**VIA ELECTRONIC MAIL –**

June 25, 2024

Blair Rollins
EH&S Specialist
Environmental Health and Safety
Caerus Piceance LLC
143 Diamond Avenue
Parachute, Colorado 81635

**Subject:** **Decommissioning Field Activities**
**L9 – Hill 9-14**
**Mamm Creek Field**
**Garfield County, Colorado**

Dear Mr. Rollins:

WSP USA Inc. (WSP), on behalf of Caerus Piceance LLC (Caerus), completed excavation oversight, field soil screening, and confirmation soil sampling to address the previously identified soil impacts associated with the decommissioning of production well Hill 9-14 [American Petroleum Institute (API) Number (#) 045-09356] located at the HILL-67S92W9NWSW (Location ID: 334844) (L9) pad location (Site). All associated field decommissioning work was completed per the State of Colorado Energy and Carbon Management Commission (ECMC) Rule 913.c.(9): *Decommissioning of Oil and Gas Facilities*. Initial decommissioning activities associated with the project can be found in Document Numbers (DNs) 403401949 and 403566667, and under ECMC Remediation Project Number (RPN) 28568. All supplemental decommissioning and Site clean-up activities completed during the second quarter of 2024 can be referenced in DN (43834330). The Site is located in the Caerus' Mamm Creek area of operation in Garfield County, Colorado (Figure 1).

## PRODUCED WATER SAMPLING ACTIVITIES – L9 – HILL 9-14

On May 22, 2024, with the assistance of Caerus personnel, WSP collected one produced water sample [2020522-MCSOURCE-(L9-T)] from the onsite production tank (Tank Number 265606) which stored production fluids from the same formation as the decommissioned production. The produced water sample was collected from the bottom loadout valve of the tank for site-specific waste characterization per ECMC Rule 915-2.(2).C. This produced water sample was submitted to Pace Analytical (Pace) of Mt. Juliet, Tennessee for laboratory analysis of Table 915-1 metals, pH, electrical conductivity (EC), pH, and chromium (IV). The sample location is shown on Figure 2.

## CONFIRMATION SOIL SAMPLING ACTIVITIES – L9 – HILL 9-14

WSP returned to the Site on June 3, 2024, to conducted excavation oversite of the removal of soil impacts observed along the north sidewall associated with confirmation soil sample location 20230720-L9-(NW-HILL 9-14)@5 (referenced in DN 403401949). The former production well footprint was opened to expose the north sidewall in order to remove soil impacts. Energy Field Services, LLC. of Parachute, Colorado, was contracted by Caerus to provide excavation services. As the excavation was advanced the soils that composed all sidewalls and base of the excavation from the former north sidewall were meticulously field screened which dictated the excavation extent. The soil sampling activities were conducted by a WSP geologist who inspected the soil samples for the presence or absence of petroleum hydrocarbons odor and/or staining. The soils were characterized by visually inspecting the confirmation soil samples and field screening the soil head space using a photo-ionization detector (PID) to monitor for the presence or absence of volatile organic compounds (VOCs). A total of five confirmation soil samples were submitted from the excavation footprint, one base and four sidewalls. All confirmation soil samples were collected

and submitted from areas where the greatest degree of impact was observed. An estimated 26 cubic yards of soil were removed to address the previously observed impacts along the north sidewall of the decommissioned production well Hill 9-14 [API:045-09356]. The approximate dimensions of the excavation footprint were 9 ft x 12 ft x 6.5 ft. The excavation of the former Hill 9-12A [API:045-09354] and the Hill 9-14 [API:045-09356] production wells were completed concurrently on June 3, 2024. The removed soils were compiled into one stockpile from which a five-point composite soil sample was also collected. Soils collected from each aliquot location were evenly and thoroughly mixed to create one representative stockpile soil sample [20240603-L9-(STOCK)]. The field soil screening results of the investigative confirmation soil samples are summarized in the table below.

**Field Soil Screening Results – June 3, 2024**

| Sample ID | PID (ppm) | Notes | Submitted for Analysis |
|---|---|---|---|
| 20240603-L9-(NW-HILL 9-14)@6.5 | 4.2 | No staining or odor | Yes |
| 20240603-L9-(WW-HILL 9-14)@6 | 1.9 | No staining or odor | Yes |
| 20240603-L9-(EW-HILL 9-14)@6 | 2.3 | No staining or odor | Yes |
| 20240603-L9-(SW-HILL 9-14)@6.5 | 3.6 | No staining, slight odor | Yes |
| 20240603-L9-(BASE-HILL 9-14)@6.5 | 1.3 | No staining or odor | Yes |
| 20240603-L9-(STOCK) | 0.0 | No staining or odor | Yes |

*Key: PID – photoionization detector ppm – parts per million*

All investigative confirmation soil samples associated with the Hill 9-14 wellhead were submitted to Pace under a reduced suite of barium, cadmium, total petroleum hydrocarbons (TPH), 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene (DN 403401949). The composite stockpile soil sample was submitted to include the analysis from each decommissioned production well that included arsenic, barium, cadmium, selenium, TPH, benzene, 1,2,4-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene. Analytical results will be evaluated under ECMC Protection of Groundwater Soil Screening Level Concentrations (PGSSLCs) and Residential Soil Screening Level Concentrations (RSSLCs). The investigative confirmation soil sample locations and composite stockpile sample aliquot locations for the investigative activities completed on June 3, 2024 are depicted on Figures 3 and 4. A photographic log of the investigative activities conducted at the Site on June 3, 2024 is included in Enclosure A.

## ANALYTICAL RESULTS – L9 – HILL 9-14

Laboratory analytical results of the five investigative confirmation soil samples and the composite stockpile soil sample collected at the Site on June 3, 2024 indicate exceedances of ECMC Table 915-1 PGSSLCs. The documented exceedances for each confirmation sample are summarized in the table below.

**Summary of Confirmation Soil Analytical Exceedances – June 3, 2024**

| Confirmation Soil Sample ID | ECMC Table 915-1 Contaminants of Concern | Units | ECMC PGSSLCs | ECMC RSSLCs | Confirmation Soil Sample Concentration |
|---|---|---|---|---|---|
| 20240603-L9-(BASE-HILL9-14)@6.5 | Barium | mg/kg | 82 (M) | 15,000 (M) | **3820** |
| 20240603-L9-(EW-HILL9-14)@6 | Barium | mg/kg | 82 (M) | 15,000 (M) | **4240** |
| 20240603-L9-(NW-HILL9-14)@6.5 | Barium | mg/kg | 82 (M) | 15,000 (M) | **3940** |
| 20240603-L9-(SW-HILL9-14)@6.5 | Barium | mg/kg | 82 (M) | 15,000 (M) | **4520** |
| 20240603-L9-(WW-HILL9-14)@6 | Barium | mg/kg | 82 (M) | 15,000 (M) | **166** |
| 20240603-L9-(STOCK) | Arsenic | mg/kg | 0.29 (M) | 0.68 (M) | **5.36** |
| | Barium | mg/kg | 82 (M) | 15,000 (M) | **1830** |

*Key:*
*ECMC – Colorado Energy and Carbon Management Commission*
*mg/kg – milligram per kilogram*
*R – risk based value*
*PGSSLC – Protection of Groundwater Soil Screening Level Concentrations*
*M – method based value*
***BOLD** – indicates exceeding ECMC standard*
*RSSLC – Residential Soil Screening Level Concentrations*

All other analytes were either below the laboratory reporting detection limit (RDL) or within the ECMC Table 915-1 PGSSLCs. The analytical results of the investigative confirmation soil samples collected are summarized on Tables 1 and 2. A soil analytical exceedances map compared to ECMC Table 951-1 PGSSLCs shown on Figure 5. The analytical results of the produced water sample collected are summarized on Table 3. The produced water sample results are depicted on Figure 6. The laboratory reports are included in Enclosure B.

## CONCLUSIONS – L9 – HILL 9-14

Based on the analytical results provided herein, confirmation soil sampling activities associated with the decommissioning of production well Hill 9-14 [API: 045-09356] production well and associated infrastructure (flowlines) indicates there are remaining ECMC Table 915-1 PGSSCL exceedances of barium in subsurface soil. Additionally, there are ECMC Table 915-1 exceedances of barium associated with soils excavated from the two above-mentioned production wells associate with stockpile soil sample 20240603-L9-(STOCK).

## RECOMMENDATIONS – L9 – HILL 9-14

Please see the ECMC Site Investigation and Remediation Workplan Document Number 43834330 “Remediation Summary and Operator Comments” sections per ECMC Rule 915 e.(2)C. for how Caerus plans to address relief of arsenic as a contaminant of concern (COC) and how Caerus plans to address the evaluation the success of this remediation project through Table 915-1, Footnote 7.

