)	Groundwater	39.89098539	-108.2922522	NM	N	N	Groundwater monitoring.	None
20231219-XTWP-(LR8-MW02)	Groundwater	39.89139538	-108.2926107	NM	N	N	Groundwater monitoring.	None
20231219-XTWP-(LR8-MW03)	Groundwater	39.89193125	-108.2930366	NM	N	N	Groundwater monitoring.	None
20231219-XTWP-(LR8-MW04)	Groundwater	39.89115013	-108.2926349	NM	N	N	Groundwater monitoring.	None
20231219-XTWP-(LR8-PZ01)	Groundwater	39.89084353	-108.2931486	NM	N	N	Groundwater monitoring.	None
20231219-XTWP-(LR8-PZ02)	Groundwater	39.89125111	-108.2932312	NM	N	N	Groundwater monitoring.	None
20231219-XTWP-(LR8-PZ03)	Groundwater	39.89182711	-108.2927436	NM	N	N	Groundwater monitoring.	None
20231219-XTWP-(LR8-PZ04)	Groundwater	39.89190264	-108.2932815	NM	N	N	Groundwater monitoring.	None
20231219-XTWP-(LR8-PZ05)	Groundwater	39.89226931	-108.2924587	NM	N	N	Groundwater monitoring.	None

NOTES:

MW = Monitoring Well

NM = Not Measured

PID = Photo-ionization Detector

PPM = Parts per million

PZ = Piezometer

TW = Temporary Well



TABLE 4 - GROUNDWATER ANALYTICAL RESULTS
CAERUS PICEANCE, LLC
REMEDATION PROJECT NUMBER: 31518
LOVE RANCH 8 OFF-LOCATION FLOWLINE RELEASE
RIO BLANCO COUNTY, COLORADO

Lab ID #		L1690655	L1690655	L1690655	L1690655	L1690654	L1690654	L1690654	L1690654
Location ID		(LR8-MW01)	(LR8-MW02)	(LR8-MW03)	(LR8-MW04)	(LR8-PZ01)	(LR8-PZ02)	(LR8-PZ03)	(LR8-PZ04)
Sample Date		12/19/2023	12/19/2023	12/19/2023	12/19/2023	12/19/2023	12/19/2023	12/19/2023	12/19/2023
Sample ID		20231219-XTWP-(LR8-MW01)	20231219-XTWP-(LR8-MW02)	20231219-XTWP-(LR8-MW03)	20231219-XTWP-(LR8-MW04)	20231219-XTWP-(LR8-PZ01)	20231219-XTWP-(LR8-PZ02)	20231219-XTWP-(LR8-PZ03)	20231219-XTWP-(LR8-PZ04)
Contaminant of Concern	Cleanup Concentration (mg/l unless otherwise noted)								
Total Dissolved Solids (TDS)	< 1.25X Local Background	1260	1500	1440	1210	1560	1350	1600 J3	1530
Chloride	250	32.9	114	77.1	35.7	42.6	34.7	91.1	124
Sulfate	250	323	782	641	438	611	514	700	622
Benzene	0.005	<0.00100 ND	0.00243	<0.00100 ND	<0.00100 ND Q	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
Toluene	1	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND Q	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
Ethylbenzene	0.7	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND Q	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
Xylenes (sum of o-, m- and p- isomers = total xylenes)	10	<0.00300 ND	<0.00300 ND	<0.00300 ND	<0.00300 ND Q	<0.00300 ND	<0.00300 ND	<0.00300 ND	<0.00300 ND
1,2,4-trimethylbenzene	0.067	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND Q	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
1,3,5-trimethylbenzene	0.067	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND Q	<0.00100 ND	<0.00100 ND	<0.00100 ND	<0.00100 ND
Naphthalene	0.14	<0.00500 ND	<0.00500 ND	<0.00500 ND	<0.00500 ND Q	<0.00500 ND	<0.00500 ND	<0.00500 ND	<0.00500 ND
1-Methylnaphthalene	0.0011	<0.000250 ND	<0.000250 ND	<0.000250 ND	<0.000250 ND Q	<0.000250 ND	<0.000250 ND	<0.000250 ND	<0.000250 ND
2-Methylnaphthalene	0.0036	<0.000250 ND	<0.000250 ND	<0.000250 ND	<0.000250 ND Q	<0.000250 ND	<0.000250 ND	<0.000250 ND	<0.000250 ND

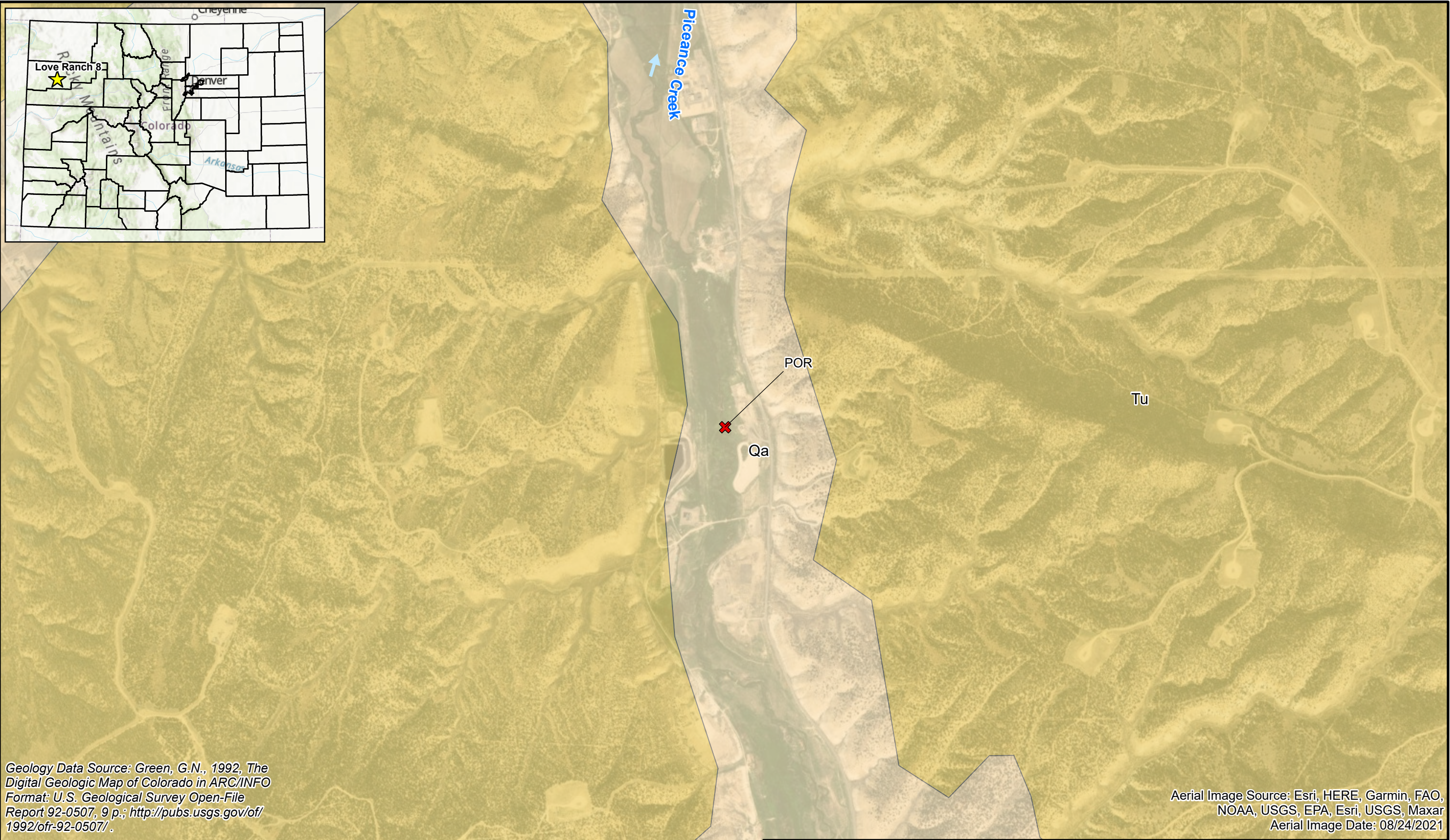
NOTES:

Greater than Table 915-1 Cleanup Concentrations

DG = down-gradient
J = The identification of the analyte is acceptable: the reported value is an estimate
J3 = The associated batch QC was outside the established quality control range for precision.
mg/L = milligram per liter
MOI = material of interest
ND = Not Detected
NM = Not Measured
POR = Point of release
Q = Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values
SP = spring
ST = stream, surface water
U = Not detected at the Reporting Limit (or MDL where applicable).

FIGURES

Date: 7/27/2023 User: ALeonard Path: \\azrgisstor03\GIS_Projects\Client\Caerus_OXY\24000859_LoveRanch\24000859_LoveRanch.aprx



Geology Data Source: Green, G.N., 1992, *The Digital Geologic Map of Colorado in ARC/INFO Format*: U.S. Geological Survey Open-File Report 92-0507, 9 p.; <http://pubs.usgs.gov/of/1992/ofr-92-0507/>.

Aerial Image Source: Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, Esri, USGS, Maxar
Aerial Image Date: 08/24/2021

LEGEND ✗ Love Ranch 8 Off-Location Flowline Point of Release (POR) Tu: Uinta Formation, Sandstone and siltstone; in Piceance basin. Formerly Evacuation Creek Member of Green River Fm Qa: Includes Piney Creek Alluvium and younger deposits	 0 1,000 2,000 4,000 Feet <small>The information included on this graphic representation has been compiled from a variety of sources and is subject to change without notice. Kleinfelder makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a land survey product nor is it designed or intended as a construction design document. The use or misuse of the information contained on this graphic representation is at the sole risk of the party using or misusing the information.</small>	 Bright People. Right Solutions. www.kleinfelder.com	PROJECT NO. 24000859 CREATED: 7/27/2023 CREATED BY: ALeonard CHECKED BY: KMaestas FILE NAME: F2_LoveRanch8_Geology	Geology Map Caerus Piceance, LLC Love Ranch 8 Off-Location Flowline SWNW Sec. 9 T2S R97W Rio Blanco County, Colorado	FIGURE 2
--	---	---	--	---	--------------------

Date: 1/18/2024 User: ALeonard Path: \\azrgisstor03\GIS_Projects\Client\Caeus_OXY\24000859_LoveRanch\24000859_LoveRanch.aprx



Aerial Image Source: Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, Maxar, Microsoft, Esri, USGS

LEGEND

✖ Love Ranch 8 Off-Location Flowline Point of Release (POR)

➡ Interpreted Groundwater Flow Direction

Potentiometric Surface Elevation Contour (ft AMSL)
Contour Interval = 0.10 Feet
Dashed Where Inferred

0 50 100 200
Feet


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PROJECT NO.	24000859
CREATED:	1/18/2024
CREATED BY:	ALeonard
CHECKED BY:	JVeith
FILE NAME:	F3D_LoveRanch8_GW_December

Potentiometric Groundwater Map 12/19/2023	FIGURE 3
Caeus Piceance, LLC Love Ranch 8 Off-Location Flowline SWNW Sec. 9 T2S R97W Rio Blanco County, Colorado	



 KLEINFELDER <i>Bright People. Right Solutions.</i> www.kleinfelder.com	PROJECT NO.	24000859	Surface Water Sample Locations	FIGURE 4
	DRAWN:	2/7/2024		
	DRAWN BY:	T. Schmalz		
	CHECKED BY:	J. Veith	Caerus Piceance, LLC Love Ranch 8 Off-Location Flowline SWNW Sec. 9 T2S R97W Rio Blanco County, Colorado	
	FILE NAME:	Love Ranch 8 Sample Map.pub		



 <p>KLEINFELDER <i>Bright People. Right Solutions.</i></p> <p>www.kleinfelder.com</p>	PROJECT NO.	24000859	Groundwater Sample Locations	<div>FIGURE</div> <div>5</div>
	DRAWN:	2/7/2024		
	DRAWN BY:	T. Schmalz	Caerus Piceance, LLC Love Ranch 8 Off-Location Flowline SWNW Sec. 9 T2S R97W Rio Blanco County, Colorado	
	CHECKED BY:	J. Veith		
	FILE NAME:	Love Ranch 8 Sample Map.pub		

APPENDIX A
GROUNDWATER SAMPLE NOTES AND PARAMETERS

LOW-FLOW SAMPLING FIELD DATA SHEET

20231219-XTWP-(LR8-MW01)

Project: Love Ranch 8	Project #: 24000859.001A	Task #: 3
Date: 12/19/2023	Sampler: J. Veith / T. Lakin	Weather: clear, sunny, 20-45°F
Well ID: MW01	Sample Time: 9:37	DTB: 26.75 ft DTW: 8.33 ft

Time within 3-5 min	pH +/- 0.1 units	Conductivity within 3% µS/cm	Turbidity (NTUs) within 10% for values >5	DO within 10% %/(mg/L)	Temperature within 3% °C	ORP +OR-MV mV
9:12	7.65	2010	N/A	4.1/0.47	10.8	76.1
9:17	7.67	1974	N/A	7.1/0.78	10.9	62.9
9:22	7.67	1955	N/A	7.0/0.78	10.9	50.3
9:27	7.67	1936	N/A	5.5/0.77	10.9	45.3
9:32	7.67	1913	N/A	5.2/0.58	10.9	42.2
9:37	7.67	1947	N/A	4.8/0.52	10.9	40.2

start pump
@9:07

Glassware: 1x1L Poly (unpreserved); 1x250 mL poly (unpreserved); 3x40 mL VOAs w/ ACL; 2x40 mL VOAs (unpreserved)

Approximate Purge Volume: 7.5 gal

Notes: No hydrocarbon scent observed.

LOW-FLOW SAMPLING FIELD DATA SHEET

20231219-XTWP-(LR8-MW02)

Project: Love Ranch 8	Project #: 24000859.001A	Task #: 3
Date: 12/19/2023	Sampler: J. Veith / T. Lakin	Weather: clear, sunny, 20-45°F
Well ID: MW02	Sample Time: 10:42	DTB: 25.7 ft DTW: 8.01ft

start pump
@ 10:12

Time within 3-5 min	pH +/- 0.1 units	Conductivity within 3% µS/cm	Turbidity (NTUs) within 10% for values >5	DO within 10% %/(mg/L)	Temperature within 3% °C	ORP +OR-MV mV
10:17	7.63	2342	N/A	33.2/3.57	10.2	94.7
10:22	7.53	2537	N/A	12.4/1.35	10.4	62.2
10:27	7.51	2655	N/A	5.8/0.83	10.4	-4.7
10:32	7.51	2657	N/A	3.4/0.39	10.5	-27.1
10:37	7.51	2646	N/A	2.5/0.27	10.5	-34.5
10:42	7.51	2639	N/A	2.0/0.22	10.5	-38.1

Glassware: 1x1L Poly (unpreserved); 1x250 mL poly (unpreserved); 3x40 mL VOAs w/ HCL; 2x40 mL VOAs (unpreserved)

Approximate Purge Volume: 6 gal

Notes: No hydrocarbon scent.

LOW-FLOW SAMPLING FIELD DATA SHEET

20231219-XTWP-(LR8-MW03)

Project: Love Ranch 8	Project #: 24000859.001A	Task #: 3
Date: 12/19/2023	Sampler: J. Veith / T. Lakin	Weather: clear, sunny, 20-45°F
Well ID: MW03	Sample Time: 14:21	DTB: 24.6 ft DTW: 7.25 ft

Time within 3-5 min	pH +/- 0.1 units	Conductivity within 3% µS/cm	Turbidity (NTUs) within 10% for values >5	DO within 10% %/(mg/L)	Temperature within 3% °C	ORP +OR-MV mV
14:01	7.62	2369	N/A	1.7/0.20	10.3	-129.3
14:06	7.63	2370	N/A	1.3/0.16	10.3	-134.5
14:11	7.63	2367	N/A	0.7/0.08	10.3	-134.6
14:16	7.63	2361	N/A	0.7/0.08	10.3	-135.0
14:21	7.63	2363	N/A	0.6/0.06	10.4	-136.8

start pump
@ 13:56

Glassware: 1x1L Poly (unpreserved); 1x250 mL poly (unpreserved); 3x40 mL VOAs w/ HCL; 2x40 mL VOAs (unpreserved)

Approximate Purge Volume: 5 gal

Notes: Parameters stabilized within 5 sets. No hydrocarbon scent.

LOW-FLOW SAMPLING FIELD DATA SHEET

20231219-XTWP-(LR8-MW04)

Project: Love Ranch 8	Project #: 24000859.001A	Task #: 3
Date: 12/19/2023	Sampler: J. Veith / T. Lakin	Weather: clear, sunny, 20-45°F
Well ID: MW04	Sample Time: 13:34	DTB: 27.05 ft DTW: 7.68 ft

Time within 3-5 min	pH +/- 0.1 units	Conductivity within 3% µS/cm	Turbidity (NTUs) within 10% for values >5	DO within 10% %/(mg/L)	Temperature within 3% °C	ORP +OR-MV mV
13:14	7.48	1921	N/A	2.6/0.28	10.8	-104.5
13:19	7.49	1935	N/A	1.3/0.16	10.8	-106.6
13:24	7.49	1943	N/A	1.4/0.16	10.7	-104.0
13:29	7.49	1955	N/A	1.5/0.17	10.7	-100.7
13:34	7.49	1961	N/A	1.4/0.16	10.7	-95.1

start pump
@ 13:09

Glassware: 1x1L Poly (unpreserved); 1x250 mL poly (unpreserved); 3x40 mL VOAs w/ HCL; 2x40 mL VOAs (unpreserved)

Approximate Purge Volume: 6 gal

Notes: Parameters stabilized after five sets. No hydrocarbon scent.