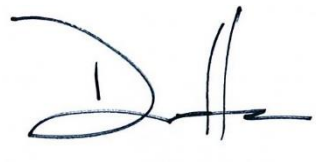
Please reference DN 403401949 for initial and supplementary investigative confirmation soil sampling activities completed in 2023 associated with the decommissioning of production well 9-14 and associated production infrastructure (flowlines). The site figures and laboratory analytical results of previous work completed can also be referenced under DNs 403401949 and 403566667.

WSP recommends that Caerus should request the Director for approval to use the soil excavated associated with stockpile 20240603-L9-(STOCK) from the two above mentioned decommissioned production wells to backfill the open excavation footprints, as analytical results indicate all analytes are within ECMC Table 915-1 RSSLCs or site-specific waste characterization per ECMC Rule 915-2.(2).C. The stockpile soil analytical exceedances compared to PGSSLCs are depicted on the attached Figure 4.

Based on the data provided, WSP recommends that Caerus request the ECMC Director for "No Further Action" and closure of RPN 28568. This recommendation is based on the analytical data provided in this report of work completed and in ECMC DN 403834330.

Please contact us at (970) 618-4514 or (970) 658-7025 if you have any questions regarding this report or require additional information.

Kind regards,



Dustin Held
Lead Consultant, Environmental Geologist

Parker Coit, P.G.
Lead Consultant, Geologist

Encl.

# FIGURES

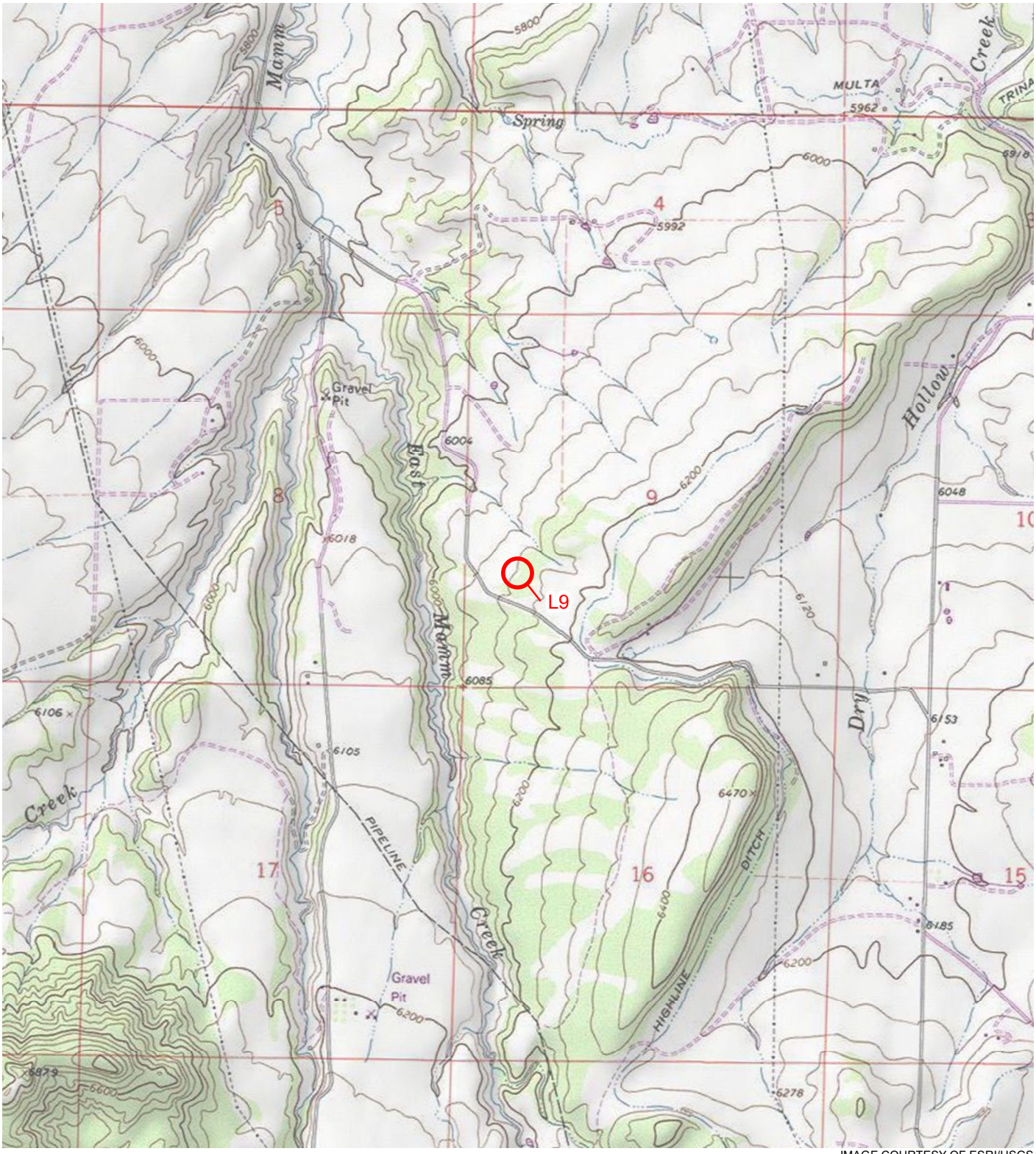



IMAGE COURTESY OF ESRI/USGS

**LEGEND**

SITE LOCATION

0 2,000 4,000

Feet

N

COLORADO

FIGURE 1
SITE LOCATION MAP
L9
NWSW SEC 9-T7S-R92W
GARFIELD COUNTY, COLORADO
**CAERUS PICEANCE LLC**

wsp

\\corp.pbwan.net\us\CentralData\DCCLDA00\Standard\gis\CaerusPiceanceLLC\L9\Maps\MXDs\Report\2023\31406292_006_FIG01_SL_2023.mxd


IMAGE COURTESY OF GOOGLE EARTH (2023)

**LEGEND**

PRODUCED WATER SAMPLE LOCATION

0 50 100

Feet

N

FIGURE 2
PRODUCED WATER SAMPLE MAP
L9
NWSW SEC 9-T7S-R92W
GARFIELD COUNTY, COLORADO
**CAERUS PICEANCE LLC**

T:\Standard\gis\CaerusPiceanceLLC\L9\Maps\MXDs\Report\2024\FIG02_PRODUCED_WATER_SAMPLE_MAP_052424.mxd


IMAGE COURTESY OF GOOGLE EARTH (2023)

**LEGEND**

- SOIL SAMPLE
- EXCAVATION EXTENT (6/3/2024)

0 25 50
Feet

N

FIGURE 3
EXCAVATION SITE MAP
L9 FC-WH-HILL-9-14
NWSW SEC 9-T7S-R92W
GARFIELD COUNTY, COLORADO
**CAERUS PICEANCE LLC**

T:\Standard\gis\CaerusPiceanceLLC\AMERICAN SODA LINE\MAPS\MXD\FIG03_EXCAVATION_MAP_14_062424.mxd


IMAGE COURTESY OF GOOGLE EARTH (2023)

**LEGEND**

△ ALIQUOT SOIL SAMPLE

▭ SPOIL PILE (6/3/2024)

0 50 100

Feet

N

FIGURE 4
STOCKPILE SAMPLE LOCATION MAP
L9
NWSW SEC 9-T7S-R92W
GARFIELD COUNTY, COLORADO
**CAERUS PICEANCE LLC**

T:\Standard\gis\CaerusPiceanceLLC\AMERICAN SODA LINE\MAPS\MXD\FIG04_STOCK_SAMPLE_MAP_062424.mxd


BACKGROUND IMAGERY COURTESY OF GOOGLE EARTH (2023)

**LEGEND**

- ALIQUOT SOIL SAMPLE
- SOIL SAMPLE
- SPOIL PILE (6/3/2024)
- EXCAVATION EXTENT (6/3/2024)

0 25 50
Feet

N

FIGURE 5
SOIL ANALYTICAL EXCEEDANCE MAP
L9 FC-WH-HILL-9-14
NWSW SEC 9-T7S-R92W
GARFIELD COUNTY, COLORADO
**CAERUS PICEANCE LLC**

T:\Standard\gis\CaerusPiceanceLLC\AMERICAN SODA LINE\MAPS\MXD\FIG05_SOIL_ANALYTICAL_MAP_14_062424.mxd


IMAGE COURTESY OF GOOGLE EARTH (2023)

**LEGEND**

PRODUCED WATER SAMPLE LOCATION

0 50 100

Feet

N

FIGURE 6
PRODUCED WATER RESULTS MAP
L9
NWSW SEC 9-T7S-R92W
GARFIELD COUNTY, COLORADO
**CAERUS PICEANCE LLC**

T:\Standard\gis\CaerusPiceanceLLC\L9\Maps\MXDs\Report\2024\FIG02_PRODUCED_WATER_SAMPLE_MAP_062424.mxd

# TABLES

# TABLE 1

## SOIL ANALYTICAL RESULTS
## L9 HILL 9-14
## GARFIELD COUNTY, COLORADO
## CAERUS PICEANCE LLC

**Soil Analytical Results**

| Analyte | | | | GRO | DRO | ORO | TPH | Benzene | Toluene | Ethylbenzene | Total Xylenes | 1,2,4-TMB | 1,3,5-TMB | Acenaphthene | Anthracene | Benz(a)anthracene | Benzo(b)fluoranthene | Benzo(k)fluoranthene | Benzo(a)pyrene | Chrysene | Dibenz(a,h)anthracen | Fluoranthene | Fluorene | Indeno(1,2,3-cd)Pyre | 1-Methylnaphthalene | 2-Methylnaphthalene | Naphthalene | Pyrene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **915-1 PROTECTION OF GW** | | | | | | | 500 | 0.0026 | 0.69 | 0.78 | 9.9 | 0.0081 | 0.0087 | 0.55 | 5.8 | 0.011 | 0.3 | 2.9 | 0.24 | 9 | 0.096 | 5.9 | 0.54 | 0.98 | 0.006 | 0.019 | 0.0038 | 1.3 |
| **915-1 RESIDENTIAL SOIL** | | | | | | | 500 | 1.2 | 490 | 5.8 | 58 | 30 | 27 | 360 | 1800 | 1.1 | 1.1 | 11 | 0.11 | 110 | 0.11 | 240 | 240 | 1.1 | 18 | 24 | 2 | 180 |
| **Units** | | | | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| **Sample Name** | **Sample Type** | **Sample Date** | **Lab Report** | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20240603-L9-(BASE-HILL9-14)@6.5 | Facility Closure | 06/03/2024 | L1743986 | < 0.100 | 52.3 | 94.8 | 147.6 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | **< 0.0200** | **< 0.0200** | **< 0.0200** | NA |
| 20240603-L9-(EW-HILL9-14)@6 | Facility Closure | 06/03/2024 | L1743986 | < 0.100 | 23.1 | 43.3 | 66.4 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | **< 0.0200** | **< 0.0200** | **< 0.0200** | NA |
| 20240603-L9-(NW-HILL9-14)@6.5 | Facility Closure | 06/03/2024 | L1743986 | < 0.100 | 53.3 | 94.9 | 148.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | **< 0.0200** | **< 0.0200** | **< 0.0200** | NA |
| 20240603-L9-(SW-HILL9-14)@6.5 | Facility Closure | 06/03/2024 | L1743986 | 0.185 | 142 | 230 | 372.185 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | **< 0.0200** | **0.0334** | **< 0.0200** | NA |
| 20240603-L9-(WW-HILL9-14)@6 | Facility Closure | 06/03/2024 | L1743986 | < 0.100 | 5.10 | 12.8 | 17.9 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | **< 0.0200** | **< 0.0200** | **< 0.0200** | NA |
| 20240603-L9-(STOCK) | Facility Closure | 06/03/2024 | L1743989 | 0.140 | 25.2 | 48.9 | 74.24 | < 0.00100 | NA | NA | NA | < 0.00500 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | **< 0.0200** | **< 0.0200** | **< 0.0200** | NA |

*Key:*
*EC - electrical conductivity*
*SAR - sodium adsorption ratio*
*umhos/cm - micromhos per centimeter*
*SU - standard units*
*mg/kg - miligram per kilogram*
*mg/l - milligram per liter*
*TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO*

*GRO - gasoline range organics*
*DRO - diesel range organics*
*ORO - oil range organics*
*TMB - trimethylbenzene*
*< - less than laboratory minimum detection limit*
*NA - not assessed*


Revised: June 20, 2024

**TABLE 1**

**SOIL ANALYTICAL RESULTS**
**L9 HILL 9-14**
**GARFIELD COUNTY, COLORADO**
**CAERUS PICEANCE LLC**

**Soil Analytical Results**

| Analyte | EC | SAR | pH | Boron | Arsenic | Barium | Cadmium | Chromium VI | Copper | Lead | Nickel | Selenium | Silver | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **915-1 PROTECTION OF GW** | 4000 | 6 | 8.3 | 2 | 0.29 | 82 | 0.38 | 0.00067 | 46 | 14 | 26 | 0.26 | 0.8 | 370 |
| **915-1 RESIDENTIAL SOIL** | 4000 | 6 | 8.3 | 2 | 0.68 | 15000 | 71 | 0.3 | 3100 | 400 | 1500 | 390 | 390 | 23000 |
| **Units** | umhos/cm | No Unit | SU | mg/L | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| **Sample Name** / **Sample Type** / **Sample Date** / **Lab Report** | | | | | | | | | | | | | | |
| 20240603-L9-(BASE-HILL9-14)@6.5 / Facility Closure / 06/03/2024 / L1743986 | NA | NA | NA | NA | NA | **3820** | **< 0.500** | NA | NA | NA | NA | NA | NA | NA |
| 20240603-L9-(EW-HILL9-14)@6 / Facility Closure / 06/03/2024 / L1743986 | NA | NA | NA | NA | NA | **4240** | **< 0.500** | NA | NA | NA | NA | NA | NA | NA |
| 20240603-L9-(NW-HILL9-14)@6.5 / Facility Closure / 06/03/2024 / L1743986 | NA | NA | NA | NA | NA | **3940** | **< 0.500** | NA | NA | NA | NA | NA | NA | NA |
| 20240603-L9-(SW-HILL9-14)@6.5 / Facility Closure / 06/03/2024 / L1743986 | NA | NA | NA | NA | NA | **4520** | **< 0.500** | NA | NA | NA | NA | NA | NA | NA |
| 20240603-L9-(WW-HILL9-14)@6 / Facility Closure / 06/03/2024 / L1743986 | NA | NA | NA | NA | NA | **166** | **< 0.500** | NA | NA | NA | NA | NA | NA | NA |
| 20240603-L9-(STOCK) / Facility Closure / 06/03/2024 / L1743989 | NA | NA | NA | NA | **5.36** | **1830** | **< 0.500** | NA | NA | NA | NA | **< 2.00** | NA | NA |

*Key:*
*EC - electrical conductivity*
*SAR - sodium adsorption ratio*
*umhos/cm - micromhos per centimeter*
*SU - standard units*
*mg/kg - miligram per kilogram*
*mg/l - milligram per liter*
*GRO - gasoline range organics*
*DRO - diesel range organics*
*ORO - oil range organics*
*TMB - trimethylbenzene*
*< - less than laboratory minimum detection limit*
*NA - not assessed*