LOW-FLOW SAMPLING FIELD DATA SHEET

20231219-XTWP-(LR8-PZ01)

Project: Love Ranch 8	Project #: 24000859.001A	Task #: 3
Date: 12/19/2023	Sampler: J. Veith / T. Lakin	Weather: clear, sunny, 20-45°F
Well ID: PZ01	Sample Time: 16:37	DTB: 18.25 ft DTW: 7.56 ft

Time within 3-5 min	pH +/- 0.1 units	Conductivity within 3% µS/cm	Turbidity (NTUs) within 10% for values >5	DO within 10% %/(mg/L)	Temperature within 3% °C	ORP +OR-MV mV
16:17	7.55	2420	N/A	2.2/0.24	9.0	-96.6
16:22	7.54	2449	N/A	1.6/0.19	9.0	-102.3
16:27	7.54	2452	N/A	1.3/0.15	8.9	-103.8
16:32	7.54	2457	N/A	1.3/0.16	8.8	-105.8
16:37	7.54	2460	N/A	1.4/0.18	8.8	-106.1

start pump
@ 16:12

Glassware: 1x1L Poly (unpreserved); 1x250 mL poly (unpreserved); 3x40 mL VOAs w/ HCL; 2x40 mL VOAs (unpreserved)

Approximate Purge Volume: 5 gal

Notes: Parameters stablized within 5 sets. No hydrocarbon scent.

LOW-FLOW SAMPLING FIELD DATA SHEET

20231219-XTWP-(LR8-PZ02)

Project: Love Ranch 8	Project #: 24000859.001A	Task #: 3
Date: 12/19/2023	Sampler: J. Veith / T. Lakin	Weather: clear, sunny, 20-45°F
Well ID: PZ02	Sample Time: 15:47	DTB: 18.9 ft DTW: 6.66 ft

Time within 3-5 min	pH +/- 0.1 units	Conductivity within 3% µS/cm	Turbidity (NTUs) within 10% for values >5	DO within 10% %/(mg/L)	Temperature within 3% °C	ORP +OR-MV mV
15:27	7.47	2215	N/A	3.4/0.37	10.1	-36.0
15:32	7.47	2217	N/A	2.4/0.27	10.1	-46.3
15:37	7.47	2219	N/A	1.9/0.22	10.2	-52.3
15:42	7.48	2219	N/A	2.0/0.22	10.1	-53.4
15:47	7.47	2220	N/A	2.1/0.23	10.0	-53.2

start pump
@ 15:22

Glassware: 1x1L Poly (unpreserved); 1x250 mL poly (unpreserved); 3x40 mL VOAs w/ HCL; 2x40 mL VOAs (unpreserved)

Approximate Purge Volume: 5 gal

Notes: Parameters stabilized within 5 sets. No hydrocarbon scent.

LOW-FLOW SAMPLING FIELD DATA SHEET

20231219-XTWP-(LR8-PZ03)

Project: Love Ranch 8	Project #: 24000859.001A	Task #: 3
Date: 12/19/2023	Sampler: J. Veith / T. Lakin	Weather: clear, sunny, 20-45°F
Well ID: PZ03	Sample Time: 11:40	DTB: 19.5 ft DTW: 7.41 ft

Time within 3-5 min	pH +/- 0.1 units	Conductivity within 3% µS/cm	Turbidity (NTUs) within 10% for values >5	DO within 10% %/(mg/L)	Temperature within 3% °C	ORP +OR-MV mV
11:15	7.58	2493	N/A	4.3/0.46	10.5	-29.4
11:20	7.60	2485	N/A	2.9/0.32	10.5	-30.9
11:25	7.61	2480	N/A	1.8/0.21	10.6	-35.2
11:30	7.61	2479	N/A	1.1/0.13	10.5	-80.2
11:35	7.61	2483	N/A	0.9/0.11	10.5	-95.2
11:40	7.61	2483	N/A	0.8/0.09	10.6	-102.4

start pump
@ 11:10

Glassware: 1x1L Poly (unpreserved); 1x250 mL poly (unpreserved); 3x40 mL VOAs w/ HCL; 2x40 mL VOAs (unpreserved)

Approximate Purge Volume: 6 gal

Notes: No hydrocarbon scent.

LOW-FLOW SAMPLING FIELD DATA SHEET

20231219-XTWP-(LR8-PZ04)

Project: Love Ranch 8	Project #: 24000859.001A	Task #: 3
Date: 12/19/2023	Sampler: J. Veith / T. Lakin	Weather: clear, sunny, 20-45°F
Well ID: PZ04	Sample Time: 15:01	DTB: 19.12 ft DTW: 6.04 ft

Time within 3-5 min	pH +/- 0.1 units	Conductivity within 3% µS/cm	Turbidity (NTUs) within 10% for values >5	DO within 10% %/(mg/L)	Temperature within 3% °C	ORP +OR-MV mV
14:41	7.59	2407	N/A	1.7/0.19	10.2	-100.6
14:46	7.58	2440	N/A	1.8/0.21	10.3	-112.1
14:51	7.58	2452	N/A	1.4/0.16	10.2	-118.2
14:56	7.58	2450	N/A	1.1/0.12	10.2	-123.3
15:01	7.58	2459	N/A	1.2/0.13	10.3	-125.8

start pump
@ 14:36

Glassware: 1x1L Poly (unpreserved); 1x250 mL poly (unpreserved); 3x40 mL VOAs w/ HCL; 2x40 mL VOAs (unpreserved)

Approximate Purge Volume: 5 gal

Notes: Parameters stabilized within 5 sets. No hydrocarbon scent.

LOW-FLOW SAMPLING FIELD DATA SHEET

20231219-XTWP-(LR8-PZ05)

Project: Love Ranch 8	Project #: 24000859.001A	Task #: 3
Date: 12/19/2023	Sampler: J. Veith / T. Lakin	Weather: clear, sunny, 20-45°F
Well ID: PZ05	Sample Time: 12:27	DTB: 19.42 ft DTW: 7.18 ft

Time within 3-5 min	pH +/- 0.1 units	Conductivity within 3% μS/cm	Turbidity (NTUs) within 10% for values >5	DO within 10% %/(mg/L)	Temperature within 3% °C	ORP +OR-MV mV
12:17	7.58	2461	N/A	3.1/0.35	10.5	-54.3
12:22	7.58	2454	N/A	2.4/0.26	10.4	-50.5
12:27	7.58	2456	N/A	1.8/0.21	10.5	-49.8
12:32	7.59	2460	N/A	1.7/0.19	10.5	-48.9
12:37	7.58	2445	N/A	1.7/0.19	10.5	-48.6

start pump
@ 12:12

Glassware: 1x1L Poly (unpreserved); 1x250 mL poly (unpreserved); 3x40 mL VOAs w/ HCL; 2x40 mL VOAs (unpreserved)

Approximate Purge Volume: 6 gal

Notes: No hydrocarbon scent.

APPENDIX B
LABORATORY ANALYTICAL REPORTS

Caerus Oil and Gas

Sample Delivery Group: L1672468
Samples Received: 11/01/2023
Project Number:
Description: Love Ranch 8 Liquid Line Release
Site: LOVE RANCH 8
Report To: Jake J. / Brett M. / Blair R. / Andy V.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

20231031-LOVE RANCH8-(ST-PC-UG2) L1672468-01 GW

Collected by
Tristan Schmalz

Collected date/time
10/31/23 07:47

Received date/time
11/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2163979	1	11/03/23 12:30	11/03/23 19:54	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2164820	1	11/07/23 21:24	11/07/23 21:24	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2164820	5	11/07/23 21:38	11/07/23 21:38	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2164415	1	11/04/23 14:13	11/04/23 14:13	ACG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2162413	1	11/01/23 17:16	11/02/23 04:02	JCH	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

20231031-LOVE RANCH8-(ST-PC-POR) L1672468-02 GW

Collected by
Tristan Schmalz

Collected date/time
10/31/23 07:53

Received date/time
11/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2163979	1	11/03/23 12:30	11/03/23 19:54	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2164820	1	11/07/23 21:52	11/07/23 21:52	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2164820	5	11/07/23 22:06	11/07/23 22:06	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2164415	1	11/04/23 14:34	11/04/23 14:34	ACG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2162413	1	11/01/23 17:16	11/02/23 04:20	JCH	Mt. Juliet, TN

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

20231031-LOVE RANCH8-(ST-PC-DG14) L1672468-03 GW

Collected by
Tristan Schmalz

Collected date/time
10/31/23 08:04

Received date/time
11/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2163979	1	11/03/23 12:30	11/03/23 19:54	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2164820	1	11/07/23 22:19	11/07/23 22:19	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2167538	5	11/09/23 05:31	11/09/23 05:31	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2164415	1	11/04/23 14:56	11/04/23 14:56	ACG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2162413	1	11/01/23 17:16	11/02/23 04:38	JCH	Mt. Juliet, TN

⁹ Sc

20231031-LOVE RANCH8-(ST-PC-DG13) L1672468-04 GW

Collected by
Tristan Schmalz

Collected date/time
10/31/23 08:16

Received date/time
11/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2163979	1	11/03/23 12:30	11/03/23 19:54	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2164820	1	11/07/23 22:47	11/07/23 22:47	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2167538	5	11/09/23 05:44	11/09/23 05:44	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2164415	1	11/04/23 15:17	11/04/23 15:17	ACG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2162837	1	11/02/23 08:08	11/02/23 14:35	AMM	Mt. Juliet, TN

20231031-LOVE RANCH8-(ST-PC-DG12) L1672468-05 GW

Collected by
Tristan Schmalz

Collected date/time
10/31/23 08:26

Received date/time
11/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2163979	1	11/03/23 12:30	11/03/23 19:54	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2164820	1	11/07/23 23:42	11/07/23 23:42	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2164820	5	11/07/23 23:55	11/07/23 23:55	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2164415	1	11/04/23 15:38	11/04/23 15:38	ACG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2162837	1	11/02/23 08:08	11/02/23 14:53	AMM	Mt. Juliet, TN

SAMPLE SUMMARY

20231031-LOVE RANCH8-(ST-PC-DG11) L1672468-06 GW

Collected by
Tristan Schmalz

Collected date/time
10/31/23 08:43

Received date/time
11/01/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2163979	1	11/03/23 12:30	11/03/23 19:54	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2164820	1	11/08/23 00:09	11/08/23 00:09	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2164820	5	11/08/23 00:23	11/08/23 00:23	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2164415	1	11/04/23 16:00	11/04/23 16:00	ACG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2162837	1	11/02/23 08:08	11/02/23 15:10	AMM	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Chris Ward
Project Manager



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	1010		20.0	1	11/03/2023 19:54	WG2163979

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	18.1		1.00	1	11/07/2023 21:24	WG2164820
Sulfate	404		25.0	5	11/07/2023 21:38	WG2164820

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	11/04/2023 14:13	WG2164415
Toluene	ND		0.00100	1	11/04/2023 14:13	WG2164415
Ethylbenzene	ND		0.00100	1	11/04/2023 14:13	WG2164415
Xylenes, Total	ND		0.00300	1	11/04/2023 14:13	WG2164415
Naphthalene	ND		0.00500	1	11/04/2023 14:13	WG2164415
1,2,4-Trimethylbenzene	ND		0.00100	1	11/04/2023 14:13	WG2164415
1,3,5-Trimethylbenzene	ND		0.00100	1	11/04/2023 14:13	WG2164415
(S) Toluene-d8	104		80.0-120		11/04/2023 14:13	WG2164415
(S) 4-Bromofluorobenzene	110		77.0-126		11/04/2023 14:13	WG2164415
(S) 1,2-Dichloroethane-d4	110		70.0-130		11/04/2023 14:13	WG2164415

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
1-Methylnaphthalene	ND		0.000250	1	11/02/2023 04:02	WG2162413
2-Methylnaphthalene	ND		0.000250	1	11/02/2023 04:02	WG2162413
(S) Nitrobenzene-d5	77.9		31.0-160		11/02/2023 04:02	WG2162413
(S) 2-Fluorobiphenyl	81.6		48.0-148		11/02/2023 04:02	WG2162413
(S) p-Terphenyl-d14	80.0		37.0-146		11/02/2023 04:02	WG2162413

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	998		20.0	1	11/03/2023 19:54	WG2163979

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	18.3		1.00	1	11/07/2023 21:52	WG2164820
Sulfate	388		25.0	5	11/07/2023 22:06	WG2164820

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	11/04/2023 14:34	WG2164415
Toluene	ND		0.00100	1	11/04/2023 14:34	WG2164415
Ethylbenzene	ND		0.00100	1	11/04/2023 14:34	WG2164415
Xylenes, Total	ND		0.00300	1	11/04/2023 14:34	WG2164415
Naphthalene	ND		0.00500	1	11/04/2023 14:34	WG2164415
1,2,4-Trimethylbenzene	ND		0.00100	1	11/04/2023 14:34	WG2164415
1,3,5-Trimethylbenzene	ND		0.00100	1	11/04/2023 14:34	WG2164415
(S) Toluene-d8	108		80.0-120		11/04/2023 14:34	WG2164415
(S) 4-Bromofluorobenzene	113		77.0-126		11/04/2023 14:34	WG2164415
(S) 1,2-Dichloroethane-d4	112		70.0-130		11/04/2023 14:34	WG2164415

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.000250	1	11/02/2023 04:20	WG2162413
2-Methylnaphthalene	ND		0.000250	1	11/02/2023 04:20	WG2162413
(S) Nitrobenzene-d5	75.3		31.0-160		11/02/2023 04:20	WG2162413
(S) 2-Fluorobiphenyl	80.5		48.0-148		11/02/2023 04:20	WG2162413
(S) p-Terphenyl-d14	76.8		37.0-146		11/02/2023 04:20	WG2162413

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	1010		20.0	1	11/03/2023 19:54	WG2163979

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	18.2		1.00	1	11/07/2023 22:19	WG2164820
Sulfate	385		25.0	5	11/09/2023 05:31	WG2167538

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	11/04/2023 14:56	WG2164415
Toluene	ND		0.00100	1	11/04/2023 14:56	WG2164415
Ethylbenzene	ND		0.00100	1	11/04/2023 14:56	WG2164415
Xylenes, Total	ND		0.00300	1	11/04/2023 14:56	WG2164415
Naphthalene	ND		0.00500	1	11/04/2023 14:56	WG2164415
1,2,4-Trimethylbenzene	ND		0.00100	1	11/04/2023 14:56	WG2164415
1,3,5-Trimethylbenzene	ND		0.00100	1	11/04/2023 14:56	WG2164415
(S) Toluene-d8	105		80.0-120		11/04/2023 14:56	WG2164415
(S) 4-Bromofluorobenzene	111		77.0-126		11/04/2023 14:56	WG2164415
(S) 1,2-Dichloroethane-d4	106		70.0-130		11/04/2023 14:56	WG2164415

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
1-Methylnaphthalene	ND		0.000250	1	11/02/2023 04:38	WG2162413
2-Methylnaphthalene	ND		0.000250	1	11/02/2023 04:38	WG2162413
(S) Nitrobenzene-d5	72.6		31.0-160		11/02/2023 04:38	WG2162413
(S) 2-Fluorobiphenyl	78.4		48.0-148		11/02/2023 04:38	WG2162413
(S) p-Terphenyl-d14	74.2		37.0-146		11/02/2023 04:38	WG2162413

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	1000		20.0	1	11/03/2023 19:54	WG2163979

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	18.3		1.00	1	11/07/2023 22:47	WG2164820
Sulfate	386		25.0	5	11/09/2023 05:44	WG2167538

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	11/04/2023 15:17	WG2164415
Toluene	ND		0.00100	1	11/04/2023 15:17	WG2164415
Ethylbenzene	ND		0.00100	1	11/04/2023 15:17	WG2164415
Xylenes, Total	ND		0.00300	1	11/04/2023 15:17	WG2164415
Naphthalene	ND		0.00500	1	11/04/2023 15:17	WG2164415
1,2,4-Trimethylbenzene	ND		0.00100	1	11/04/2023 15:17	WG2164415
1,3,5-Trimethylbenzene	ND		0.00100	1	11/04/2023 15:17	WG2164415
(S) Toluene-d8	105		80.0-120		11/04/2023 15:17	WG2164415
(S) 4-Bromofluorobenzene	110		77.0-126		11/04/2023 15:17	WG2164415
(S) 1,2-Dichloroethane-d4	110		70.0-130		11/04/2023 15:17	WG2164415

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.000250	1	11/02/2023 14:35	WG2162837
2-Methylnaphthalene	ND		0.000250	1	11/02/2023 14:35	WG2162837
(S) Nitrobenzene-d5	121		31.0-160		11/02/2023 14:35	WG2162837
(S) 2-Fluorobiphenyl	95.0		48.0-148		11/02/2023 14:35	WG2162837
(S) p-Terphenyl-d14	107		37.0-146		11/02/2023 14:35	WG2162837

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	1010		20.0	1	11/03/2023 19:54	WG2163979

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	18.1		1.00	1	11/07/2023 23:42	WG2164820
Sulfate	392		25.0	5	11/07/2023 23:55	WG2164820

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	11/04/2023 15:38	WG2164415
Toluene	ND		0.00100	1	11/04/2023 15:38	WG2164415
Ethylbenzene	ND		0.00100	1	11/04/2023 15:38	WG2164415
Xylenes, Total	ND		0.00300	1	11/04/2023 15:38	WG2164415
Naphthalene	ND		0.00500	1	11/04/2023 15:38	WG2164415
1,2,4-Trimethylbenzene	ND		0.00100	1	11/04/2023 15:38	WG2164415
1,3,5-Trimethylbenzene	ND		0.00100	1	11/04/2023 15:38	WG2164415
(S) Toluene-d8	105		80.0-120		11/04/2023 15:38	WG2164415
(S) 4-Bromofluorobenzene	108		77.0-126		11/04/2023 15:38	WG2164415
(S) 1,2-Dichloroethane-d4	109		70.0-130		11/04/2023 15:38	WG2164415

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
1-Methylnaphthalene	ND		0.000250	1	11/02/2023 14:53	WG2162837
2-Methylnaphthalene	ND		0.000250	1	11/02/2023 14:53	WG2162837
(S) Nitrobenzene-d5	120		31.0-160		11/02/2023 14:53	WG2162837
(S) 2-Fluorobiphenyl	86.0		48.0-148		11/02/2023 14:53	WG2162837
(S) p-Terphenyl-d14	111		37.0-146		11/02/2023 14:53	WG2162837

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	1020		20.0	1	11/03/2023 19:54	WG2163979

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	18.1		1.00	1	11/08/2023 00:09	WG2164820
Sulfate	379		25.0	5	11/08/2023 00:23	WG2164820

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	11/04/2023 16:00	WG2164415
Toluene	ND		0.00100	1	11/04/2023 16:00	WG2164415
Ethylbenzene	ND		0.00100	1	11/04/2023 16:00	WG2164415
Xylenes, Total	ND		0.00300	1	11/04/2023 16:00	WG2164415
Naphthalene	ND		0.00500	1	11/04/2023 16:00	WG2164415
1,2,4-Trimethylbenzene	ND		0.00100	1	11/04/2023 16:00	WG2164415
1,3,5-Trimethylbenzene	ND		0.00100	1	11/04/2023 16:00	WG2164415
(S) Toluene-d8	106		80.0-120		11/04/2023 16:00	WG2164415
(S) 4-Bromofluorobenzene	107		77.0-126		11/04/2023 16:00	WG2164415
(S) 1,2-Dichloroethane-d4	106		70.0-130		11/04/2023 16:00	WG2164415

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
1-Methylnaphthalene	ND		0.000250	1	11/02/2023 15:10	WG2162837
2-Methylnaphthalene	ND		0.000250	1	11/02/2023 15:10	WG2162837
(S) Nitrobenzene-d5	113		31.0-160		11/02/2023 15:10	WG2162837
(S) 2-Fluorobiphenyl	78.5		48.0-148		11/02/2023 15:10	WG2162837
(S) p-Terphenyl-d14	102		37.0-146		11/02/2023 15:10	WG2162837

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3995687-1 11/03/23 19:54

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

L1672468-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1672468-01 11/03/23 19:54 • (DUP) R3995687-3 11/03/23 19:54

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	1010	1030	1	2.15		5

L1672468-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1672468-02 11/03/23 19:54 • (DUP) R3995687-4 11/03/23 19:54

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	998	1050	1	4.89		5

Laboratory Control Sample (LCS)

(LCS) R3995687-2 11/03/23 19:54

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8670	98.5	85.0-115	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3996962-1 11/07/23 20:57

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Chloride	0.446	⬇	0.379	1.00
Sulfate	U		0.594	5.00

L1672513-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1672513-05 11/08/23 00:37 • (DUP) R3996962-3 11/08/23 00:50

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	29.2	29.2	1	0.0465		15
Sulfate	51.8	51.9	1	0.103		15

L1672714-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1672714-01 11/08/23 04:16 • (DUP) R3996962-6 11/08/23 04:30

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	52.1	51.9	1	0.417		15
Sulfate	ND	ND	1	2.58		15

Laboratory Control Sample (LCS)

(LCS) R3996962-2 11/07/23 21:11

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Chloride	40.0	40.3	101	80.0-120	
Sulfate	40.0	40.6	102	80.0-120	

L1672513-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1672513-05 11/08/23 00:37 • (MS) R3996962-4 11/08/23 01:04 • (MSD) R3996962-5 11/08/23 01:18

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Chloride	40.0	29.2	64.7	64.1	88.8	87.1	1	80.0-120			1.05	15
Sulfate	40.0	51.8	83.6	82.5	79.3	76.6	1	80.0-120	J6	J6	1.30	15

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1672714-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1672714-01 11/08/23 04:16 • (MS) R3996962-7 11/08/23 05:11 • (MSD) R3996962-8 11/08/23 05:24

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Chloride	40.0	52.1	82.5	81.3	76.1	73.0	1	80.0-120	J6	J6	1.50	15
Sulfate	40.0	ND	41.6	40.9	98.9	97.1	1	80.0-120			1.75	15

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3998139-1 11/09/23 04:50

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Sulfate	U		0.594	5.00

L1673153-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1673153-01 11/09/23 08:57 • (DUP) R3998139-6 11/09/23 09:10

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Sulfate	123	123	1	0.357		15

Laboratory Control Sample (LCS)

(LCS) R3998139-2 11/09/23 05:03

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Sulfate	40.0	41.1	103	80.0-120	

L1673153-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1673153-01 11/09/23 08:57 • (MS) R3998139-7 11/09/23 09:24

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>
Analyte	mg/l	mg/l	mg/l	%		%	
Sulfate	40.0	123	139	40.9	1	80.0-120	<u>J6</u>

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3996367-2 11/04/23 07:05

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Toluene	U		0.000278	0.00100
Ethylbenzene	U		0.000137	0.00100
Xylenes, Total	U		0.000174	0.00300
Naphthalene	U		0.00100	0.00500
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
(S) Toluene-d8	103			80.0-120
(S) 4-Bromofluorobenzene	104			77.0-126
(S) 1,2-Dichloroethane-d4	109			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3996367-1 11/04/23 06:23

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00486	97.2	70.0-123	
Toluene	0.00500	0.00468	93.6	79.0-120	
Ethylbenzene	0.00500	0.00497	99.4	79.0-123	
Xylenes, Total	0.0150	0.0133	88.7	79.0-123	
Naphthalene	0.00500	0.00280	56.0	54.0-135	
1,2,4-Trimethylbenzene	0.00500	0.00450	90.0	76.0-121	
1,3,5-Trimethylbenzene	0.00500	0.00492	98.4	76.0-122	
(S) Toluene-d8			103	80.0-120	
(S) 4-Bromofluorobenzene			110	77.0-126	
(S) 1,2-Dichloroethane-d4			112	70.0-130	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3994332-2 11/01/23 23:03

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
(S) Nitrobenzene-d5	79.5			31.0-160
(S) 2-Fluorobiphenyl	81.5			48.0-148
(S) p-Terphenyl-d14	79.0			37.0-146

Laboratory Control Sample (LCS)

(LCS) R3994332-1 11/01/23 22:45

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.00200	0.00167	83.5	66.0-142	
2-Methylnaphthalene	0.00200	0.00168	84.0	62.0-136	
(S) Nitrobenzene-d5			79.5	31.0-160	
(S) 2-Fluorobiphenyl			80.0	48.0-148	
(S) p-Terphenyl-d14			76.0	37.0-146	

L1672296-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1672296-01 11/02/23 01:06 • (MS) R3994332-3 11/02/23 01:24 • (MSD) R3994332-4 11/02/23 01:41

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
1-Methylnaphthalene	0.00190	0.00186	0.00240	0.00278	28.4	48.4	1	21.0-160			14.7	20
2-Methylnaphthalene	0.00190	ND	0.00159	0.00161	83.7	84.7	1	31.0-160			1.25	20
(S) Nitrobenzene-d5					83.7	84.7		31.0-160				
(S) 2-Fluorobiphenyl					77.4	76.8		48.0-148				
(S) p-Terphenyl-d14					60.5	71.1		37.0-146				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3995156-3 11/02/23 14:18

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
(S) Nitrobenzene-d5	117			31.0-160
(S) 2-Fluorobiphenyl	92.5			48.0-148
(S) p-Terphenyl-d14	105			37.0-146

Method Blank (MB)

(MB) R3995743-1 11/03/23 16:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
(S) Nitrobenzene-d5	109			31.0-160
(S) 2-Fluorobiphenyl	96.0			48.0-148
(S) p-Terphenyl-d14	102			37.0-146

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3995156-1 11/02/23 13:43 • (LCSD) R3995156-2 11/02/23 14:00

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1-Methylnaphthalene	0.00200	0.00217	0.00217	108	108	66.0-142			0.000	20
2-Methylnaphthalene	0.00200	0.00227	0.00226	114	113	62.0-136			0.442	20
(S) Nitrobenzene-d5				129	125	31.0-160				
(S) 2-Fluorobiphenyl				98.0	108	48.0-148				
(S) p-Terphenyl-d14				105	99.0	37.0-146				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

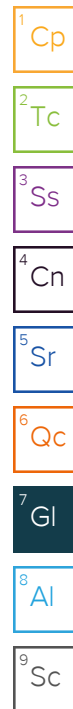
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122



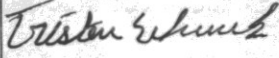
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Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

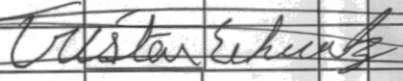
¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



Caerus Oil and Gas 143 Diamond Avenue Parachute, CO 81635				Billing Information: SAME AS LEFT				Chain of Custody Page ___ of ___					
				Report to: Blair Rollins		Email To: brollins@caerusoilandgas.com		<div style="text-align: center;">  </div> <div> 12065 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-758-5858 Phone: 800-767-5859 Fax: 615-758-5859 </div> <div style="text-align: center;">  </div> <div> SDG # 4672468 J227 </div> <div> Acctnum: Template: Prelogin: PM: PB: Shipped Via: </div>					
Project Description: LOVE RANCH Liquid Line Release				City/State: Piceance Crk, CO		Please Circle: PT <input type="checkbox"/> MT <input checked="" type="checkbox"/> CT <input type="checkbox"/> ET <input type="checkbox"/>							
Phone: (970) 640-6919		Client Project #		Lab Project #		Collected by (print): Tristan Schmalz				Site/Facility ID # Love Ranch 8		P.O. #	
Collected by (signature): 		Rush? (Lab MUST Be Notified) <input type="checkbox"/> Same Day <input type="checkbox"/> Five Day <input type="checkbox"/> Next Day <input type="checkbox"/> 5 Day (Rad Only) <input type="checkbox"/> Two Day <input type="checkbox"/> 10 Day (Rad Only) <input type="checkbox"/> Three Day		Quote #		Date Results Needed <div style="border: 1px solid black; border-radius: 50%; padding: 2px; display: inline-block;"> Standard TAT </div>				No. of Cntrs		Pres Chk	
Immediately Packed on Ice N ___ Y <input checked="" type="checkbox"/>													

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	COGCC Table 915-1 Water	EC, pH, SAR	Arsenic, Boron	COGCC Table 910-1	1-methylnaphthalene	2-methylnaphthalene	Remarks	Sample # (lab only)
20231031-LOVE RANCH 8-(ST-PC-UG2)	Grab	ET	—	10/31/23	7:47	2	X			X	X		-01
20231031-LOVE RANCH 8-(ST-PC-POR)	↓	↓	—		7:53	↓	↓			↓	↓		-02
20231031-LOVE RANCH 8-(ST-PC-DG14)	↓	↓	—		8:04	↓	↓			↓	↓		-03
20231031-LOVE RANCH 8-(ST-PC-DG13)	↓	↓	—		8:16	↓	↓			↓	↓		-04
20231031-LOVE RANCH 8-(ST-PC-DG12)	↓	↓	—		8:26	↓	↓			↓	↓		-05
20231031-LOVE RANCH 8-(ST-PC-DG11)	↓	↓	—		8:43	↓	↓			↓	↓		-06
 10/31/2023													

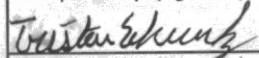

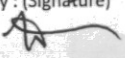
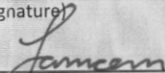
* Matrix:
 SS - Soil AIR - Air F - Filter
 GW - Groundwater B - Bioassay
 WW - Waste Water
 DW - Drinking Water
 OT - Other Surface Water

Remarks:

Samples returned via:
☐ UPS ☐ FedEx ☐ Courier

pH _____ Temp _____
 Flow _____ Other _____

Tracking # **6525 5572 3060**

Relinquished by: (Signature) 		Date: 10/31/2023		Time: 11:00		Received by: (Signature) 		Trip Blank Received: Yes/No HCL / MeOH TBR	
Relinquished by: (Signature) 		Date: 10/31/23		Time: 1500		Received by: (Signature)		Temp: °C DPAS 0.2 + 0 = 0.2 42	
Relinquished by: (Signature)		Date:		Time:		Received for lab by: (Signature) 		Date: Time:	

If preservation required by Login: Date/Time		Hold:		Condition: NCF / OK <input checked="" type="checkbox"/>	
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December 12, 2023

Caerus Oil and Gas

Sample Delivery Group: L1682898
Samples Received: 11/30/2023
Project Number: LOVE RANCH 8 INVESTI
Description: Love Ranch 8 Investigation
Site: LOVE RANCH 8
Report To: Jake J. / Brett M. / Blair R. / Andy V.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Shane Gambill
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

SAMPLE SUMMARY

20231129-XTWP-(LR8-ST-PC-UG02) L1682898-01 GW

Collected by Trevor Lakin
Collected date/time 11/29/23 09:41
Received date/time 11/30/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2181999	1	12/04/23 12:45	12/04/23 13:30	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2182859	1	12/05/23 13:59	12/05/23 13:59	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2185054	5	12/08/23 14:02	12/08/23 14:02	MDM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2182125	1	12/04/23 06:39	12/04/23 06:39	JHH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2180759	1	12/01/23 18:36	12/02/23 00:18	JCH	Mt. Juliet, TN

20231129-XTWP-(LR8-ST-PC-POR) L1682898-02 GW

Collected by Trevor Lakin
Collected date/time 11/29/23 09:55
Received date/time 11/30/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2182000	1	12/03/23 17:15	12/04/23 08:13	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2182859	1	12/05/23 14:13	12/05/23 14:13	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2185054	1	12/08/23 14:34	12/08/23 14:34	MDM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2182125	1	12/04/23 07:02	12/04/23 07:02	JHH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2180759	1	12/01/23 18:36	12/02/23 00:36	JCH	Mt. Juliet, TN

20231129-XTWP-(LR8-ST-PC-DG14) L1682898-03 GW

Collected by Trevor Lakin
Collected date/time 11/29/23 10:19
Received date/time 11/30/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2181997	1	12/04/23 12:28	12/04/23 13:58	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2182859	1	12/05/23 14:27	12/05/23 14:27	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2185395	5	12/08/23 09:55	12/08/23 09:55	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2182125	1	12/04/23 07:25	12/04/23 07:25	JHH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2180759	1	12/01/23 18:36	12/02/23 00:53	JCH	Mt. Juliet, TN

20231129-XTWP-(LR8-ST-PC-DG13) L1682898-04 GW

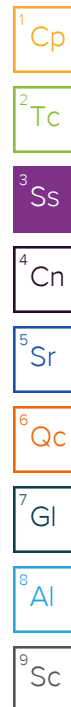
Collected by Trevor Lakin
Collected date/time 11/29/23 10:31
Received date/time 11/30/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2181997	1	12/04/23 12:28	12/04/23 13:58	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2182859	1	12/05/23 15:08	12/05/23 15:08	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2185395	5	12/08/23 10:58	12/08/23 10:58	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2182125	1	12/04/23 07:48	12/04/23 07:48	JHH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2180759	1	12/01/23 18:36	12/02/23 01:11	JCH	Mt. Juliet, TN

20231129-XTWP-(LR8-ST-PC-DG12) L1682898-05 GW

Collected by Trevor Lakin
Collected date/time 11/29/23 10:48
Received date/time 11/30/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2181997	1	12/04/23 12:28	12/04/23 13:58	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2182859	1	12/05/23 15:22	12/05/23 15:22	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2185395	5	12/08/23 11:14	12/08/23 11:14	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2182125	1	12/04/23 08:11	12/04/23 08:11	JHH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2180759	1	12/01/23 18:36	12/02/23 01:28	JCH	Mt. Juliet, TN