Revised: June 20, 2024

**TABLE 1**

**SOIL ANALYTICAL RESULTS**
**L9 HILL 9-14**
**GARFIELD COUNTY, COLORADO**
**CAERUS PICEANCE LLC**

| | | | | Soil Analytical Results | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | **Analyte** | **EC** | **SAR** | **pH** | **Boron** | **Arsenic** | **Barium** | **Cadmium** | **Chromium VI** | **Copper** | **Lead** | **Nickel** | **Selenium** | **Silver** | **Zinc** |
| | | | **915-1 PROTECTION OF GW** | 4000 | 6 | 8.3 | 2 | 0.29 | 82 | 0.38 | 0.00067 | 46 | 14 | 26 | 0.26 | 0.8 | 370 |
| | | | **915-1 RESIDENTIAL SOIL** | 4000 | 6 | 8.3 | 2 | 0.68 | 15000 | 71 | 0.3 | 3100 | 400 | 1500 | 390 | 390 | 23000 |
| | | | **Units** | umhos/cm | No Unit | SU | mg/L | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| **Sample Name** | **Sample Type** | **Sample Date** | **Lab Report** | | | | | | | | | | | | | | |
| 20240603-L9-(BASE-HILL9-14)@6.5 | Facility Closure | 06/03/2024 | L1743986 | NA | NA | NA | NA | NA | **3820** | **< 0.500** | NA | NA | NA | NA | NA | NA | NA |
| 20240603-L9-(EW-HILL9-14)@6 | Facility Closure | 06/03/2024 | L1743986 | NA | NA | NA | NA | NA | **4240** | **< 0.500** | NA | NA | NA | NA | NA | NA | NA |
| 20240603-L9-(NW-HILL9-14)@6.5 | Facility Closure | 06/03/2024 | L1743986 | NA | NA | NA | NA | NA | **3940** | **< 0.500** | NA | NA | NA | NA | NA | NA | NA |
| 20240603-L9-(SW-HILL9-14)@6.5 | Facility Closure | 06/03/2024 | L1743986 | NA | NA | NA | NA | NA | **4520** | **< 0.500** | NA | NA | NA | NA | NA | NA | NA |
| 20240603-L9-(WW-HILL9-14)@6 | Facility Closure | 06/03/2024 | L1743986 | NA | NA | NA | NA | NA | **166** | **< 0.500** | NA | NA | NA | NA | NA | NA | NA |
| 20240603-L9-(STOCK) | Facility Closure | 06/03/2024 | L1743989 | NA | NA | NA | NA | **5.36** | **1830** | **< 0.500** | NA | NA | NA | NA | **< 2.00** | NA | NA |
| 20230413-L9-(BG1)@0.5-1 | Background | 04/13/2023 | L1605744 | 0.198 | 0.237 | 8.05 | 0.404 | **5.31** | **138** | 0.232 | **< 1.00** | 10.7 | 11.4 | 11.4 | **0.620** | < 0.500 | 45.3 |
| 20230413-L9-(BG1)@1.5-2 | Background | 04/13/2023 | L1605744 | 0.195 | 0.212 | 8.05 | 0.324 | **7.96** | **119** | 0.235 | **< 1.00** | 7.90 | 11.0 | 9.01 | **0.539** | < 0.500 | 35.6 |
| 20230413-L9-(BG2)@1-1.5 | Background | 04/13/2023 | L1605744 | 0.143 | 0.161 | 8.22 | 0.406 | **6.08** | **124** | 0.166 | **< 1.00** | 9.00 | 10.6 | 9.30 | **0.574** | < 0.500 | 35.0 |
| 20230413-L9-(BG2)@2-2.5 | Background | 04/13/2023 | L1605744 | 0.108 | 0.358 | 8.22 | 0.283 | **4.17** | **85.8** | 0.183 | **< 1.00** | 11.1 | 11.7 | 9.91 | **0.555** | < 0.500 | 41.9 |

*Key:*
*EC - electrical conductivity*
*SAR - sodium adsorption ratio*
*umhos/cm - micromhos per centimeter*
*SU - standard units*
*mg/kg - miligram per kilogram*
*mg/l - milligram per liter*

*GRO - gasoline range organics*
*DRO - diesel range organics*
*ORO - oil range organics*
*TMB - trimethylbenzene*
*< - less than laboratory minimum detection limit*
*NA - not assessed*


Revised: June 20, 2024

# PRODUCED WATER ANALYTICAL RESULTS
# TABLE 2
# L9
# GARFIELD COUNTY, COLORADO
# CAERUS PICEANCE LLC

| Analyte | | | Produced Water Results | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PH | SPECIFIC CONDUCTIVITY | HEXAVALENT CHROMIUM | SELENIUM | ARSENIC | BARIUM | CADMIUM | COPPER | LEAD | NICKEL | SELENIUM | SILVER | ZINC |
| **Units** | | | SU | umhos/cm | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l |
| **Same Name** | **Sample Date** | **Lab Report** | | | | | | | | | | | | | |
| 20240522-MCSOURCE-(L9-T) | PW | L1739722 | 8.55 T8 | 21600 | < 0.000500 | < 0.00200 U | < 0.0200 U | 36.3 | < 0.00100 U | < 0.0500 U | < 0.00200 U | 0.0240 | < 0.00200 U | < 0.00200 U | < 0.250 U |

*NOTES:*
*SU - standard units*
*umhos - microhmos per centimeter*
*mg/l - milligram per liter*
*< - concentration below laboratory detection limit*

Notes:
Bold with silver highlight: Exceeds RSSLs
Bold with blue highlight: Exceeds POGs
"<" (as in, less than laboratory reporting detection limit)

# ENCLOSURE A – SOIL SCREENING PHOTOLOG

# PHOTOGRAPHIC LOG

| Caerus Piceance LLC | L9 Hill 9-14 - P&A Well Closure | 31403501.5189 |
|---|---|---|

| Photo No. | Date |
|---|---|
| 1 | June 3, 2024 |

L9 site excavation overview

View east

| Photo No. | Date |
|---|---|
| 3 | June 3, 2024 |

Hill 9-14 excavation overview

View east

## PHOTOGRAPHIC LOG

| Caerus Piceance LLC | L9 Hill 9-14 - P&A Well Closure | 31403501.5189 |
|---|---|---|

| Photo No. | Date |
|---|---|
| 9 | June 3, 2024 |

20240603-L9-(BASE-HILL9-14)@6.5

View east

| Photo No. | Date |
|---|---|
| 10 | June 3, 2024 |

20240603-L9-(SW-HILL9-14)@6.5

View south

## PHOTOGRAPHIC LOG

| Caerus Piceance LLC | L9 Hill 9-14 - P&A Well Closure | 31403501.5189 |
|---|---|---|

| Photo No. | Date |
|---|---|
| 11 | June 3, 2024 |

20240603-L9-(EW-HILL9-14)@6

View east

| Photo No. | Date |
|---|---|
| 12 | June 3, 2024 |

20240603-L9-(WW-HILL9-14)@6

View west

## PHOTOGRAPHIC LOG

| Caerus Piceance LLC | L9 Hill 9-14 - P&A Well Closure | 31403501.5189 |
|---|---|---|