SAMPLE SUMMARY

20231129-XTWP-(LR8-ST-PC-DG11) L1682898-06 GW

Collected by
Trevor Lakin

Collected date/time
11/29/23 11:11

Received date/time
11/30/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2182007	1	12/03/23 16:40	12/04/23 07:33	JAC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2182859	1	12/05/23 15:35	12/05/23 15:35	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2185395	5	12/08/23 12:02	12/08/23 12:02	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2182125	1	12/04/23 08:34	12/04/23 08:34	JHH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2181420	1	12/02/23 17:13	12/04/23 18:36	AED	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Shane Gambill
Project Manager



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	868		20.0	1	12/04/2023 13:30	WG2181999

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	16.0		1.00	1	12/05/2023 13:59	WG2182859
Sulfate	349		25.0	5	12/08/2023 14:02	WG2185054

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	12/04/2023 06:39	WG2182125
Toluene	ND		0.00100	1	12/04/2023 06:39	WG2182125
Ethylbenzene	ND		0.00100	1	12/04/2023 06:39	WG2182125
Xylenes, Total	ND		0.00300	1	12/04/2023 06:39	WG2182125
Naphthalene	ND	J4	0.00500	1	12/04/2023 06:39	WG2182125
1,2,4-Trimethylbenzene	ND		0.00100	1	12/04/2023 06:39	WG2182125
1,3,5-Trimethylbenzene	ND		0.00100	1	12/04/2023 06:39	WG2182125
(S) Toluene-d8	106		80.0-120		12/04/2023 06:39	WG2182125
(S) 4-Bromofluorobenzene	97.4		77.0-126		12/04/2023 06:39	WG2182125
(S) 1,2-Dichloroethane-d4	102		70.0-130		12/04/2023 06:39	WG2182125

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.000250	1	12/02/2023 00:18	WG2180759
2-Methylnaphthalene	ND		0.000250	1	12/02/2023 00:18	WG2180759
(S) Nitrobenzene-d5	97.4		31.0-160		12/02/2023 00:18	WG2180759
(S) 2-Fluorobiphenyl	78.4		48.0-148		12/02/2023 00:18	WG2180759
(S) p-Terphenyl-d14	78.4		37.0-146		12/02/2023 00:18	WG2180759

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	898		20.0	1	12/04/2023 08:13	WG2182000

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	16.1		1.00	1	12/05/2023 14:13	WG2182859
Sulfate	355	E V	5.00	1	12/08/2023 14:34	WG2185054

Sample Narrative:

L1682898-02 WG2185054: Sulfate results confirmed by reanalysis

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	12/04/2023 07:02	WG2182125
Toluene	ND		0.00100	1	12/04/2023 07:02	WG2182125
Ethylbenzene	ND		0.00100	1	12/04/2023 07:02	WG2182125
Xylenes, Total	ND		0.00300	1	12/04/2023 07:02	WG2182125
Naphthalene	ND	J4	0.00500	1	12/04/2023 07:02	WG2182125
1,2,4-Trimethylbenzene	ND		0.00100	1	12/04/2023 07:02	WG2182125
1,3,5-Trimethylbenzene	ND		0.00100	1	12/04/2023 07:02	WG2182125
(S) Toluene-d8	104		80.0-120		12/04/2023 07:02	WG2182125
(S) 4-Bromofluorobenzene	97.4		77.0-126		12/04/2023 07:02	WG2182125
(S) 1,2-Dichloroethane-d4	99.4		70.0-130		12/04/2023 07:02	WG2182125

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.000250	1	12/02/2023 00:36	WG2180759
2-Methylnaphthalene	ND		0.000250	1	12/02/2023 00:36	WG2180759
(S) Nitrobenzene-d5	98.4		31.0-160		12/02/2023 00:36	WG2180759
(S) 2-Fluorobiphenyl	78.9		48.0-148		12/02/2023 00:36	WG2180759
(S) p-Terphenyl-d14	81.6		37.0-146		12/02/2023 00:36	WG2180759

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	908		20.0	1	12/04/2023 13:58	WG2181997

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	16.4		1.00	1	12/05/2023 14:27	WG2182859
Sulfate	364	V	25.0	5	12/08/2023 09:55	WG2185395

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	12/04/2023 07:25	WG2182125
Toluene	ND		0.00100	1	12/04/2023 07:25	WG2182125
Ethylbenzene	ND		0.00100	1	12/04/2023 07:25	WG2182125
Xylenes, Total	ND		0.00300	1	12/04/2023 07:25	WG2182125
Naphthalene	ND	J4	0.00500	1	12/04/2023 07:25	WG2182125
1,2,4-Trimethylbenzene	ND		0.00100	1	12/04/2023 07:25	WG2182125
1,3,5-Trimethylbenzene	ND		0.00100	1	12/04/2023 07:25	WG2182125
(S) Toluene-d8	105		80.0-120		12/04/2023 07:25	WG2182125
(S) 4-Bromofluorobenzene	99.9		77.0-126		12/04/2023 07:25	WG2182125
(S) 1,2-Dichloroethane-d4	101		70.0-130		12/04/2023 07:25	WG2182125

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
1-Methylnaphthalene	ND		0.000250	1	12/02/2023 00:53	WG2180759
2-Methylnaphthalene	ND		0.000250	1	12/02/2023 00:53	WG2180759
(S) Nitrobenzene-d5	95.3		31.0-160		12/02/2023 00:53	WG2180759
(S) 2-Fluorobiphenyl	75.8		48.0-148		12/02/2023 00:53	WG2180759
(S) p-Terphenyl-d14	78.9		37.0-146		12/02/2023 00:53	WG2180759

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	900		20.0	1	12/04/2023 13:58	WG2181997

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	16.1		1.00	1	12/05/2023 15:08	WG2182859
Sulfate	357		25.0	5	12/08/2023 10:58	WG2185395

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	12/04/2023 07:48	WG2182125
Toluene	ND		0.00100	1	12/04/2023 07:48	WG2182125
Ethylbenzene	ND		0.00100	1	12/04/2023 07:48	WG2182125
Xylenes, Total	ND		0.00300	1	12/04/2023 07:48	WG2182125
Naphthalene	ND	J4	0.00500	1	12/04/2023 07:48	WG2182125
1,2,4-Trimethylbenzene	ND		0.00100	1	12/04/2023 07:48	WG2182125
1,3,5-Trimethylbenzene	ND		0.00100	1	12/04/2023 07:48	WG2182125
(S) Toluene-d8	106		80.0-120		12/04/2023 07:48	WG2182125
(S) 4-Bromofluorobenzene	98.6		77.0-126		12/04/2023 07:48	WG2182125
(S) 1,2-Dichloroethane-d4	99.9		70.0-130		12/04/2023 07:48	WG2182125

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.000250	1	12/02/2023 01:11	WG2180759
2-Methylnaphthalene	ND		0.000250	1	12/02/2023 01:11	WG2180759
(S) Nitrobenzene-d5	97.4		31.0-160		12/02/2023 01:11	WG2180759
(S) 2-Fluorobiphenyl	78.9		48.0-148		12/02/2023 01:11	WG2180759
(S) p-Terphenyl-d14	81.1		37.0-146		12/02/2023 01:11	WG2180759

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	896		20.0	1	12/04/2023 13:58	WG2181997

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	16.1		1.00	1	12/05/2023 15:22	WG2182859
Sulfate	363		25.0	5	12/08/2023 11:14	WG2185395

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	12/04/2023 08:11	WG2182125
Toluene	ND		0.00100	1	12/04/2023 08:11	WG2182125
Ethylbenzene	ND		0.00100	1	12/04/2023 08:11	WG2182125
Xylenes, Total	ND		0.00300	1	12/04/2023 08:11	WG2182125
Naphthalene	ND	J4	0.00500	1	12/04/2023 08:11	WG2182125
1,2,4-Trimethylbenzene	ND		0.00100	1	12/04/2023 08:11	WG2182125
1,3,5-Trimethylbenzene	ND		0.00100	1	12/04/2023 08:11	WG2182125
(S) Toluene-d8	105		80.0-120		12/04/2023 08:11	WG2182125
(S) 4-Bromofluorobenzene	97.1		77.0-126		12/04/2023 08:11	WG2182125
(S) 1,2-Dichloroethane-d4	99.2		70.0-130		12/04/2023 08:11	WG2182125

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
1-Methylnaphthalene	ND		0.000250	1	12/02/2023 01:28	WG2180759
2-Methylnaphthalene	ND		0.000250	1	12/02/2023 01:28	WG2180759
(S) Nitrobenzene-d5	97.9		31.0-160		12/02/2023 01:28	WG2180759
(S) 2-Fluorobiphenyl	78.4		48.0-148		12/02/2023 01:28	WG2180759
(S) p-Terphenyl-d14	78.4		37.0-146		12/02/2023 01:28	WG2180759

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	878		20.0	1	12/04/2023 07:33	WG2182007

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	16.1		1.00	1	12/05/2023 15:35	WG2182859
Sulfate	362		25.0	5	12/08/2023 12:02	WG2185395

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	12/04/2023 08:34	WG2182125
Toluene	ND		0.00100	1	12/04/2023 08:34	WG2182125
Ethylbenzene	ND		0.00100	1	12/04/2023 08:34	WG2182125
Xylenes, Total	ND		0.00300	1	12/04/2023 08:34	WG2182125
Naphthalene	ND	J4	0.00500	1	12/04/2023 08:34	WG2182125
1,2,4-Trimethylbenzene	ND		0.00100	1	12/04/2023 08:34	WG2182125
1,3,5-Trimethylbenzene	ND		0.00100	1	12/04/2023 08:34	WG2182125
(S) Toluene-d8	104		80.0-120		12/04/2023 08:34	WG2182125
(S) 4-Bromofluorobenzene	95.4		77.0-126		12/04/2023 08:34	WG2182125
(S) 1,2-Dichloroethane-d4	98.4		70.0-130		12/04/2023 08:34	WG2182125

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.000250	1	12/04/2023 18:36	WG2181420
2-Methylnaphthalene	ND		0.000250	1	12/04/2023 18:36	WG2181420
(S) Nitrobenzene-d5	106		31.0-160		12/04/2023 18:36	WG2181420
(S) 2-Fluorobiphenyl	112		48.0-148		12/04/2023 18:36	WG2181420
(S) p-Terphenyl-d14	109		37.0-146		12/04/2023 18:36	WG2181420

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R4008461-1 12/04/23 13:58

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

L1682648-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1682648-11 12/04/23 13:58 • (DUP) R4008461-3 12/04/23 13:58

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	2590	2560	1	1.36		5

L1682648-14 Original Sample (OS) • Duplicate (DUP)

(OS) L1682648-14 12/04/23 13:58 • (DUP) R4008461-4 12/04/23 13:58

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	1360	1580	1	15.3	J3	5

Laboratory Control Sample (LCS)

(LCS) R4008461-2 12/04/23 13:58

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8540	97.0	85.0-115	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4008411-1 12/04/23 13:30

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

L1682762-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1682762-03 12/04/23 13:30 • (DUP) R4008411-3 12/04/23 13:30

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	516	550	1	6.38	J3	5

L1682762-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1682762-04 12/04/23 13:30 • (DUP) R4008411-4 12/04/23 13:30

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	834	846	1	1.43		5

Laboratory Control Sample (LCS)

(LCS) R4008411-2 12/04/23 13:30

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	9290	106	85.0-115	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4008401-1 12/04/23 08:13

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1683347-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1683347-01 12/04/23 08:13 • (DUP) R4008401-3 12/04/23 08:13

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	524	550	1	4.84		5

L1683438-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1683438-01 12/04/23 08:13 • (DUP) R4008401-4 12/04/23 08:13

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	1060	1080	1	1.31		5

Laboratory Control Sample (LCS)

(LCS) R4008401-2 12/04/23 08:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	9140	104	85.0-115	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R4008462-1 12/04/23 07:33

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1682762-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1682762-02 12/04/23 07:33 • (DUP) R4008462-3 12/04/23 07:33

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	552	576	1	4.26		5

L1682785-16 Original Sample (OS) • Duplicate (DUP)

(OS) L1682785-16 12/04/23 07:33 • (DUP) R4008462-4 12/04/23 07:33

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	1750	1990	1	13.1	J3	5

Laboratory Control Sample (LCS)

(LCS) R4008462-2 12/04/23 07:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	9230	105	85.0-115	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4009269-1 12/05/23 09:08

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Chloride	U		0.379	1.00

L1682565-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1682565-01 12/05/23 13:04 • (DUP) R4009269-3 12/05/23 13:18

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	5.72	5.65	1	1.22		15

L1683675-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1683675-01 12/05/23 19:15 • (DUP) R4009269-6 12/05/23 19:29

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	7.21	7.01	1	2.82		15

Laboratory Control Sample (LCS)

(LCS) R4009269-2 12/05/23 09:21

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Chloride	40.0	39.8	99.6	80.0-120	

L1682565-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1682565-01 12/05/23 13:04 • (MS) R4009269-4 12/05/23 13:32 • (MSD) R4009269-5 12/05/23 13:46

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Chloride	40.0	5.72	44.4	44.1	96.6	96.0	1	80.0-120			0.532	15

L1683675-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1683675-01 12/05/23 19:15 • (MS) R4009269-7 12/05/23 19:42

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Chloride	40.0	7.21	45.5	95.6	1	80.0-120	

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R4010292-1 12/08/23 03:57

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Sulfate	U		0.594	5.00

L1685233-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1685233-02 12/08/23 05:01 • (DUP) R4010292-3 12/08/23 05:17

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Sulfate	24.9	24.9	1	0.0738		15

L1682898-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1682898-01 12/08/23 14:02 • (DUP) R4010292-5 12/08/23 14:18

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Sulfate	349	351	5	0.464		15

Laboratory Control Sample (LCS)

(LCS) R4010292-2 12/08/23 04:13

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Sulfate	40.0	40.0	99.9	80.0-120	

L1685233-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1685233-02 12/08/23 05:01 • (MS) R4010292-4 12/08/23 05:33

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Sulfate	40.0	24.9	58.3	83.4	1	80.0-120	

L1682898-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1682898-02 12/08/23 14:34 • (MS) R4010292-8 12/08/23 14:49 • (MSD) R4010292-9 12/08/23 15:05

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Sulfate	40.0	355	320	324	0.000	0.000	1	80.0-120	EV	EV	1.05	15

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1682898-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1682898-02 12/08/23 14:34 • (MS) R4010292-8 12/08/23 14:49 • (MSD) R4010292-9 12/08/23 15:05

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
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Sample Narrative:

OS: Sulfate results confirmed by reanalysis

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R4010115-1 12/08/23 09:07

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Sulfate	U		0.594	5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1684034-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1684034-07 12/08/23 14:25 • (DUP) R4010115-6 12/08/23 15:13

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Sulfate	21.5	21.5	1	0.0545		15

L1682898-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1682898-03 12/08/23 09:55 • (DUP) R4010115-3 12/08/23 10:11

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Sulfate	364	367	5	0.608		15

Laboratory Control Sample (LCS)

(LCS) R4010115-2 12/08/23 09:23

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Sulfate	40.0	40.9	102	80.0-120	

L1684034-07 Original Sample (OS) • Matrix Spike (MS)

(OS) L1684034-07 12/08/23 14:25 • (MS) R4010115-7 12/08/23 15:29

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Sulfate	40.0	21.5	58.2	91.8	1	80.0-120	

L1682898-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1682898-03 12/08/23 09:55 • (MS) R4010115-4 12/08/23 10:27 • (MSD) R4010115-5 12/08/23 10:42

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Sulfate	40.0	364	332	332	0.000	0.000	5	80.0-120	✓	✓	0.0391	15

Method Blank (MB)

(MB) R4007651-3 12/03/23 23:36

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Toluene	U		0.000278	0.00100
Ethylbenzene	U		0.000137	0.00100
Xylenes, Total	U		0.000174	0.00300
Naphthalene	U		0.00100	0.00500
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
(S) Toluene-d8	104			80.0-120
(S) 4-Bromofluorobenzene	98.2			77.0-126
(S) 1,2-Dichloroethane-d4	99.2			70.0-130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4007651-1 12/03/23 22:26 • (LCSD) R4007651-2 12/03/23 22:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.00562	0.00565	112	113	70.0-123			0.532	20
Toluene	0.00500	0.00553	0.00544	111	109	79.0-120			1.64	20
Ethylbenzene	0.00500	0.00520	0.00491	104	98.2	79.0-123			5.74	20
Xylenes, Total	0.0150	0.0151	0.0151	101	101	79.0-123			0.000	20
Naphthalene	0.00500	0.00201	0.00223	40.2	44.6	54.0-135	J4	J4	10.4	20
1,2,4-Trimethylbenzene	0.00500	0.00497	0.00509	99.4	102	76.0-121			2.39	20
1,3,5-Trimethylbenzene	0.00500	0.00514	0.00523	103	105	76.0-122			1.74	20
(S) Toluene-d8				105	104	80.0-120				
(S) 4-Bromofluorobenzene				100	103	77.0-126				
(S) 1,2-Dichloroethane-d4				96.1	95.9	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4008189-2 12/01/23 22:34

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
(S) Nitrobenzene-d5	142			31.0-160
(S) 2-Fluorobiphenyl	111			48.0-148
(S) p-Terphenyl-d14	117			37.0-146

Laboratory Control Sample (LCS)

(LCS) R4008189-1 12/01/23 22:16

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.00200	0.00208	104	66.0-142	
2-Methylnaphthalene	0.00200	0.00198	99.0	62.0-136	
(S) Nitrobenzene-d5			114	31.0-160	
(S) 2-Fluorobiphenyl			89.5	48.0-148	
(S) p-Terphenyl-d14			83.5	37.0-146	

L1682914-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1682914-03 12/02/23 02:21 • (MS) R4008189-3 12/02/23 02:38 • (MSD) R4008189-4 12/02/23 02:56

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
1-Methylnaphthalene	0.00190	ND	0.00206	0.00178	108	93.7	1	21.0-160			14.6	20
2-Methylnaphthalene	0.00190	ND	0.00194	0.00167	102	87.9	1	31.0-160			15.0	20
(S) Nitrobenzene-d5					95.3	80.5		31.0-160				
(S) 2-Fluorobiphenyl					92.6	80.5		48.0-148				
(S) p-Terphenyl-d14					88.9	78.9		37.0-146				

Cp

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

Method Blank (MB)

(MB) R4008094-2 12/04/23 16:32

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
(S) Nitrobenzene-d5	110			31.0-160
(S) 2-Fluorobiphenyl	113			48.0-148
(S) p-Terphenyl-d14	111			37.0-146

Laboratory Control Sample (LCS)

(LCS) R4008094-1 12/04/23 16:14

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.00200	0.00225	112	66.0-142	
2-Methylnaphthalene	0.00200	0.00217	108	62.0-136	
(S) Nitrobenzene-d5			103	31.0-160	
(S) 2-Fluorobiphenyl			107	48.0-148	
(S) p-Terphenyl-d14			103	37.0-146	

L1682951-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1682951-06 12/04/23 20:23 • (MS) R4008094-3 12/04/23 20:41 • (MSD) R4008094-4 12/04/23 20:59

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
1-Methylnaphthalene	0.00190	0.0405	0.0429	0.0428	126	121	1	21.0-160			0.233	20
2-Methylnaphthalene	0.00190	0.0810	0.0829	0.0833	100	121	1	31.0-160			0.481	20
(S) Nitrobenzene-d5					267	264		31.0-160	J1	J1		
(S) 2-Fluorobiphenyl					105	106		48.0-148				
(S) p-Terphenyl-d14					100	99.5		37.0-146				

Sample Narrative:

OS: Surrogate failure due to matrix interference.

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

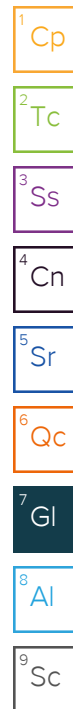
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.
V	The sample concentration is too high to evaluate accurate spike recoveries.



ACCREDITATIONS & LOCATIONS

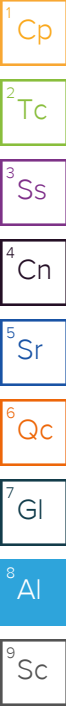
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

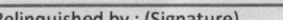
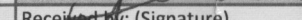

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



Relinquished by: (Signature) 	Date: 11/29/23	Time: 16:00	Received by: (Signature) 	Trip Blank Received: Yes / No HCL / MeOH TBR	Preservation Correct / Checked: <u>Y</u> / <u>N</u> RAD Screen <0.5 mR/hr: <u>Y</u> / <u>N</u>		
Relinquished by: (Signature) 	Date: 11/29/23	Time: 1700	Received by: (Signature)	Temp: <u>20°C</u> Bottles Received: <u>5.0+0=5.0</u> <u>42</u>	If preservation required by Login: Date/Time		
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) <u>Alexa Mitchell</u>	Date: 11/30/23	Time: 0900	Hold:	Condition: NCF / <u>OK</u>

December 29, 2023

Caerus Oil and Gas

Sample Delivery Group: L1689727
Samples Received: 12/19/2023
Project Number:
Description: Love Ranch 8 Investigation
Site: LOVE RANCH 8
Report To: Jake J. / Brett M. / Blair R. / Andy V.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

20231218-XTWP-(LR8-ST-PC-UG02) L1689727-01 GW

Collected by Trevor Lakin
Collected date/time 12/18/23 09:40
Received date/time 12/19/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2193747	1	12/21/23 11:43	12/21/23 17:15	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2194643	1	12/23/23 20:03	12/23/23 20:03	ASM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2196357	5	12/28/23 05:26	12/28/23 05:26	ASM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2195186	1	12/23/23 16:31	12/23/23 16:31	JHH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2192733	1	12/20/23 06:58	12/21/23 15:18	NWH	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

20231218-XTWP-(LR8-ST-PC-POR) L1689727-02 GW

Collected by Trevor Lakin
Collected date/time 12/18/23 10:02
Received date/time 12/19/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2193747	1	12/21/23 11:43	12/21/23 17:15	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2194643	1	12/23/23 20:41	12/23/23 20:41	ASM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2196357	5	12/28/23 05:42	12/28/23 05:42	ASM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2195186	1	12/23/23 16:50	12/23/23 16:50	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2196836	25	12/28/23 02:39	12/28/23 02:39	AV	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2192733	1	12/20/23 06:58	12/21/23 16:12	NWH	Mt. Juliet, TN

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

20231218-XTWP-(LR8-ST-PC-DG14) L1689727-03 GW

Collected by Trevor Lakin
Collected date/time 12/18/23 10:14
Received date/time 12/19/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2193747	1	12/21/23 11:43	12/21/23 17:15	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2194643	1	12/23/23 20:53	12/23/23 20:53	ASM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2196357	5	12/28/23 05:57	12/28/23 05:57	ASM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2196836	1	12/28/23 01:24	12/28/23 01:24	AV	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2192733	1	12/20/23 06:58	12/21/23 15:36	NWH	Mt. Juliet, TN

20231218-XTWP-(LR8-ST-PC-DG13) L1689727-04 GW

Collected by Trevor Lakin
Collected date/time 12/18/23 10:24
Received date/time 12/19/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2193747	1	12/21/23 11:43	12/21/23 17:15	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2194643	1	12/23/23 21:06	12/23/23 21:06	ASM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2196357	5	12/28/23 06:13	12/28/23 06:13	ASM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2195186	1	12/23/23 17:28	12/23/23 17:28	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2196836	1	12/28/23 01:43	12/28/23 01:43	AV	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2193278	1	12/21/23 00:06	12/21/23 04:25	ALM	Mt. Juliet, TN

20231218-XTWP-(LR8-ST-PC-DG12) L1689727-05 GW

Collected by Trevor Lakin
Collected date/time 12/18/23 10:32
Received date/time 12/19/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2193747	1	12/21/23 11:43	12/21/23 17:15	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2194643	1	12/23/23 21:19	12/23/23 21:19	ASM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2196357	5	12/28/23 06:29	12/28/23 06:29	ASM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2195186	1	12/23/23 17:47	12/23/23 17:47	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2196836	1	12/28/23 02:01	12/28/23 02:01	AV	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2193278	1	12/21/23 00:06	12/21/23 04:42	ALM	Mt. Juliet, TN

SAMPLE SUMMARY

20231218-XTWP-(LR8-ST-PC-DG11) L1689727-06 GW

Collected by
Trevor Lakin

Collected date/time
12/18/23 10:50

Received date/time
12/19/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2193747	1	12/21/23 11:43	12/21/23 17:15	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2194643	1	12/23/23 21:31	12/23/23 21:31	ASM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2196357	5	12/28/23 06:45	12/28/23 06:45	ASM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2195186	1	12/23/23 18:06	12/23/23 18:06	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2196836	1	12/28/23 02:20	12/28/23 02:20	AV	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2193278	1	12/21/23 00:06	12/21/23 04:59	ALM	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

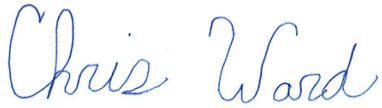
⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Chris Ward
Project Manager



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	970		20.0	1	12/21/2023 17:15	WG2193747

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	15.8		1.00	1	12/23/2023 20:03	WG2194643
Sulfate	337		25.0	5	12/28/2023 05:26	WG2196357

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	12/23/2023 16:31	WG2195186
Toluene	ND		0.00100	1	12/23/2023 16:31	WG2195186
Ethylbenzene	ND		0.00100	1	12/23/2023 16:31	WG2195186
Xylenes, Total	ND		0.00300	1	12/23/2023 16:31	WG2195186
Naphthalene	ND		0.00500	1	12/23/2023 16:31	WG2195186
1,2,4-Trimethylbenzene	ND		0.00100	1	12/23/2023 16:31	WG2195186
1,3,5-Trimethylbenzene	ND		0.00100	1	12/23/2023 16:31	WG2195186
(S) Toluene-d8	102		80.0-120		12/23/2023 16:31	WG2195186
(S) 4-Bromofluorobenzene	102		77.0-126		12/23/2023 16:31	WG2195186
(S) 1,2-Dichloroethane-d4	127		70.0-130		12/23/2023 16:31	WG2195186

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.000250	1	12/21/2023 15:18	WG2192733
2-Methylnaphthalene	ND		0.000250	1	12/21/2023 15:18	WG2192733
(S) Nitrobenzene-d5	95.3		31.0-160		12/21/2023 15:18	WG2192733
(S) 2-Fluorobiphenyl	114		48.0-148		12/21/2023 15:18	WG2192733
(S) p-Terphenyl-d14	116		37.0-146		12/21/2023 15:18	WG2192733

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	1170		20.0	1	12/21/2023 17:15	WG2193747

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	49.5		1.00	1	12/23/2023 20:41	WG2194643
Sulfate	268		25.0	5	12/28/2023 05:42	WG2196357

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.572		0.0250	25	12/28/2023 02:39	WG2196836
Toluene	0.411		0.0250	25	12/28/2023 02:39	WG2196836
Ethylbenzene	0.0922		0.00100	1	12/23/2023 16:50	WG2195186
Xylenes, Total	1.11		0.0750	25	12/28/2023 02:39	WG2196836
Naphthalene	0.0143		0.00500	1	12/23/2023 16:50	WG2195186
1,2,4-Trimethylbenzene	0.139		0.0250	25	12/28/2023 02:39	WG2196836
1,3,5-Trimethylbenzene	0.119		0.0250	25	12/28/2023 02:39	WG2196836
(S) Toluene-d8	95.6		80.0-120		12/23/2023 16:50	WG2195186
(S) Toluene-d8	104		80.0-120		12/28/2023 02:39	WG2196836
(S) 4-Bromofluorobenzene	110		77.0-126		12/23/2023 16:50	WG2195186
(S) 4-Bromofluorobenzene	99.4		77.0-126		12/28/2023 02:39	WG2196836
(S) 1,2-Dichloroethane-d4	122		70.0-130		12/23/2023 16:50	WG2195186
(S) 1,2-Dichloroethane-d4	83.4		70.0-130		12/28/2023 02:39	WG2196836

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	0.00591		0.000250	1	12/21/2023 16:12	WG2192733
2-Methylnaphthalene	0.0177		0.000250	1	12/21/2023 16:12	WG2192733
(S) Nitrobenzene-d5	139		31.0-160		12/21/2023 16:12	WG2192733
(S) 2-Fluorobiphenyl	109		48.0-148		12/21/2023 16:12	WG2192733
(S) p-Terphenyl-d14	108		37.0-146		12/21/2023 16:12	WG2192733

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	952		20.0	1	12/21/2023 17:15	WG2193747

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	15.7		1.00	1	12/23/2023 20:53	WG2194643
Sulfate	337		25.0	5	12/28/2023 05:57	WG2196357

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	12/28/2023 01:24	WG2196836
Toluene	ND		0.00100	1	12/28/2023 01:24	WG2196836
Ethylbenzene	ND		0.00100	1	12/28/2023 01:24	WG2196836
Xylenes, Total	ND		0.00300	1	12/28/2023 01:24	WG2196836
Naphthalene	ND		0.00500	1	12/28/2023 01:24	WG2196836
1,2,4-Trimethylbenzene	ND		0.00100	1	12/28/2023 01:24	WG2196836
1,3,5-Trimethylbenzene	ND		0.00100	1	12/28/2023 01:24	WG2196836
(S) Toluene-d8	103		80.0-120		12/28/2023 01:24	WG2196836
(S) 4-Bromofluorobenzene	103		77.0-126		12/28/2023 01:24	WG2196836
(S) 1,2-Dichloroethane-d4	85.3		70.0-130		12/28/2023 01:24	WG2196836

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.000250	1	12/21/2023 15:36	WG2192733
2-Methylnaphthalene	ND		0.000250	1	12/21/2023 15:36	WG2192733
(S) Nitrobenzene-d5	92.1		31.0-160		12/21/2023 15:36	WG2192733
(S) 2-Fluorobiphenyl	109		48.0-148		12/21/2023 15:36	WG2192733
(S) p-Terphenyl-d14	109		37.0-146		12/21/2023 15:36	WG2192733

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	984		20.0	1	12/21/2023 17:15	WG2193747

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	15.6		1.00	1	12/23/2023 21:06	WG2194643
Sulfate	334		25.0	5	12/28/2023 06:13	WG2196357

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	12/28/2023 01:43	WG2196836
Toluene	ND		0.00100	1	12/23/2023 17:28	WG2195186
Ethylbenzene	ND		0.00100	1	12/23/2023 17:28	WG2195186
Xylenes, Total	ND		0.00300	1	12/28/2023 01:43	WG2196836
Naphthalene	ND		0.00500	1	12/23/2023 17:28	WG2195186
1,2,4-Trimethylbenzene	ND		0.00100	1	12/23/2023 17:28	WG2195186
1,3,5-Trimethylbenzene	ND		0.00100	1	12/28/2023 01:43	WG2196836
(S) Toluene-d8	98.1		80.0-120		12/23/2023 17:28	WG2195186
(S) Toluene-d8	110		80.0-120		12/28/2023 01:43	WG2196836
(S) 4-Bromofluorobenzene	104		77.0-126		12/23/2023 17:28	WG2195186
(S) 4-Bromofluorobenzene	98.1		77.0-126		12/28/2023 01:43	WG2196836
(S) 1,2-Dichloroethane-d4	124		70.0-130		12/23/2023 17:28	WG2195186
(S) 1,2-Dichloroethane-d4	96.4		70.0-130		12/28/2023 01:43	WG2196836

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.000250	1	12/21/2023 04:25	WG2193278
2-Methylnaphthalene	ND		0.000250	1	12/21/2023 04:25	WG2193278
(S) Nitrobenzene-d5	75.3		31.0-160		12/21/2023 04:25	WG2193278
(S) 2-Fluorobiphenyl	91.6		48.0-148		12/21/2023 04:25	WG2193278
(S) p-Terphenyl-d14	89.5		37.0-146		12/21/2023 04:25	WG2193278

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	960		20.0	1	12/21/2023 17:15	WG2193747

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	16.1		1.00	1	12/23/2023 21:19	WG2194643
Sulfate	334		25.0	5	12/28/2023 06:29	WG2196357

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	12/28/2023 02:01	WG2196836
Toluene	ND		0.00100	1	12/23/2023 17:47	WG2195186
Ethylbenzene	ND		0.00100	1	12/23/2023 17:47	WG2195186
Xylenes, Total	ND		0.00300	1	12/28/2023 02:01	WG2196836
Naphthalene	ND		0.00500	1	12/23/2023 17:47	WG2195186
1,2,4-Trimethylbenzene	ND		0.00100	1	12/23/2023 17:47	WG2195186
1,3,5-Trimethylbenzene	ND		0.00100	1	12/23/2023 17:47	WG2195186
(S) Toluene-d8	99.4		80.0-120		12/23/2023 17:47	WG2195186
(S) Toluene-d8	110		80.0-120		12/28/2023 02:01	WG2196836
(S) 4-Bromofluorobenzene	103		77.0-126		12/23/2023 17:47	WG2195186
(S) 4-Bromofluorobenzene	98.4		77.0-126		12/28/2023 02:01	WG2196836
(S) 1,2-Dichloroethane-d4	127		70.0-130		12/23/2023 17:47	WG2195186
(S) 1,2-Dichloroethane-d4	92.2		70.0-130		12/28/2023 02:01	WG2196836

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.000250	1	12/21/2023 04:42	WG2193278
2-Methylnaphthalene	ND		0.000250	1	12/21/2023 04:42	WG2193278
(S) Nitrobenzene-d5	72.6		31.0-160		12/21/2023 04:42	WG2193278
(S) 2-Fluorobiphenyl	90.0		48.0-148		12/21/2023 04:42	WG2193278
(S) p-Terphenyl-d14	85.3		37.0-146		12/21/2023 04:42	WG2193278