| Photo No. | Date |
|---|---|
| 13 | June 3, 2024 |

20240603-L9-(NW-HILL9-14)@6.5

View north

# ENCLOSURE B – LABORATORY ANALYTICAL RESULTS

# ANALYTICAL REPORT

June 17, 2024



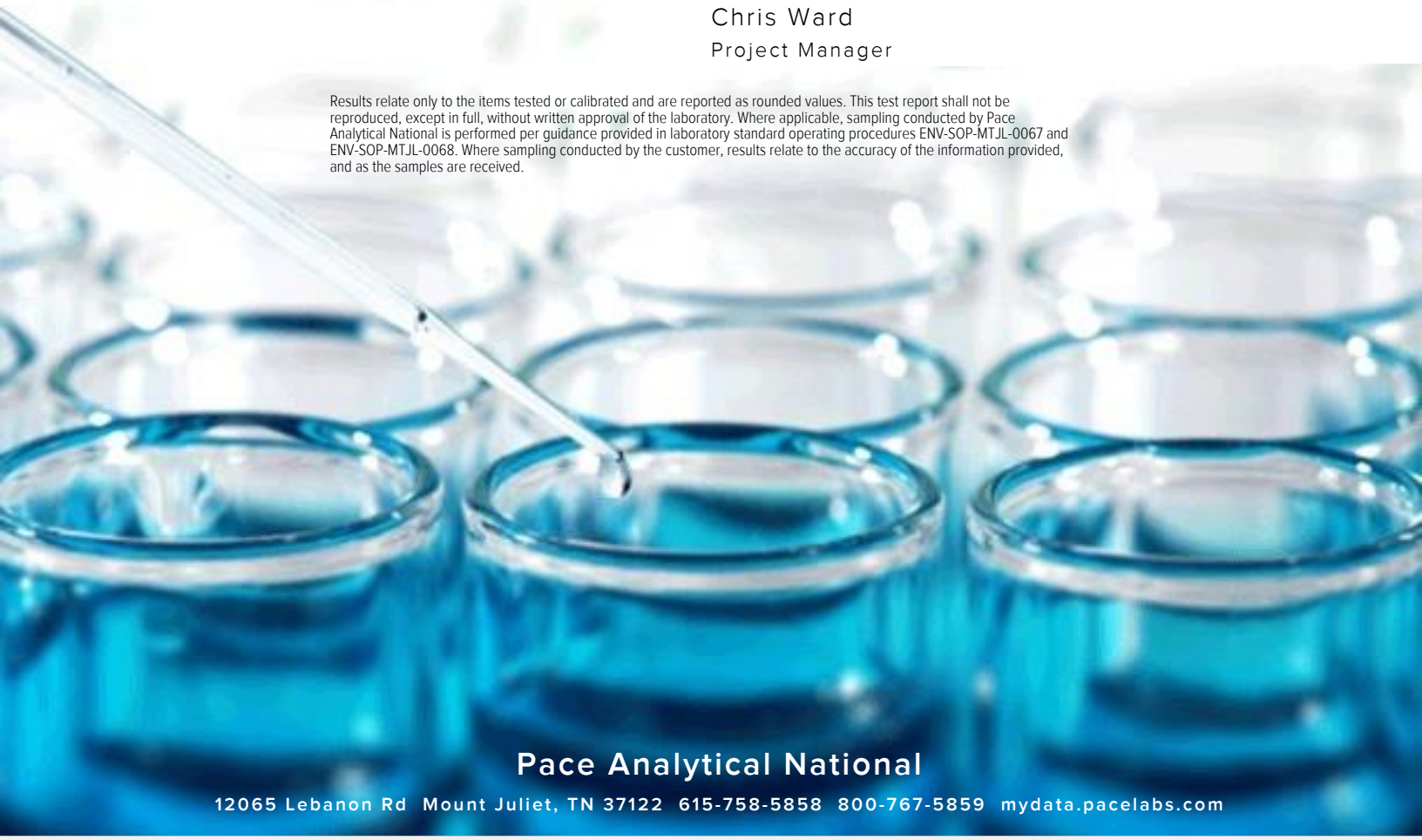
## Caerus Oil and Gas

| | |
|---|---|
| Sample Delivery Group: | L1743986 |
| Samples Received: | 06/06/2024 |
| Project Number: | L9 |
| Description: | L9 Facility Decommissioning |
| Site: | L9 |
| Report To: | Jake J. / Brett M. / Blair R. / Andy V.<br>143 Diamond Avenue<br>Parachute, CO 81635 |

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager





Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 mydata.pacelabs.com

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# SAMPLE SUMMARY

## 20240603-L9-(NW-HILL9-14)@6.5 L1743986-01 Solid

Collected by: Logan Permenter | Collected date/time: 06/03/24 11:45 | Received date/time: 06/06/24 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Metals (ICP) by Method 6010B | WG2300673 | 1 | 06/12/24 18:30 | 06/13/24 11:44 | DJS | Mt. Juliet, TN |
| Volatile Organic Compounds (GC) by Method 8015D/GRO | WG2303152 | 1 | 06/10/24 15:47 | 06/12/24 02:17 | ACG | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG2303237 | 1 | 06/13/24 09:00 | 06/14/24 05:00 | JAS | Mt. Juliet, TN |
| Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM | WG2303233 | 1 | 06/13/24 06:34 | 06/13/24 12:46 | JCH | Mt. Juliet, TN |

## 20240603-L9-(WW-HILL9-14)@6 L1743986-02 Solid

Collected by: Logan Permenter | Collected date/time: 06/03/24 11:50 | Received date/time: 06/06/24 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Metals (ICP) by Method 6010B | WG2300673 | 1 | 06/12/24 18:30 | 06/13/24 11:46 | DJS | Mt. Juliet, TN |
| Volatile Organic Compounds (GC) by Method 8015D/GRO | WG2303152 | 1 | 06/10/24 15:47 | 06/12/24 02:39 | ACG | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG2303237 | 1 | 06/13/24 09:00 | 06/14/24 01:57 | JAS | Mt. Juliet, TN |
| Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM | WG2303233 | 1 | 06/13/24 06:34 | 06/13/24 13:03 | JCH | Mt. Juliet, TN |

## 20240603-L9-(EW-HILL9-14)@6 L1743986-03 Solid

Collected by: Logan Permenter | Collected date/time: 06/03/24 11:55 | Received date/time: 06/06/24 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Metals (ICP) by Method 6010B | WG2300673 | 1 | 06/12/24 18:30 | 06/13/24 11:47 | DJS | Mt. Juliet, TN |
| Volatile Organic Compounds (GC) by Method 8015D/GRO | WG2303152 | 1 | 06/10/24 15:47 | 06/12/24 03:00 | ACG | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG2303237 | 1 | 06/13/24 09:00 | 06/14/24 03:42 | JAS | Mt. Juliet, TN |
| Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM | WG2303233 | 1 | 06/13/24 06:34 | 06/13/24 13:21 | JCH | Mt. Juliet, TN |

## 20240603-L9-(SW-HILL9-14)@6.5 L1743986-04 Solid

Collected by: Logan Permenter | Collected date/time: 06/03/24 12:00 | Received date/time: 06/06/24 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Metals (ICP) by Method 6010B | WG2300673 | 1 | 06/12/24 18:30 | 06/13/24 11:49 | DJS | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B | WG2300673 | 5 | 06/12/24 18:30 | 06/13/24 12:42 | DJS | Mt. Juliet, TN |
| Volatile Organic Compounds (GC) by Method 8015D/GRO | WG2303152 | 1 | 06/10/24 15:47 | 06/12/24 03:22 | ACG | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG2303237 | 1 | 06/13/24 09:00 | 06/14/24 04:08 | JAS | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG2303237 | 5 | 06/13/24 09:00 | 06/14/24 11:27 | JAS | Mt. Juliet, TN |
| Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM | WG2303233 | 1 | 06/13/24 06:34 | 06/13/24 13:39 | JCH | Mt. Juliet, TN |

## 20240603-L9-(BASE-HILL9-14)@6.5 L1743986-05 Solid

Collected by: Logan Permenter | Collected date/time: 06/03/24 12:05 | Received date/time: 06/06/24 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Metals (ICP) by Method 6010B | WG2300644 | 1 | 06/07/24 17:27 | 06/09/24 10:25 | ZSA | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B | WG2305006 | 1 | 06/14/24 09:36 | 06/14/24 18:31 | JTM | Mt. Juliet, TN |
| Volatile Organic Compounds (GC) by Method 8015D/GRO | WG2303152 | 1 | 06/10/24 15:47 | 06/12/24 03:43 | ACG | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG2303237 | 1 | 06/13/24 09:00 | 06/14/24 04:47 | JAS | Mt. Juliet, TN |
| Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM | WG2303233 | 1 | 06/13/24 06:34 | 06/13/24 13:57 | JCH | 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

## Metals (ICP) by Method 6010B

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | date / time | |
| Barium | 3940 | | 0.500 | 1 | 06/13/2024 11:44 | WG2300673 |
| Cadmium | ND | | 0.500 | 1 | 06/13/2024 11:44 | WG2300673 |

## Volatile Organic Compounds (GC) by Method 8015D/GRO

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | date / time | |
| TPH (GC/FID) Low Fraction | ND | | 0.100 | 1 | 06/12/2024 02:17 | WG2303152 |
| *(S) a,a,a-Trifluorotoluene(FID)* | *99.2* | | *77.0-120* | | *06/12/2024 02:17* | WG2303152 |

## Semi-Volatile Organic Compounds (GC) by Method 8015M

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | date / time | |
| C10-C28 Diesel Range | 53.3 | | 4.00 | 1 | 06/14/2024 05:00 | WG2303237 |
| C28-C36 Motor Oil Range | 94.9 | | 4.00 | 1 | 06/14/2024 05:00 | WG2303237 |
| *(S) o-Terphenyl* | *73.0* | | *18.0-148* | | *06/14/2024 05:00* | WG2303237 |

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

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | date / time | |
| 1-Methylnaphthalene | ND | | 0.0200 | 1 | 06/13/2024 12:46 | WG2303233 |
| 2-Methylnaphthalene | ND | | 0.0200 | 1 | 06/13/2024 12:46 | WG2303233 |
| Naphthalene | ND | | 0.0200 | 1 | 06/13/2024 12:46 | WG2303233 |
| *(S) p-Terphenyl-d14* | *72.1* | | *23.0-120* | | *06/13/2024 12:46* | WG2303233 |
| *(S) Nitrobenzene-d5* | *83.4* | | *14.0-149* | | *06/13/2024 12:46* | WG2303233 |
| *(S) 2-Fluorobiphenyl* | *75.0* | | *34.0-125* | | *06/13/2024 12:46* | WG2303233 |

## Metals (ICP) by Method 6010B

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | date / time | |
| Barium | 166 | | 0.500 | 1 | 06/13/2024 11:46 | WG2300673 |
| Cadmium | ND | | 0.500 | 1 | 06/13/2024 11:46 | WG2300673 |

## Volatile Organic Compounds (GC) by Method 8015D/GRO

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | date / time | |
| TPH (GC/FID) Low Fraction | ND | | 0.100 | 1 | 06/12/2024 02:39 | WG2303152 |
| *(S) a,a,a-Trifluorotoluene(FID)* | *98.8* | | *77.0-120* | | *06/12/2024 02:39* | WG2303152 |