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	972		20.0	1	12/21/2023 17:15	WG2193747

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	16.1		1.00	1	12/23/2023 21:31	WG2194643
Sulfate	338		25.0	5	12/28/2023 06:45	WG2196357

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	12/28/2023 02:20	WG2196836
Toluene	ND		0.00100	1	12/23/2023 18:06	WG2195186
Ethylbenzene	ND		0.00100	1	12/23/2023 18:06	WG2195186
Xylenes, Total	ND		0.00300	1	12/28/2023 02:20	WG2196836
Naphthalene	ND		0.00500	1	12/23/2023 18:06	WG2195186
1,2,4-Trimethylbenzene	ND		0.00100	1	12/23/2023 18:06	WG2195186
1,3,5-Trimethylbenzene	ND		0.00100	1	12/23/2023 18:06	WG2195186
(S) Toluene-d8	98.7		80.0-120		12/23/2023 18:06	WG2195186
(S) Toluene-d8	110		80.0-120		12/28/2023 02:20	WG2196836
(S) 4-Bromofluorobenzene	102		77.0-126		12/23/2023 18:06	WG2195186
(S) 4-Bromofluorobenzene	90.4		77.0-126		12/28/2023 02:20	WG2196836
(S) 1,2-Dichloroethane-d4	129		70.0-130		12/23/2023 18:06	WG2195186
(S) 1,2-Dichloroethane-d4	87.8		70.0-130		12/28/2023 02:20	WG2196836

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.000250	1	12/21/2023 04:59	WG2193278
2-Methylnaphthalene	ND		0.000250	1	12/21/2023 04:59	WG2193278
(S) Nitrobenzene-d5	74.2		31.0-160		12/21/2023 04:59	WG2193278
(S) 2-Fluorobiphenyl	90.0		48.0-148		12/21/2023 04:59	WG2193278
(S) p-Terphenyl-d14	88.9		37.0-146		12/21/2023 04:59	WG2193278

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R4016271-1 12/21/23 17:15

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

L1688923-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1688923-03 12/21/23 17:15 • (DUP) R4016271-3 12/21/23 17:15

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	329	343	1	4.17		5

L1689467-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1689467-02 12/21/23 17:15 • (DUP) R4016271-4 12/21/23 17:15

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	3400	3550	1	4.46		5

Laboratory Control Sample (LCS)

(LCS) R4016271-2 12/21/23 17:15

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8590	97.6	85.0-115	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R4017062-1 12/23/23 09:43

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Chloride	U		0.379	1.00

L1689727-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1689727-01 12/23/23 20:03 • (DUP) R4017062-5 12/23/23 20:16

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	15.8	16.0	1	0.872		15

L1690527-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1690527-01 12/23/23 21:44 • (DUP) R4017062-7 12/23/23 22:22

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	123	123	1	0.352		15

Laboratory Control Sample (LCS)

(LCS) R4017062-2 12/23/23 09:57

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Chloride	40.0	40.0	99.9	80.0-120	

L1689727-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1689727-01 12/23/23 20:03 • (MS) R4017062-6 12/23/23 20:28

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Chloride	40.0	15.8	53.6	94.5	1	80.0-120	

L1690527-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1690527-01 12/23/23 21:44 • (MS) R4017062-8 12/23/23 22:34 • (MSD) R4017062-9 12/23/23 22:47

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Chloride	40.0	123	139	140	39.5	40.8	1	80.0-120	J6	J6	0.390	15

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4017540-1 12/28/23 02:09

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Sulfate	U		0.594	5.00

L1689613-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1689613-01 12/28/23 03:50 • (DUP) R4017540-3 12/28/23 04:06

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Sulfate	8.44	8.40	1	0.489		15

L1691156-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1691156-02 12/28/23 08:37 • (DUP) R4017540-6 12/28/23 08:53

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Sulfate	90.2	90.1	1	0.141		15

Laboratory Control Sample (LCS)

(LCS) R4017540-2 12/28/23 02:24

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Sulfate	40.0	41.0	103	80.0-120	

L1689613-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1689613-01 12/28/23 03:50 • (MS) R4017540-4 12/28/23 04:22 • (MSD) R4017540-5 12/28/23 04:38

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Sulfate	40.0	8.44	47.1	47.1	96.8	96.7	1	80.0-120			0.0325	15

L1691156-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1691156-02 12/28/23 08:37 • (MS) R4017540-7 12/28/23 09:08

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Sulfate	40.0	90.2	113	57.3	1	80.0-120	<u>J6</u>

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R4017290-3 12/23/23 11:11

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Toluene	U		0.000278	0.00100
Ethylbenzene	U		0.000137	0.00100
Xylenes, Total	U		0.000174	0.00300
Naphthalene	U		0.00100	0.00500
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
(S) Toluene-d8	99.1			80.0-120
(S) 4-Bromofluorobenzene	103			77.0-126
(S) 1,2-Dichloroethane-d4	128			70.0-130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4017290-1 12/23/23 09:55 • (LCSD) R4017290-2 12/23/23 10:14

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.00588	0.00521	118	104	70.0-123			12.1	20
Toluene	0.00500	0.00529	0.00474	106	94.8	79.0-120			11.0	20
Ethylbenzene	0.00500	0.00531	0.00464	106	92.8	79.0-123			13.5	20
Xylenes, Total	0.0150	0.0153	0.0138	102	92.0	79.0-123			10.3	20
Naphthalene	0.00500	0.00477	0.00461	95.4	92.2	54.0-135			3.41	20
1,2,4-Trimethylbenzene	0.00500	0.00542	0.00486	108	97.2	76.0-121			10.9	20
1,3,5-Trimethylbenzene	0.00500	0.00541	0.00486	108	97.2	76.0-122			10.7	20
(S) Toluene-d8				97.0	98.4	80.0-120				
(S) 4-Bromofluorobenzene				102	104	77.0-126				
(S) 1,2-Dichloroethane-d4				124	124	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4017525-2 12/27/23 18:26

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Toluene	U		0.000278	0.00100
Ethylbenzene	U		0.000137	0.00100
Xylenes, Total	U		0.000174	0.00300
Naphthalene	U		0.00100	0.00500
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
(S) Toluene-d8	104			80.0-120
(S) 4-Bromofluorobenzene	97.2			77.0-126
(S) 1,2-Dichloroethane-d4	91.6			70.0-130

Laboratory Control Sample (LCS)

(LCS) R4017525-1 12/27/23 17:39

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.00500	0.00531	106	70.0-123	
Toluene	0.00500	0.00519	104	79.0-120	
Ethylbenzene	0.00500	0.00540	108	79.0-123	
Xylenes, Total	0.0150	0.0149	99.3	79.0-123	
Naphthalene	0.00500	0.00415	83.0	54.0-135	
1,2,4-Trimethylbenzene	0.00500	0.00447	89.4	76.0-121	
1,3,5-Trimethylbenzene	0.00500	0.00460	92.0	76.0-122	
(S) Toluene-d8			107	80.0-120	
(S) 4-Bromofluorobenzene			102	77.0-126	
(S) 1,2-Dichloroethane-d4			86.7	70.0-130	

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R4015541-3 12/21/23 13:13

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
(S) Nitrobenzene-d5	91.5			31.0-160
(S) 2-Fluorobiphenyl	109			48.0-148
(S) p-Terphenyl-d14	114			37.0-146

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4015541-1 12/21/23 12:38 • (LCSD) R4015541-2 12/21/23 12:55

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1-Methylnaphthalene	0.00200	0.00224	0.00233	112	117	66.0-142			3.94	20
2-Methylnaphthalene	0.00200	0.00214	0.00222	107	111	62.0-136			3.67	20
(S) Nitrobenzene-d5				93.5	95.0	31.0-160				
(S) 2-Fluorobiphenyl				110	115	48.0-148				
(S) p-Terphenyl-d14				113	115	37.0-146				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4016511-3 12/21/23 04:08

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
(S) Nitrobenzene-d5	76.0			31.0-160
(S) 2-Fluorobiphenyl	91.5			48.0-148
(S) p-Terphenyl-d14	91.5			37.0-146

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4016511-1 12/21/23 03:34 • (LCSD) R4016511-2 12/21/23 03:51

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1-Methylnaphthalene	0.00200	0.00195	0.00200	97.5	100	66.0-142			2.53	20
2-Methylnaphthalene	0.00200	0.00189	0.00192	94.5	96.0	62.0-136			1.57	20
(S) Nitrobenzene-d5				79.0	77.0	31.0-160				
(S) 2-Fluorobiphenyl				92.0	92.5	48.0-148				
(S) p-Terphenyl-d14				86.0	85.5	37.0-146				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

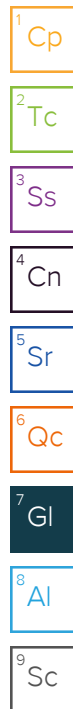
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
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ACCREDITATIONS & LOCATIONS

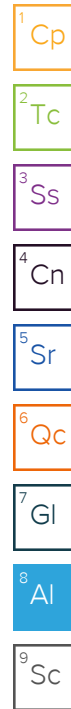
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



Caerus Oil and Gas
143 Diamond Avenue
Parachute, CO 81635

Billing Information:
SAMEASLEFT

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page ____ of ____



12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



SDG # 21689727

H081

Accnum:

Template:

Prelogin:

PM:

PB:

Shipped Via:

Remarks Sample # (lab only)

Report to:

Blair Rollins

Email To:

brollins@caerusoilandgas.com

Project Description:

Love Ranch 8 Investigation

City/State

Collected: Piceance Crk, CO

Please Circle:

PT MT CT ET

Phone: (970) 640-6919

Client Project #

Lab Project #

Collected by (print):

Trevor Lakin

Site/Facility ID #

LOVE RANCH 8

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)

____ Same Day ____ Five Day
____ Next Day ____ 5 Day (Rad Only)
____ Two Day ____ 10 Day (Rad Only)
____ Three Day

Quote #

Date Results Needed

Standard TAI

No.
of
Cnts

Sample ID

Comp/Grab

Matrix*

Depth

Date

Time

20231218-XTWP-(LR8-ST-PC-UG02)

Grab

OT

-

12/18/23

9:40

7

20231218-XTWP-(LR8-ST-PC-POR)

↓

↓

-

↓

10:02

7

20231218-XTWP-(LR8-ST-PC-DG14)

↓

↓

-

↓

10:14

7

20231218-XTWP-(LR8-ST-PC-DG13)

↓

↓

-

↓

10:24

7

20231218-XTWP-(LR8-ST-PC-DG12)

↓

↓

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10:32

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20231218-XTWP-(LR8-ST-PC-DG11)

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10:50

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20231218-XTWP-(LR8-ST-PC-DG10)

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20231218-XTWP-(LR8-ST-PC-DG09)

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20231218-XTWP-(LR8-ST-PC-DG08)

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20231218-XTWP-(LR8-ST-PC-DG07)

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20231218-XTWP-(LR8-ST-PC-DG06)

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20231218-XTWP-(LR8-ST-PC-DG05)

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20231218-XTWP-(LR8-ST-PC-DG04)

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20231218-XTWP-(LR8-ST-PC-DG03)

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20231218-XTWP-(LR8-ST-PC-DG02)

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20231218-XTWP-(LR8-ST-PC-DG01)

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20231218-XTWP-(LR8-ST-PC-DG00)

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20231218-XTWP-(LR8-ST-PC-DG00)

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20231218-XTWP-(LR8-ST-PC-DG00)

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20231218-XTWP-(LR8-ST-PC-DG00)

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* Matrix:

SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other Surface Water

Remarks:

Samples returned via:

____ UPS ____ FedEx ____ Courier ____

pH ____ Temp ____

Flow ____ Other ____

Sample Receipt Checklist

COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y Y N
Bottles arrive intact: Y Y N
Correct bottles used: Y Y N
Sufficient volume sent: Y Y N
If Applicable
VOA Zero Headspace: Y Y N
Preservation Correct/Checked: Y Y N
RAD Screen <0.5 mR/hr: Y Y N

Tracking # 6426 8306 7830

Received by: (Signature)

Trip Blank Received: Yes (No)
HCL / MeOH
TBR

Received by: (Signature)

Temp: M54.8C Bottles Received: 42
1.170 ~ 1.1

Received for lab by: (Signature)

Date: 12/19/23 Time: 900 42
AM 12/19

If preservation required by Login: Date/Time

Hold:

Condition:
NCF / OK

Caerus Oil and Gas

Sample Delivery Group: L1690655
Samples Received: 12/21/2023
Project Number:
Description: Love Ranch 8 Investigation
Site: LOVE RANCH 8
Report To: Jake J. / Brett M. / Blair R. / Andy V.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

SAMPLE SUMMARY

20231219-XTWP-(LR8-MW01) L1690655-01 GW

Collected by
Jordan Veith

Collected date/time
12/19/23 09:37

Received date/time
12/21/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2195648	1	12/25/23 06:50	12/25/23 08:19	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2195118	1	01/10/24 08:23	01/10/24 08:23	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2195118	10	01/10/24 08:35	01/10/24 08:35	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2198516	1	12/31/23 14:48	12/31/23 14:48	ACG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2194463	1	12/22/23 10:49	12/23/23 03:33	AGW	Mt. Juliet, TN

20231219-XTWP-(LR8-MW02) L1690655-02 GW

Collected by
Jordan Veith

Collected date/time
12/19/23 10:42

Received date/time
12/21/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2195239	1	12/23/23 15:31	12/24/23 14:58	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2195118	1	01/10/24 08:53	01/10/24 08:53	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2195118	10	01/10/24 09:06	01/10/24 09:06	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2198516	1	12/31/23 15:10	12/31/23 15:10	ACG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2194463	1	12/22/23 10:49	12/23/23 03:53	ALM	Mt. Juliet, TN

20231219-XTWP-(LR8-MW03) L1690655-03 GW

Collected by
Jordan Veith

Collected date/time
12/19/23 14:21

Received date/time
12/21/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2195231	1	12/23/23 15:15	12/24/23 13:24	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2195118	1	01/10/24 09:20	01/10/24 09:20	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2195118	10	01/10/24 09:34	01/10/24 09:34	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2198516	1	12/31/23 15:31	12/31/23 15:31	ACG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2194463	1	12/22/23 10:49	12/23/23 04:12	ALM	Mt. Juliet, TN

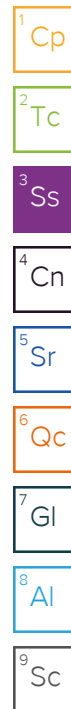
20231219-XTWP-(LR8-MW04) L1690655-04 GW

Collected by
Jordan Veith

Collected date/time
12/19/23 13:34

Received date/time
12/21/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2195231	1	12/23/23 15:15	12/24/23 13:24	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2195118	1	01/10/24 10:48	01/10/24 10:48	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2195118	10	01/10/24 11:01	01/10/24 11:01	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2200105	1	01/03/24 18:59	01/03/24 18:59	JAH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2194463	1	12/22/23 10:49	12/23/23 04:32	ALM	Mt. Juliet, TN

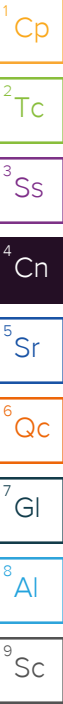


CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Chris Ward
Project Manager



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	1260		25.0	1	12/25/2023 08:19	WG2195648

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	32.9		1.00	1	01/10/2024 08:23	WG2195118
Sulfate	323		50.0	10	01/10/2024 08:35	WG2195118

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	12/31/2023 14:48	WG2198516
Toluene	ND		0.00100	1	12/31/2023 14:48	WG2198516
Ethylbenzene	ND		0.00100	1	12/31/2023 14:48	WG2198516
Xylenes, Total	ND		0.00300	1	12/31/2023 14:48	WG2198516
Naphthalene	ND		0.00500	1	12/31/2023 14:48	WG2198516
1,2,4-Trimethylbenzene	ND		0.00100	1	12/31/2023 14:48	WG2198516
1,3,5-Trimethylbenzene	ND		0.00100	1	12/31/2023 14:48	WG2198516
(S) Toluene-d8	103		80.0-120		12/31/2023 14:48	WG2198516
(S) 4-Bromofluorobenzene	116		77.0-126		12/31/2023 14:48	WG2198516
(S) 1,2-Dichloroethane-d4	124		70.0-130		12/31/2023 14:48	WG2198516

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
1-Methylnaphthalene	ND		0.000250	1	12/23/2023 03:33	WG2194463
2-Methylnaphthalene	ND		0.000250	1	12/23/2023 03:33	WG2194463
(S) Nitrobenzene-d5	0.000	J2	31.0-160		12/23/2023 03:33	WG2194463
(S) 2-Fluorobiphenyl	0.000	J2	48.0-148		12/23/2023 03:33	WG2194463
(S) p-Terphenyl-d14	0.000	J2	37.0-146		12/23/2023 03:33	WG2194463

Sample Narrative:

L1690655-01 WG2194463: Duplicate Analysis performed due to surrogate failure. Results confirm; reporting in hold data

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	1500		50.0	1	12/24/2023 14:58	WG2195239

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	114		1.00	1	01/10/2024 08:53	WG2195118
Sulfate	782		50.0	10	01/10/2024 09:06	WG2195118

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	0.00243		0.00100	1	12/31/2023 15:10	WG2198516
Toluene	ND		0.00100	1	12/31/2023 15:10	WG2198516
Ethylbenzene	ND		0.00100	1	12/31/2023 15:10	WG2198516
Xylenes, Total	ND		0.00300	1	12/31/2023 15:10	WG2198516
Naphthalene	ND		0.00500	1	12/31/2023 15:10	WG2198516
1,2,4-Trimethylbenzene	ND		0.00100	1	12/31/2023 15:10	WG2198516
1,3,5-Trimethylbenzene	ND		0.00100	1	12/31/2023 15:10	WG2198516
(S) Toluene-d8	105		80.0-120		12/31/2023 15:10	WG2198516
(S) 4-Bromofluorobenzene	117		77.0-126		12/31/2023 15:10	WG2198516
(S) 1,2-Dichloroethane-d4	121		70.0-130		12/31/2023 15:10	WG2198516

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
1-Methylnaphthalene	ND		0.000250	1	12/23/2023 03:53	WG2194463
2-Methylnaphthalene	ND		0.000250	1	12/23/2023 03:53	WG2194463
(S) Nitrobenzene-d5	104		31.0-160		12/23/2023 03:53	WG2194463
(S) 2-Fluorobiphenyl	116		48.0-148		12/23/2023 03:53	WG2194463
(S) p-Terphenyl-d14	104		37.0-146		12/23/2023 03:53	WG2194463

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	1440		25.0	1	12/24/2023 13:24	WG2195231

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	77.1		1.00	1	01/10/2024 09:20	WG2195118
Sulfate	641		50.0	10	01/10/2024 09:34	WG2195118

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	12/31/2023 15:31	WG2198516
Toluene	ND		0.00100	1	12/31/2023 15:31	WG2198516
Ethylbenzene	ND		0.00100	1	12/31/2023 15:31	WG2198516
Xylenes, Total	ND		0.00300	1	12/31/2023 15:31	WG2198516
Naphthalene	ND		0.00500	1	12/31/2023 15:31	WG2198516
1,2,4-Trimethylbenzene	ND		0.00100	1	12/31/2023 15:31	WG2198516
1,3,5-Trimethylbenzene	ND		0.00100	1	12/31/2023 15:31	WG2198516
(S) Toluene-d8	103		80.0-120		12/31/2023 15:31	WG2198516
(S) 4-Bromofluorobenzene	116		77.0-126		12/31/2023 15:31	WG2198516
(S) 1,2-Dichloroethane-d4	124		70.0-130		12/31/2023 15:31	WG2198516

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
1-Methylnaphthalene	ND		0.000250	1	12/23/2023 04:12	WG2194463
2-Methylnaphthalene	ND		0.000250	1	12/23/2023 04:12	WG2194463
(S) Nitrobenzene-d5	108		31.0-160		12/23/2023 04:12	WG2194463
(S) 2-Fluorobiphenyl	123		48.0-148		12/23/2023 04:12	WG2194463
(S) p-Terphenyl-d14	103		37.0-146		12/23/2023 04:12	WG2194463

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	1210		25.0	1	12/24/2023 13:24	WG2195231

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	35.7		1.00	1	01/10/2024 10:48	WG2195118
Sulfate	438		50.0	10	01/10/2024 11:01	WG2195118

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND	Q	0.00100	1	01/03/2024 18:59	WG2200105
Toluene	ND	Q	0.00100	1	01/03/2024 18:59	WG2200105
Ethylbenzene	ND	Q	0.00100	1	01/03/2024 18:59	WG2200105
Xylenes, Total	ND	Q	0.00300	1	01/03/2024 18:59	WG2200105
Naphthalene	ND	Q	0.00500	1	01/03/2024 18:59	WG2200105
1,2,4-Trimethylbenzene	ND	Q	0.00100	1	01/03/2024 18:59	WG2200105
1,3,5-Trimethylbenzene	ND	Q	0.00100	1	01/03/2024 18:59	WG2200105
(S) Toluene-d8	102		80.0-120		01/03/2024 18:59	WG2200105
(S) 4-Bromofluorobenzene	97.7		77.0-126		01/03/2024 18:59	WG2200105
(S) 1,2-Dichloroethane-d4	99.6		70.0-130		01/03/2024 18:59	WG2200105

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
1-Methylnaphthalene	ND		0.000250	1	12/23/2023 04:32	WG2194463
2-Methylnaphthalene	ND		0.000250	1	12/23/2023 04:32	WG2194463
(S) Nitrobenzene-d5	105		31.0-160		12/23/2023 04:32	WG2194463
(S) 2-Fluorobiphenyl	117		48.0-148		12/23/2023 04:32	WG2194463
(S) p-Terphenyl-d14	95.8		37.0-146		12/23/2023 04:32	WG2194463

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R4016986-1 12/24/23 13:24

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1689848-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1689848-01 12/24/23 13:24 • (DUP) R4016986-3 12/24/23 13:24

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	352	354	1	0.567		5

L1689884-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1689884-01 12/24/23 13:24 • (DUP) R4016986-4 12/24/23 13:24

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	1570	1740	1	10.6	J3	5

Laboratory Control Sample (LCS)

(LCS) R4016986-2 12/24/23 13:24

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8670	98.5	85.0-115	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4017258-1 12/24/23 14:58

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

L1690654-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1690654-03 12/24/23 14:58 • (DUP) R4017258-3 12/24/23 14:58

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	1600	1700	1	5.77	<u>J3</u>	5

Laboratory Control Sample (LCS)

(LCS) R4017258-2 12/24/23 14:58

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8380	95.2	85.0-115	

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R4016961-1 12/25/23 08:19

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

L1690634-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1690634-04 12/25/23 08:19 • (DUP) R4016961-3 12/25/23 08:19

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	1310	1440	1	9.45	J3	5

L1690634-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1690634-13 12/25/23 08:19 • (DUP) R4016961-4 12/25/23 08:19

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	693	704	1	1.53		5

Laboratory Control Sample (LCS)

(LCS) R4016961-2 12/25/23 08:19

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8330	94.7	85.0-115	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4021724-1 01/09/24 23:43

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Chloride	U		0.379	1.00
Sulfate	U		0.594	5.00

L1686818-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1686818-05 01/10/24 00:37 • (DUP) R4021724-3 01/10/24 00:51

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	54.3	54.1	1	0.317		15
Sulfate	33.4	32.9	1	1.70		15

L1690527-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1690527-13 01/10/24 04:57 • (DUP) R4021724-5 01/10/24 05:10

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	141	141	1	0.354		15
Sulfate	ND	ND	1	0.000		15

Laboratory Control Sample (LCS)

(LCS) R4021724-2 01/09/24 23:57

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Chloride	40.0	43.3	108	80.0-120	
Sulfate	40.0	42.3	106	80.0-120	

L1686818-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1686818-05 01/10/24 00:37 • (MS) R4021724-4 01/10/24 01:05

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Chloride	40.0	54.3	86.0	79.4	1	80.0-120	J6
Sulfate	40.0	33.4	69.4	90.0	1	80.0-120	

Sample Narrative:

MS: cl spike failed due to sample matrix



L1690527-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1690527-13 01/10/24 04:57 • (MS) R4021724-6 01/10/24 05:23 • (MSD) R4021724-7 01/10/24 05:35

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Chloride	40.0	141	156	156	35.8	35.4	1	80.0-120	J6	J6	0.100	15
Sulfate	40.0	ND	40.3	39.9	101	99.8	1	80.0-120			0.908	15

Sample Narrative:

MS: cl spike failed due to sample matrix

MSD: cl spike failed due to sample matrix

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4019194-3 12/31/23 10:46

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Toluene	U		0.000278	0.00100
Ethylbenzene	U		0.000137	0.00100
Xylenes, Total	U		0.000174	0.00300
Naphthalene	U		0.00100	0.00500
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
(S) Toluene-d8	105			80.0-120
(S) 4-Bromofluorobenzene	117			77.0-126
(S) 1,2-Dichloroethane-d4	123			70.0-130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4019194-1 12/31/23 09:42 • (LCSD) R4019194-2 12/31/23 10:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.00526	0.00500	105	100	70.0-123			5.07	20
Toluene	0.00500	0.00446	0.00447	89.2	89.4	79.0-120			0.224	20
Ethylbenzene	0.00500	0.00426	0.00419	85.2	83.8	79.0-123			1.66	20
Xylenes, Total	0.0150	0.0129	0.0126	86.0	84.0	79.0-123			2.35	20
Naphthalene	0.00500	0.00310	0.00318	62.0	63.6	54.0-135			2.55	20
1,2,4-Trimethylbenzene	0.00500	0.00395	0.00388	79.0	77.6	76.0-121			1.79	20
1,3,5-Trimethylbenzene	0.00500	0.00403	0.00392	80.6	78.4	76.0-122			2.77	20
(S) Toluene-d8				101	103	80.0-120				
(S) 4-Bromofluorobenzene				113	114	77.0-126				
(S) 1,2-Dichloroethane-d4				124	124	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4019683-3 01/03/24 12:55

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Toluene	U		0.000278	0.00100
Ethylbenzene	U		0.000137	0.00100
Xylenes, Total	U		0.000174	0.00300
Naphthalene	U		0.00100	0.00500
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
(S) Toluene-d8	101			80.0-120
(S) 4-Bromofluorobenzene	95.9			77.0-126
(S) 1,2-Dichloroethane-d4	96.0			70.0-130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4019683-1 01/03/24 11:59 • (LCSD) R4019683-2 01/03/24 12:17

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.00518	0.00490	104	98.0	70.0-123			5.56	20
Toluene	0.00500	0.00530	0.00505	106	101	79.0-120			4.83	20
Ethylbenzene	0.00500	0.00507	0.00489	101	97.8	79.0-123			3.61	20
Xylenes, Total	0.0150	0.0152	0.0152	101	101	79.0-123			0.000	20
Naphthalene	0.00500	0.00527	0.00463	105	92.6	54.0-135			12.9	20
1,2,4-Trimethylbenzene	0.00500	0.00552	0.00482	110	96.4	76.0-121			13.5	20
1,3,5-Trimethylbenzene	0.00500	0.00554	0.00497	111	99.4	76.0-122			10.8	20
(S) Toluene-d8				103	100	80.0-120				
(S) 4-Bromofluorobenzene				97.5	103	77.0-126				
(S) 1,2-Dichloroethane-d4				97.1	97.3	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4018047-3 12/23/23 00:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
(S) Nitrobenzene-d5	108			31.0-160
(S) 2-Fluorobiphenyl	118			48.0-148
(S) p-Terphenyl-d14	104			37.0-146

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4018047-1 12/23/23 00:18 • (LCSD) R4018047-2 12/23/23 00:37

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1-Methylnaphthalene	0.00200	0.00217	0.00221	108	111	66.0-142			1.83	20
2-Methylnaphthalene	0.00200	0.00207	0.00212	104	106	62.0-136			2.39	20
(S) Nitrobenzene-d5				100	100	31.0-160				
(S) 2-Fluorobiphenyl				107	110	48.0-148				
(S) p-Terphenyl-d14				91.5	94.0	37.0-146				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

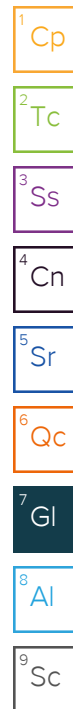
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
Q	Sample was prepared and/or analyzed past holding time as defined in the method. Concentrations should be considered minimum values.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



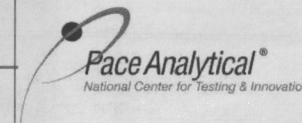
Caerus Oil and Gas
143 Diamond Avenue
Parachute, CO 81635

Billing Information:
SAME AS LEFT

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page ____ of ____



Report to:
Blair Rollins

Email To:
brollins@caerusoilandgas.com

Project Description:
Love Ranch 8 Investigation

City/State
Collected: Piceance Crk, CO

Please Circle:
PT MT CT ET

Phone: (970) 640-6919

Client Project #

Lab Project #

Collected by (print):
Jordan Veith

Site/Facility ID #
Love Ranch 8

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)

Quote #

Immediately
Packed on Ice N Y X

Same Day Five Day
Next Day 5 Day (Rad Only)
Two Day 10 Day (Rad Only)
Three Day

Date Results Needed

Standard TAT

No.
of
Cntrs

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	COGOC Table 915-1 WATER	EC, pH, SAR	Arsenic, Boron	1-methylnaphthalene	2-methylnaphthalene								
20231219-XTWP-(LR8-MW01)	Grab	GW	-	12/19/23	9:37	7	X			X	X								
20231219-XTWP-(LR8-MW02)	↓	↓	-	↓	10:42	7	X			X	X								
20231219-XTWP-(LR8-MW03)	↓	↓	-	↓	11:40	7	X			X	X								
20231219-XTWP-(LR8-MW04)	↓	↓	-	↓	1:34	7	X			X	X								
<div></div>																			

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks:

Samples returned via:
UPS FedEx Courier

Tracking # 6426 8306 7966

Relinquished by: (Signature)

Date: 12/20/23
Time: 11:00

Received by: (Signature)

Trip Blank Received: Yes / No
HCL / MeOH
TBR

Relinquished by: (Signature)

Date: 12/21/23
Time: 1:00

Received by: (Signature)

Temp: 41.8°C
2.7 + 0 = 2.7
Date: 12/21/23

Bottles Received: 35-28
If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date: Time:

Received for lab by: (Signature)

Date: 12/21/23
Time: 1000

Hold:

Condition:
NCF / OK

Sample Receipt Checklist
COC Seal Present/Intact: ☒ NP ☐ Y ☐ N
COC Signed/Accurate: ☒ ☐ ☐ N
Bottles arrive intact: ☒ ☐ ☐ N
Correct bottles used: ☒ ☐ ☐ N
Sufficient volume sent: ☒ ☐ ☐ N
If Applicable
VOA Zero Headspace: ☒ ☐ ☐ N
Preservation Correct/Checked: ☒ ☐ ☐ N
RAD Screen <0.5 mR/hr: ☒ ☐ ☐ N

Caerus Oil and Gas

Sample Delivery Group: L1690654
Samples Received: 12/21/2023
Project Number:
Description: Love Ranch 8 Investigation
Site: LOVE RANCH 8
Report To: Jake J. / Brett M. / Blair R. / Andy V.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



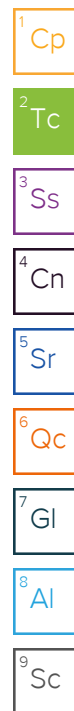
Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

20231219-XTWP-(LR8-PZ01) L1690654-01 GW

Collected by
Jordan Veith

Collected date/time
12/19/23 16:37

Received date/time
12/21/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2195231	1	12/23/23 15:15	12/24/23 13:24	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2195118	1	01/10/24 05:48	01/10/24 05:48	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2195118	10	01/10/24 06:01	01/10/24 06:01	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2197958	1	12/29/23 22:32	12/29/23 22:32	AV	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2194463	1	12/22/23 10:49	12/23/23 01:55	ALM	Mt. Juliet, TN

20231219-XTWP-(LR8-PZ02) L1690654-02 GW

Collected by
Jordan Veith

Collected date/time
12/19/23 15:47

Received date/time
12/21/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2195231	1	12/23/23 15:15	12/24/23 13:24	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2195118	1	01/10/24 06:14	01/10/24 06:14	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2195118	10	01/10/24 06:27	01/10/24 06:27	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2197958	1	12/29/23 22:52	12/29/23 22:52	AV	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2194463	1	12/22/23 10:49	12/23/23 02:15	ALM	Mt. Juliet, TN

20231219-XTWP-(LR8-PZ03) L1690654-03 GW

Collected by
Jordan Veith

Collected date/time
12/19/23 11:40

Received date/time
12/21/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2195239	1	12/23/23 15:31	12/24/23 14:58	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2195118	1	01/10/24 06:40	01/10/24 06:40	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2195118	10	01/10/24 06:53	01/10/24 06:53	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2197958	1	12/29/23 23:12	12/29/23 23:12	AV	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2194463	1	12/22/23 10:49	12/23/23 02:35	ALM	Mt. Juliet, TN

20231219-XTWP-(LR8-PZ04) L1690654-04 GW

Collected by
Jordan Veith

Collected date/time
12/19/23 15:01

Received date/time
12/21/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2197368	1	12/28/23 13:00	12/28/23 15:53	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2195118	1	01/10/24 07:31	01/10/24 07:31	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2195118	10	01/10/24 07:44	01/10/24 07:44	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2198516	1	12/31/23 14:06	12/31/23 14:06	ACG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2194463	1	12/22/23 10:49	12/23/23 02:54	ALM	Mt. Juliet, TN