## Semi-Volatile Organic Compounds (GC) by Method 8015M

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | date / time | |
| C10-C28 Diesel Range | 5.10 | | 4.00 | 1 | 06/14/2024 01:57 | WG2303237 |
| C28-C36 Motor Oil Range | 12.8 | | 4.00 | 1 | 06/14/2024 01:57 | WG2303237 |
| *(S) o-Terphenyl* | *65.1* | | *18.0-148* | | *06/14/2024 01:57* | WG2303237 |

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

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | date / time | |
| 1-Methylnaphthalene | ND | | 0.0200 | 1 | 06/13/2024 13:03 | WG2303233 |
| 2-Methylnaphthalene | ND | | 0.0200 | 1 | 06/13/2024 13:03 | WG2303233 |
| Naphthalene | ND | | 0.0200 | 1 | 06/13/2024 13:03 | WG2303233 |
| *(S) p-Terphenyl-d14* | *65.2* | | *23.0-120* | | *06/13/2024 13:03* | WG2303233 |
| *(S) Nitrobenzene-d5* | *75.0* | | *14.0-149* | | *06/13/2024 13:03* | WG2303233 |
| *(S) 2-Fluorobiphenyl* | *68.1* | | *34.0-125* | | *06/13/2024 13:03* | WG2303233 |

## Metals (ICP) by Method 6010B

| Analyte | Result mg/kg | Qualifier | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| Barium | 4240 | | 0.500 | 1 | 06/13/2024 11:47 | WG2300673 |
| Cadmium | ND | | 0.500 | 1 | 06/13/2024 11:47 | WG2300673 |

## Volatile Organic Compounds (GC) by Method 8015D/GRO

| Analyte | Result mg/kg | Qualifier | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| TPH (GC/FID) Low Fraction | ND | | 0.100 | 1 | 06/12/2024 03:00 | WG2303152 |
| *(S) a,a,a-Trifluorotoluene(FID)* | *98.6* | | *77.0-120* | | *06/12/2024 03:00* | WG2303152 |

## Semi-Volatile Organic Compounds (GC) by Method 8015M

| Analyte | Result mg/kg | Qualifier | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| C10-C28 Diesel Range | 23.1 | | 4.00 | 1 | 06/14/2024 03:42 | WG2303237 |
| C28-C36 Motor Oil Range | 43.3 | | 4.00 | 1 | 06/14/2024 03:42 | WG2303237 |
| *(S) o-Terphenyl* | *71.9* | | *18.0-148* | | *06/14/2024 03:42* | WG2303237 |

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

| Analyte | Result mg/kg | Qualifier | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | ND | | 0.0200 | 1 | 06/13/2024 13:21 | WG2303233 |
| 2-Methylnaphthalene | ND | | 0.0200 | 1 | 06/13/2024 13:21 | WG2303233 |
| Naphthalene | ND | | 0.0200 | 1 | 06/13/2024 13:21 | WG2303233 |
| *(S) p-Terphenyl-d14* | *61.4* | | *23.0-120* | | *06/13/2024 13:21* | WG2303233 |
| *(S) Nitrobenzene-d5* | *68.5* | | *14.0-149* | | *06/13/2024 13:21* | WG2303233 |
| *(S) 2-Fluorobiphenyl* | *65.3* | | *34.0-125* | | *06/13/2024 13:21* | WG2303233 |

## Metals (ICP) by Method 6010B

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | date / time | |
| Barium | 4520 | | 2.50 | 5 | 06/13/2024 12:42 | WG2300673 |
| Cadmium | ND | | 0.500 | 1 | 06/13/2024 11:49 | WG2300673 |

## Volatile Organic Compounds (GC) by Method 8015D/GRO

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | date / time | |
| TPH (GC/FID) Low Fraction | 0.185 | B | 0.100 | 1 | 06/12/2024 03:22 | WG2303152 |
| *(S) a,a,a-Trifluorotoluene(FID)* | *99.8* | | *77.0-120* | | *06/12/2024 03:22* | WG2303152 |

## Semi-Volatile Organic Compounds (GC) by Method 8015M

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | date / time | |
| C10-C28 Diesel Range | 142 | | 4.00 | 1 | 06/14/2024 04:08 | WG2303237 |
| C28-C36 Motor Oil Range | 230 | | 20.0 | 5 | 06/14/2024 11:27 | WG2303237 |
| *(S) o-Terphenyl* | *74.1* | | *18.0-148* | | *06/14/2024 11:27* | WG2303237 |
| *(S) o-Terphenyl* | *73.3* | | *18.0-148* | | *06/14/2024 04:08* | WG2303237 |

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

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | date / time | |
| 1-Methylnaphthalene | ND | | 0.0200 | 1 | 06/13/2024 13:39 | WG2303233 |
| 2-Methylnaphthalene | 0.0334 | | 0.0200 | 1 | 06/13/2024 13:39 | WG2303233 |
| Naphthalene | ND | | 0.0200 | 1 | 06/13/2024 13:39 | WG2303233 |
| *(S) p-Terphenyl-d14* | *66.8* | | *23.0-120* | | *06/13/2024 13:39* | WG2303233 |
| *(S) Nitrobenzene-d5* | *81.2* | | *14.0-149* | | *06/13/2024 13:39* | WG2303233 |
| *(S) 2-Fluorobiphenyl* | *69.8* | | *34.0-125* | | *06/13/2024 13:39* | WG2303233 |

## Metals (ICP) by Method 6010B

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | date / time | |
| Barium | 3820 | | 0.500 | 1 | 06/09/2024 10:25 | WG2300644 |
| Cadmium | ND | | 0.500 | 1 | 06/14/2024 18:31 | WG2305006 |

## Volatile Organic Compounds (GC) by Method 8015D/GRO

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | date / time | |
| TPH (GC/FID) Low Fraction | ND | | 0.100 | 1 | 06/12/2024 03:43 | WG2303152 |
| *(S) a,a,a-Trifluorotoluene(FID)* | *98.2* | | *77.0-120* | | *06/12/2024 03:43* | WG2303152 |

## Semi-Volatile Organic Compounds (GC) by Method 8015M

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | date / time | |
| C10-C28 Diesel Range | 52.3 | | 4.00 | 1 | 06/14/2024 04:47 | WG2303237 |
| C28-C36 Motor Oil Range | 94.8 | | 4.00 | 1 | 06/14/2024 04:47 | WG2303237 |
| *(S) o-Terphenyl* | *72.2* | | *18.0-148* | | *06/14/2024 04:47* | WG2303237 |

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

| Analyte | Result | Qualifier | RDL | Dilution | Analysis | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | date / time | |
| 1-Methylnaphthalene | ND | | 0.0200 | 1 | 06/13/2024 13:57 | WG2303233 |
| 2-Methylnaphthalene | ND | | 0.0200 | 1 | 06/13/2024 13:57 | WG2303233 |
| Naphthalene | ND | | 0.0200 | 1 | 06/13/2024 13:57 | WG2303233 |
| *(S) p-Terphenyl-d14* | *50.7* | | *23.0-120* | | *06/13/2024 13:57* | WG2303233 |
| *(S) Nitrobenzene-d5* | *59.2* | | *14.0-149* | | *06/13/2024 13:57* | WG2303233 |
| *(S) 2-Fluorobiphenyl* | *52.5* | | *34.0-125* | | *06/13/2024 13:57* | WG2303233 |

## Method Blank (MB)

(MB) R4079247-1 06/09/24 09:54

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| Barium | U | | 0.0852 | 0.500 |

## Laboratory Control Sample (LCS)

(LCS) R4079247-2 06/09/24 09:55

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Barium | 100 | 99.2 | 99.2 | 80.0-120 | |

## L1743967-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1743967-07 06/09/24 09:57 • (MS) R4079247-5 06/09/24 10:02 • (MSD) R4079247-6 06/09/24 10:04

| Analyte | Spike Amount mg/kg | Original Result mg/kg | MS Result mg/kg | MSD Result mg/kg | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 100 | 116 | 218 | 221 | 103 | 106 | 1 | 75.0-125 | | | 1.36 | 20 |

## Method Blank (MB)

(MB) R4081333-1 06/13/24 11:54

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| Barium | 0.174 | J | 0.0852 | 0.500 |
| Cadmium | U | | 0.0471 | 0.500 |

## Laboratory Control Sample (LCS)

(LCS) R4081333-2 06/13/24 11:56

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Barium | 100 | 105 | 105 | 80.0-120 | |
| Cadmium | 100 | 98.8 | 98.8 | 80.0-120 | |

## L1743593-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1743593-02 06/13/24 11:58 • (MS) R4081333-5 06/13/24 12:03 • (MSD) R4081333-6 06/13/24 12:04

| Analyte | Spike Amount mg/kg | Original Result mg/kg | MS Result mg/kg | MSD Result mg/kg | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 100 | 80.6 | 201 | 213 | 120 | 132 | 1 | 75.0-125 | | J5 | 5.88 | 20 |
| Cadmium | 100 | ND | 89.5 | 89.5 | 89.5 | 89.5 | 1 | 75.0-125 | | | 0.00780 | 20 |

## Method Blank (MB)

(MB) R4082109-1 06/14/24 18:28

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| Cadmium | U | | 0.0471 | 0.500 |

## Laboratory Control Sample (LCS)

(LCS) R4082109-2 06/14/24 18:29

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Cadmium | 100 | 89.5 | 89.5 | 80.0-120 | |

## L1743986-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1743986-05 06/14/24 18:31 • (MS) R4082109-5 06/14/24 18:36 • (MSD) R4082109-6 06/14/24 18:38

| Analyte | Spike Amount mg/kg | Original Result mg/kg | MS Result mg/kg | MSD Result mg/kg | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cadmium | 100 | ND | 93.9 | 96.7 | 93.7 | 96.4 | 1 | 75.0-125 | | | 2.89 | 20 |

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

## Method Blank (MB)

(MB) R4081246-2 06/12/24 00:08

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| TPH (GC/FID) Low Fraction | 0.0293 | J | 0.0217 | 0.100 |
| *(S) a,a,a-Trifluorotoluene(FID)* | *102* | | | *77.0-120* |

## Laboratory Control Sample (LCS)

(LCS) R4081246-1 06/11/24 23:08

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| TPH (GC/FID) Low Fraction | 5.00 | 4.99 | 99.8 | 72.0-127 | |
| *(S) a,a,a-Trifluorotoluene(FID)* | | | *97.3* | *77.0-120* | |

## Method Blank (MB)

(MB) R4081602-1 06/13/24 22:38

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| C10-C28 Diesel Range | U | | 1.61 | 4.00 |
| C28-C36 Motor Oil Range | 0.395 | J | 0.274 | 4.00 |
| *(S) o-Terphenyl* | *86.9* | | | *18.0-148* |

## Laboratory Control Sample (LCS)

(LCS) R4081602-2 06/13/24 23:37

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| C10-C28 Diesel Range | 50.0 | 39.1 | 78.2 | 50.0-150 | |
| *(S) o-Terphenyl* | | | *89.8* | *18.0-148* | |

## L1743982-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1743982-02 06/14/24 02:36 • (MS) R4081602-3 06/14/24 02:49 • (MSD) R4081602-4 06/14/24 03:03

| Analyte | Spike Amount mg/kg | Original Result mg/kg | MS Result mg/kg | MSD Result mg/kg | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C10-C28 Diesel Range | 50.0 | 14.2 | 30.1 | 26.0 | 31.8 | 23.6 | 1 | 50.0-150 | J6 | J6 | 14.6 | 20 |
| *(S) o-Terphenyl* | | | | | *60.7* | *52.0* | | *18.0-148* | | | | |

## Method Blank (MB)

(MB) R4081389-2 06/13/24 10:56

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| 1-Methylnaphthalene | U | | 0.00449 | 0.0200 |
| 2-Methylnaphthalene | U | | 0.00427 | 0.0200 |
| Naphthalene | U | | 0.00408 | 0.0200 |
| *(S) p-Terphenyl-d14* | *67.6* | | | *23.0-120* |
| *(S) Nitrobenzene-d5* | *53.0* | | | *14.0-149* |
| *(S) 2-Fluorobiphenyl* | *68.9* | | | *34.0-125* |

## Laboratory Control Sample (LCS)

(LCS) R4081389-1 06/13/24 10:39

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| 1-Methylnaphthalene | 0.0800 | 0.0559 | 69.9 | 51.0-121 | |
| 2-Methylnaphthalene | 0.0800 | 0.0584 | 73.0 | 50.0-120 | |
| Naphthalene | 0.0800 | 0.0574 | 71.8 | 50.0-120 | |
| *(S) p-Terphenyl-d14* | | | *77.9* | *23.0-120* | |
| *(S) Nitrobenzene-d5* | | | *65.8* | *14.0-149* | |
| *(S) 2-Fluorobiphenyl* | | | *81.4* | *34.0-125* | |

## L1743986-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1743986-05 06/13/24 13:57 • (MS) R4081421-1 06/13/24 14:14 • (MSD) R4081421-2 06/13/24 14:32

| Analyte | Spike Amount mg/kg | Original Result mg/kg | MS Result mg/kg | MSD Result mg/kg | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | 0.0780 | ND | 0.0622 | 0.0591 | 79.7 | 76.6 | 1 | 10.0-142 | | | 5.11 | 28 |
| 2-Methylnaphthalene | 0.0780 | ND | 0.0694 | 0.0643 | 81.0 | 75.3 | 1 | 10.0-137 | | | 7.63 | 28 |
| Naphthalene | 0.0780 | ND | 0.0580 | 0.0549 | 74.4 | 71.1 | 1 | 10.0-135 | | | 5.49 | 27 |
| *(S) p-Terphenyl-d14* | | | | | *75.4* | *76.8* | | *23.0-120* | | | | |
| *(S) Nitrobenzene-d5* | | | | | *88.2* | *90.2* | | *14.0-149* | | | | |
| *(S) 2-Fluorobiphenyl* | | | | | *80.6* | *81.6* | | *34.0-125* | | | | |

# 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 |
|---|---|
| B | The same analyte is found in the associated blank. |
| J | The identification of the analyte is acceptable; the reported value is an estimate. |
| J5 | The sample matrix interfered with the ability to make any accurate determination; spike value is high. |
| 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 | LAO000356 |
| 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 Piceance LLC**
**143 Diamond Avenue**
**Parachute, CO 81635**
**970-285-9606**

Billing Information: **Same as above**

Report to: **bmiddleton@caerusoilandgas.com**

Email To: **bmiddleton@caerusoilandgas.com**

Project Description: **L9 Facility Decommissioning**

City/State Collected: **Mamm Creek**

Phone:
Fax:

Client Project # **L9**

Lab Project # **L9**

Collected by (print): **Logan Permenter**

Site/Facility ID # **L9**

P.O. # **L9**

Collected by (signature):

Immediately Packed on Ice N ___ Y X

***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 TAT**

| Sample ID | Comp/Grab | Matrix * | Depth | Date | Time | No. of Cntrs | TPH- GRO,DRO,ORO | 1-&2-methylnaphthalene 802 | cadmium, barium | naphthalene | Remarks | Sample # (lab only) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20240603-L9-(NW-HILL9-14)@6.5 | Grab | SS | 6.5 | 6/3/24 | 1145 | 1 | X | X | X | X | | -01 |
| 20240603-L9-(WW-HILL9-14)@6 | Grab | SS | 6 | 6/3/24 | 1150 | 1 | X | X | X | X | | -02 |
| 20240603-L9-(EW-HILL9-14)@6 | Grab | SS | 6 | 6/3/24 | 1155 | 1 | X | X | X | X | | -03 |
| 20240603-L9-(SW-HILL9-14)@6.5 | Grab | SS | 6.5 | 6/3/24 | 1200 | 1 | X | X | X | X | | -04 |
| 20240603-L9-(BASE-HILL9-14)@6.5 | Grab | SS | 6.5 | 6/3/24 | 1205 | 1 | X | X | X | X | | -05 |

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation

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

L # 174386
Ta A091
Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

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

**Remarks:**

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking # 6426 8306 6514

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: __Y __N
Bottles arrive intact: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N

| Relinquished by : (Signature) | Date: | Time: | Received by: (Signature) | Trip Blank Received: Yes / No HCL / MeoH TBR |
|---|---|---|---|---|
| | 6/4/24 | 1200 | | |
| Relinquished by : (Signature) | Date: | Time: | Received by: (Signature) | Temp: °C Bottles Received: |
| | 6/4/24 | 1500 | | EDAB .6.2.3=.9 |
| Relinquished by : (Signature) | Date: | Time: | Received for lab by: (Signature) | Date: Time: |
| | | | | 6-6-24 9:00 |