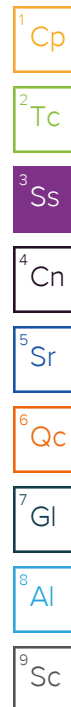
20231219-XTWP-(LR8-PZ05) L1690654-05 GW

Collected by
Jordan Veith

Collected date/time
12/19/23 12:37

Received date/time
12/21/23 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2195239	1	12/23/23 15:31	12/24/23 14:58	DLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2195118	1	01/10/24 07:57	01/10/24 07:57	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2195118	10	01/10/24 08:10	01/10/24 08:10	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2198516	1	12/31/23 14:27	12/31/23 14:27	ACG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2194463	1	12/22/23 10:49	12/23/23 03:14	AGW	Mt. Juliet, TN



CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Chris Ward
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	1560		50.0	1	12/24/2023 13:24	WG2195231

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	42.6		1.00	1	01/10/2024 05:48	WG2195118
Sulfate	611		50.0	10	01/10/2024 06:01	WG2195118

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	12/29/2023 22:32	WG2197958
Toluene	ND		0.00100	1	12/29/2023 22:32	WG2197958
Ethylbenzene	ND		0.00100	1	12/29/2023 22:32	WG2197958
Xylenes, Total	ND		0.00300	1	12/29/2023 22:32	WG2197958
Naphthalene	ND		0.00500	1	12/29/2023 22:32	WG2197958
1,2,4-Trimethylbenzene	ND		0.00100	1	12/29/2023 22:32	WG2197958
1,3,5-Trimethylbenzene	ND		0.00100	1	12/29/2023 22:32	WG2197958
(S) Toluene-d8	101		80.0-120		12/29/2023 22:32	WG2197958
(S) 4-Bromofluorobenzene	94.1		77.0-126		12/29/2023 22:32	WG2197958
(S) 1,2-Dichloroethane-d4	85.6		70.0-130		12/29/2023 22:32	WG2197958

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
1-Methylnaphthalene	ND		0.000250	1	12/23/2023 01:55	WG2194463
2-Methylnaphthalene	ND		0.000250	1	12/23/2023 01:55	WG2194463
(S) Nitrobenzene-d5	106		31.0-160		12/23/2023 01:55	WG2194463
(S) 2-Fluorobiphenyl	119		48.0-148		12/23/2023 01:55	WG2194463
(S) p-Terphenyl-d14	102		37.0-146		12/23/2023 01:55	WG2194463

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	1350		25.0	1	12/24/2023 13:24	WG2195231

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	34.7		1.00	1	01/10/2024 06:14	WG2195118
Sulfate	514		50.0	10	01/10/2024 06:27	WG2195118

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	12/29/2023 22:52	WG2197958
Toluene	ND		0.00100	1	12/29/2023 22:52	WG2197958
Ethylbenzene	ND		0.00100	1	12/29/2023 22:52	WG2197958
Xylenes, Total	ND		0.00300	1	12/29/2023 22:52	WG2197958
Naphthalene	ND		0.00500	1	12/29/2023 22:52	WG2197958
1,2,4-Trimethylbenzene	ND		0.00100	1	12/29/2023 22:52	WG2197958
1,3,5-Trimethylbenzene	ND		0.00100	1	12/29/2023 22:52	WG2197958
(S) Toluene-d8	102		80.0-120		12/29/2023 22:52	WG2197958
(S) 4-Bromofluorobenzene	88.8		77.0-126		12/29/2023 22:52	WG2197958
(S) 1,2-Dichloroethane-d4	83.2		70.0-130		12/29/2023 22:52	WG2197958

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.000250	1	12/23/2023 02:15	WG2194463
2-Methylnaphthalene	ND		0.000250	1	12/23/2023 02:15	WG2194463
(S) Nitrobenzene-d5	98.9		31.0-160		12/23/2023 02:15	WG2194463
(S) 2-Fluorobiphenyl	111		48.0-148		12/23/2023 02:15	WG2194463
(S) p-Terphenyl-d14	95.8		37.0-146		12/23/2023 02:15	WG2194463

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	1600	J3	50.0	1	12/24/2023 14:58	WG2195239

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	91.1		1.00	1	01/10/2024 06:40	WG2195118
Sulfate	700		50.0	10	01/10/2024 06:53	WG2195118

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	12/29/2023 23:12	WG2197958
Toluene	ND		0.00100	1	12/29/2023 23:12	WG2197958
Ethylbenzene	ND		0.00100	1	12/29/2023 23:12	WG2197958
Xylenes, Total	ND		0.00300	1	12/29/2023 23:12	WG2197958
Naphthalene	ND		0.00500	1	12/29/2023 23:12	WG2197958
1,2,4-Trimethylbenzene	ND		0.00100	1	12/29/2023 23:12	WG2197958
1,3,5-Trimethylbenzene	ND		0.00100	1	12/29/2023 23:12	WG2197958
(S) Toluene-d8	103		80.0-120		12/29/2023 23:12	WG2197958
(S) 4-Bromofluorobenzene	94.3		77.0-126		12/29/2023 23:12	WG2197958
(S) 1,2-Dichloroethane-d4	86.6		70.0-130		12/29/2023 23:12	WG2197958

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.000250	1	12/23/2023 02:35	WG2194463
2-Methylnaphthalene	ND		0.000250	1	12/23/2023 02:35	WG2194463
(S) Nitrobenzene-d5	97.9		31.0-160		12/23/2023 02:35	WG2194463
(S) 2-Fluorobiphenyl	111		48.0-148		12/23/2023 02:35	WG2194463
(S) p-Terphenyl-d14	97.9		37.0-146		12/23/2023 02:35	WG2194463

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	1530		50.0	1	12/28/2023 15:53	WG2197368

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	124		1.00	1	01/10/2024 07:31	WG2195118
Sulfate	622		50.0	10	01/10/2024 07:44	WG2195118

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	12/31/2023 14:06	WG2198516
Toluene	ND		0.00100	1	12/31/2023 14:06	WG2198516
Ethylbenzene	ND		0.00100	1	12/31/2023 14:06	WG2198516
Xylenes, Total	ND		0.00300	1	12/31/2023 14:06	WG2198516
Naphthalene	ND		0.00500	1	12/31/2023 14:06	WG2198516
1,2,4-Trimethylbenzene	ND		0.00100	1	12/31/2023 14:06	WG2198516
1,3,5-Trimethylbenzene	ND		0.00100	1	12/31/2023 14:06	WG2198516
(S) Toluene-d8	105		80.0-120		12/31/2023 14:06	WG2198516
(S) 4-Bromofluorobenzene	116		77.0-126		12/31/2023 14:06	WG2198516
(S) 1,2-Dichloroethane-d4	123		70.0-130		12/31/2023 14:06	WG2198516

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.000250	1	12/23/2023 02:54	WG2194463
2-Methylnaphthalene	ND		0.000250	1	12/23/2023 02:54	WG2194463
(S) Nitrobenzene-d5	101		31.0-160		12/23/2023 02:54	WG2194463
(S) 2-Fluorobiphenyl	112		48.0-148		12/23/2023 02:54	WG2194463
(S) p-Terphenyl-d14	102		37.0-146		12/23/2023 02:54	WG2194463

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	1580		50.0	1	12/24/2023 14:58	WG2195239

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	123		1.00	1	01/10/2024 07:57	WG2195118
Sulfate	652		50.0	10	01/10/2024 08:10	WG2195118

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	12/31/2023 14:27	WG2198516
Toluene	ND		0.00100	1	12/31/2023 14:27	WG2198516
Ethylbenzene	ND		0.00100	1	12/31/2023 14:27	WG2198516
Xylenes, Total	ND		0.00300	1	12/31/2023 14:27	WG2198516
Naphthalene	ND		0.00500	1	12/31/2023 14:27	WG2198516
1,2,4-Trimethylbenzene	ND		0.00100	1	12/31/2023 14:27	WG2198516
1,3,5-Trimethylbenzene	ND		0.00100	1	12/31/2023 14:27	WG2198516
(S) Toluene-d8	105		80.0-120		12/31/2023 14:27	WG2198516
(S) 4-Bromofluorobenzene	117		77.0-126		12/31/2023 14:27	WG2198516
(S) 1,2-Dichloroethane-d4	122		70.0-130		12/31/2023 14:27	WG2198516

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
1-Methylnaphthalene	ND		0.000250	1	12/23/2023 03:14	WG2194463
2-Methylnaphthalene	ND		0.000250	1	12/23/2023 03:14	WG2194463
(S) Nitrobenzene-d5	189	J1	31.0-160		12/23/2023 03:14	WG2194463
(S) 2-Fluorobiphenyl	214	J1	48.0-148		12/23/2023 03:14	WG2194463
(S) p-Terphenyl-d14	191	J1	37.0-146		12/23/2023 03:14	WG2194463

Sample Narrative:

L1690654-05 WG2194463: Duplicate Analysis performed due to surrogate failure. Results confirm; reporting in hold data

Method Blank (MB)

(MB) R4016986-1 12/24/23 13:24

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

L1689848-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1689848-01 12/24/23 13:24 • (DUP) R4016986-3 12/24/23 13:24

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	352	354	1	0.567		5

L1689884-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1689884-01 12/24/23 13:24 • (DUP) R4016986-4 12/24/23 13:24

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	1570	1740	1	10.6	J3	5

Laboratory Control Sample (LCS)

(LCS) R4016986-2 12/24/23 13:24

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8670	98.5	85.0-115	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4017258-1 12/24/23 14:58

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

L1690654-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1690654-03 12/24/23 14:58 • (DUP) R4017258-3 12/24/23 14:58

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	1600	1700	1	5.77	<u>J3</u>	5

Laboratory Control Sample (LCS)

(LCS) R4017258-2 12/24/23 14:58

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8380	95.2	85.0-115	

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R4018606-1 12/28/23 15:53

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		10.0	10.0

L1690654-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1690654-04 12/28/23 15:53 • (DUP) R4018606-3 12/28/23 15:53

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	1530	1530	1	0.000		5

L1690953-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1690953-04 12/28/23 15:53 • (DUP) R4018606-4 12/28/23 15:53

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	1480	1560	1	5.26	J3	5

Sample Narrative:

OS: Initial analysis within hold. Re-analysis for dilution or confirmation outside of hold.

Laboratory Control Sample (LCS)

(LCS) R4018606-2 12/28/23 15:53

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8220	93.4	85.0-115	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4021724-1 01/09/24 23:43

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Chloride	U		0.379	1.00
Sulfate	U		0.594	5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1686818-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1686818-05 01/10/24 00:37 • (DUP) R4021724-3 01/10/24 00:51

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	54.3	54.1	1	0.317		15
Sulfate	33.4	32.9	1	1.70		15

L1690527-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1690527-13 01/10/24 04:57 • (DUP) R4021724-5 01/10/24 05:10

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	141	141	1	0.354		15
Sulfate	ND	ND	1	0.000		15

Laboratory Control Sample (LCS)

(LCS) R4021724-2 01/09/24 23:57

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Chloride	40.0	43.3	108	80.0-120	
Sulfate	40.0	42.3	106	80.0-120	

L1686818-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1686818-05 01/10/24 00:37 • (MS) R4021724-4 01/10/24 01:05

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Chloride	40.0	54.3	86.0	79.4	1	80.0-120	J6
Sulfate	40.0	33.4	69.4	90.0	1	80.0-120	

Sample Narrative:

MS: cl spike failed due to sample matrix

L1690527-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1690527-13 01/10/24 04:57 • (MS) R4021724-6 01/10/24 05:23 • (MSD) R4021724-7 01/10/24 05:35

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	40.0	141	156	156	35.8	35.4	1	80.0-120	J6	J6	0.100	15
Sulfate	40.0	ND	40.3	39.9	101	99.8	1	80.0-120			0.908	15

Sample Narrative:

MS: cl spike failed due to sample matrix

MSD: cl spike failed due to sample matrix

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R4018825-3 12/29/23 18:36

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Toluene	U		0.000278	0.00100
Ethylbenzene	U		0.000137	0.00100
Xylenes, Total	U		0.000174	0.00300
Naphthalene	U		0.00100	0.00500
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
(S) Toluene-d8	101			80.0-120
(S) 4-Bromofluorobenzene	89.3			77.0-126
(S) 1,2-Dichloroethane-d4	101			70.0-130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4018825-1 12/29/23 17:37 • (LCSD) R4018825-2 12/29/23 17:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.00522	0.00518	104	104	70.0-123			0.769	20
Toluene	0.00500	0.00529	0.00522	106	104	79.0-120			1.33	20
Ethylbenzene	0.00500	0.00470	0.00477	94.0	95.4	79.0-123			1.48	20
Xylenes, Total	0.0150	0.0137	0.0138	91.3	92.0	79.0-123			0.727	20
Naphthalene	0.00500	0.00285	0.00295	57.0	59.0	54.0-135			3.45	20
1,2,4-Trimethylbenzene	0.00500	0.00498	0.00489	99.6	97.8	76.0-121			1.82	20
1,3,5-Trimethylbenzene	0.00500	0.00497	0.00494	99.4	98.8	76.0-122			0.605	20
(S) Toluene-d8				99.6	99.7	80.0-120				
(S) 4-Bromofluorobenzene				94.3	91.4	77.0-126				
(S) 1,2-Dichloroethane-d4				103	103	70.0-130				

L1690435-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1690435-02 12/29/23 21:33 • (MS) R4018825-4 12/30/23 01:49 • (MSD) R4018825-5 12/30/23 02:09

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	ND	0.00658	0.00690	116	123	1	17.0-158			4.75	27
Toluene	0.00500	ND	0.00593	0.00644	119	129	1	26.0-154			8.25	28
Ethylbenzene	0.00500	0.00796	0.0136	0.0147	113	135	1	30.0-155			7.77	27
Xylenes, Total	0.0150	ND	0.0163	0.0174	109	116	1	29.0-154			6.53	28
Naphthalene	0.00500	0.0169	0.0245	0.0241	152	144	1	12.0-156			1.65	35
1,2,4-Trimethylbenzene	0.00500	ND	0.00575	0.00604	115	121	1	26.0-154			4.92	27
1,3,5-Trimethylbenzene	0.00500	ND	0.00514	0.00557	103	111	1	28.0-153			8.03	27

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1690435-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1690435-02 12/29/23 21:33 • (MS) R4018825-4 12/30/23 01:49 • (MSD) R4018825-5 12/30/23 02:09

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
(S) Toluene-d8					99.6	101		80.0-120				
(S) 4-Bromofluorobenzene					95.3	97.9		77.0-126				
(S) 1,2-Dichloroethane-d4					86.5	84.6		70.0-130				

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R4019194-3 12/31/23 10:46

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Toluene	U		0.000278	0.00100
Ethylbenzene	U		0.000137	0.00100
Xylenes, Total	U		0.000174	0.00300
Naphthalene	U		0.00100	0.00500
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
(S) Toluene-d8	105			80.0-120
(S) 4-Bromofluorobenzene	117			77.0-126
(S) 1,2-Dichloroethane-d4	123			70.0-130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4019194-1 12/31/23 09:42 • (LCSD) R4019194-2 12/31/23 10:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.00526	0.00500	105	100	70.0-123			5.07	20
Toluene	0.00500	0.00446	0.00447	89.2	89.4	79.0-120			0.224	20
Ethylbenzene	0.00500	0.00426	0.00419	85.2	83.8	79.0-123			1.66	20
Xylenes, Total	0.0150	0.0129	0.0126	86.0	84.0	79.0-123			2.35	20
Naphthalene	0.00500	0.00310	0.00318	62.0	63.6	54.0-135			2.55	20
1,2,4-Trimethylbenzene	0.00500	0.00395	0.00388	79.0	77.6	76.0-121			1.79	20
1,3,5-Trimethylbenzene	0.00500	0.00403	0.00392	80.6	78.4	76.0-122			2.77	20
(S) Toluene-d8				101	103	80.0-120				
(S) 4-Bromofluorobenzene				113	114	77.0-126				
(S) 1,2-Dichloroethane-d4				124	124	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4018047-3 12/23/23 00:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
1-Methylnaphthalene	U		0.0000687	0.000250
2-Methylnaphthalene	U		0.0000674	0.000250
(S) Nitrobenzene-d5	108			31.0-160
(S) 2-Fluorobiphenyl	118			48.0-148
(S) p-Terphenyl-d14	104			37.0-146

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4018047-1 12/23/23 00:18 • (LCSD) R4018047-2 12/23/23 00:37

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1-Methylnaphthalene	0.00200	0.00217	0.00221	108	111	66.0-142			1.83	20
2-Methylnaphthalene	0.00200	0.00207	0.00212	104	106	62.0-136			2.39	20
(S) Nitrobenzene-d5				100	100	31.0-160				
(S) 2-Fluorobiphenyl				107	110	48.0-148				
(S) p-Terphenyl-d14				91.5	94.0	37.0-146				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

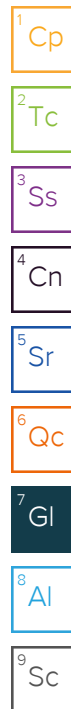
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.



ACCREDITATIONS & LOCATIONS

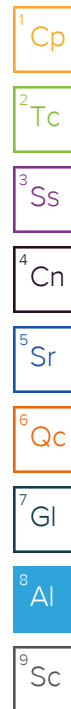
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



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