If preservation required by Login: Date/Time

Hold: Condition: NCF / OK

# ANALYTICAL REPORT

June 17, 2024



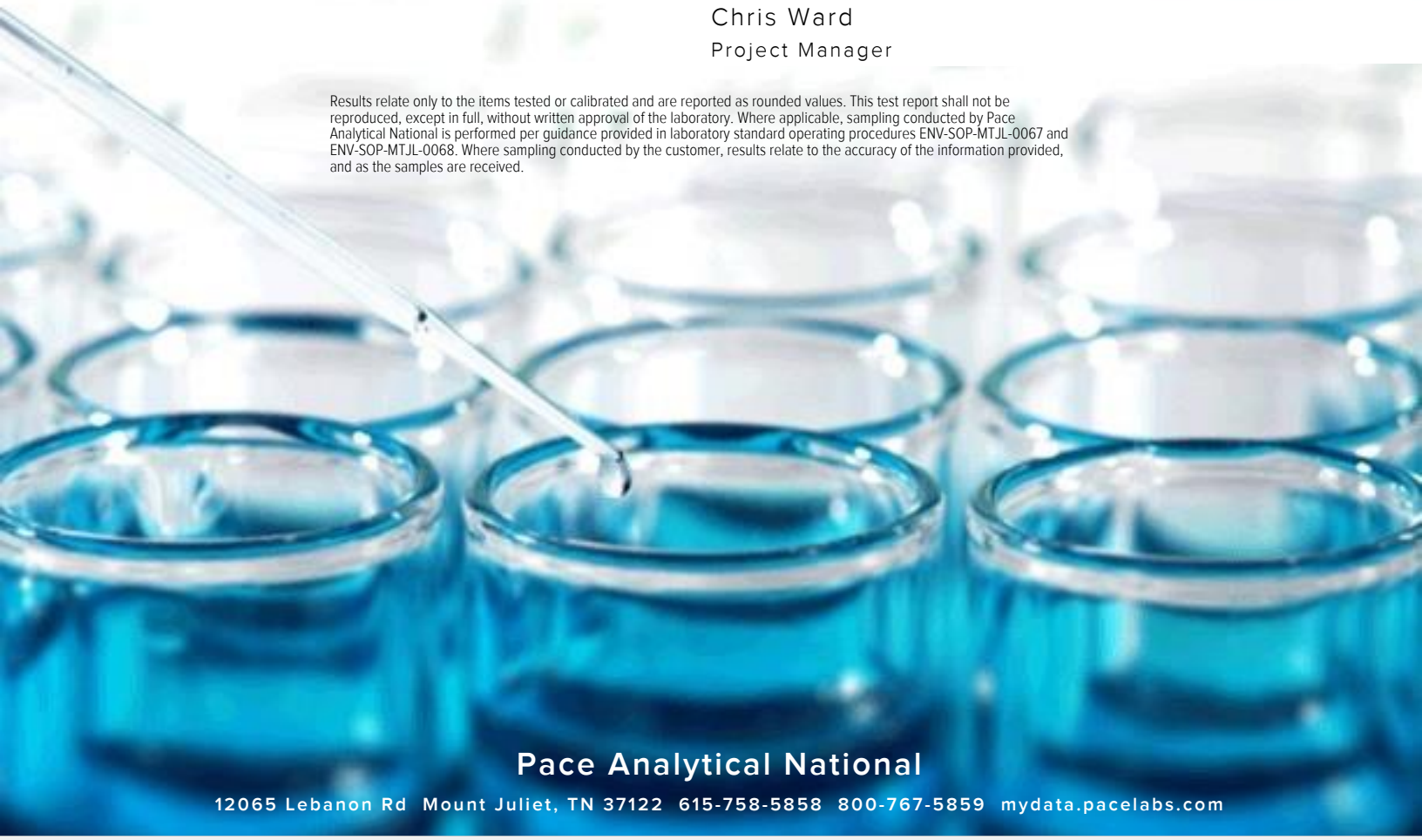
## Caerus Oil and Gas

| | |
|---|---|
| Sample Delivery Group: | L1743989 |
| Samples Received: | 06/06/2024 |
| Project Number: | L9 |
| Description: | L9 Facility Decommissioning |
| Site: | L9 |
| Report To: | Jake J. / Brett M. / Blair R. / Andy V.<br>143 Diamond Avenue<br>Parachute, CO 81635 |

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager





Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 mydata.pacelabs.com

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# SAMPLE SUMMARY

## 20240603-L9-(STOCK) L1743989-01 Solid

Collected by: Logan Permenter
Collected date/time: 06/03/24 15:55
Received date/time: 06/06/24 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Metals (ICP) by Method 6010B | WG2300644 | 1 | 06/07/24 17:27 | 06/09/24 10:27 | ZSA | Mt. Juliet, TN |
| Metals (ICPMS) by Method 6020 | WG2305014 | 5 | 06/14/24 11:12 | 06/14/24 17:35 | LD | Mt. Juliet, TN |
| Volatile Organic Compounds (GC) by Method 8015D/GRO | WG2302839 | 1 | 06/09/24 19:01 | 06/11/24 20:32 | DWR | Mt. Juliet, TN |
| Volatile Organic Compounds (GC/MS) by Method 8260B | WG2303615 | 1 | 06/09/24 19:01 | 06/12/24 16:04 | JHH | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG2303237 | 1 | 06/13/24 09:00 | 06/14/24 04:34 | JAS | Mt. Juliet, TN |
| Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM | WG2302933 | 1 | 06/11/24 21:02 | 06/12/24 07:36 | JRM | 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

## Metals (ICP) by Method 6010B

| Analyte | Result mg/kg | Qualifier | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| Barium | 1830 | | 0.500 | 1 | 06/09/2024 10:27 | WG2300644 |
| Cadmium | ND | | 0.500 | 1 | 06/09/2024 10:27 | WG2300644 |
| Selenium | ND | | 2.00 | 1 | 06/09/2024 10:27 | WG2300644 |

## Metals (ICPMS) by Method 6020

| Analyte | Result mg/kg | Qualifier | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| Arsenic | 5.36 | | 1.00 | 5 | 06/14/2024 17:35 | WG2305014 |

## Volatile Organic Compounds (GC) by Method 8015D/GRO

| Analyte | Result mg/kg | Qualifier | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| TPH (GC/FID) Low Fraction | 0.140 | | 0.100 | 1 | 06/11/2024 20:32 | WG2302839 |
| *(S) a,a,a-Trifluorotoluene(FID)* | *105* | | *77.0-120* | | *06/11/2024 20:32* | WG2302839 |

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

| Analyte | Result mg/kg | Qualifier | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| Benzene | ND | | 0.00100 | 1 | 06/12/2024 16:04 | WG2303615 |
| 1,2,4-Trimethylbenzene | ND | | 0.00500 | 1 | 06/12/2024 16:04 | WG2303615 |
| *(S) Toluene-d8* | *113* | | *75.0-131* | | *06/12/2024 16:04* | WG2303615 |
| *(S) 4-Bromofluorobenzene* | *97.2* | | *67.0-138* | | *06/12/2024 16:04* | WG2303615 |
| *(S) 1,2-Dichloroethane-d4* | *99.6* | | *70.0-130* | | *06/12/2024 16:04* | WG2303615 |

## Semi-Volatile Organic Compounds (GC) by Method 8015M

| Analyte | Result mg/kg | Qualifier | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| C10-C28 Diesel Range | 25.2 | | 4.00 | 1 | 06/14/2024 04:34 | WG2303237 |
| C28-C36 Motor Oil Range | 48.9 | | 4.00 | 1 | 06/14/2024 04:34 | WG2303237 |
| *(S) o-Terphenyl* | *67.9* | | *18.0-148* | | *06/14/2024 04:34* | WG2303237 |

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

| Analyte | Result mg/kg | Qualifier | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | ND | | 0.0200 | 1 | 06/12/2024 07:36 | WG2302933 |
| 2-Methylnaphthalene | ND | | 0.0200 | 1 | 06/12/2024 07:36 | WG2302933 |
| Naphthalene | ND | | 0.0200 | 1 | 06/12/2024 07:36 | WG2302933 |
| *(S) p-Terphenyl-d14* | *105* | | *23.0-120* | | *06/12/2024 07:36* | WG2302933 |
| *(S) Nitrobenzene-d5* | *84.8* | | *14.0-149* | | *06/12/2024 07:36* | WG2302933 |
| *(S) 2-Fluorobiphenyl* | *112* | | *34.0-125* | | *06/12/2024 07:36* | WG2302933 |

## Method Blank (MB)

(MB) R4079247-1 06/09/24 09:54

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| Barium | U | | 0.0852 | 0.500 |
| Cadmium | U | | 0.0471 | 0.500 |
| Selenium | U | | 0.764 | 2.00 |

## Laboratory Control Sample (LCS)

(LCS) R4079247-2 06/09/24 09:55

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Barium | 100 | 99.2 | 99.2 | 80.0-120 | |
| Cadmium | 100 | 94.6 | 94.6 | 80.0-120 | |
| Selenium | 100 | 93.6 | 93.6 | 80.0-120 | |

## L1743967-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1743967-07 06/09/24 09:57 • (MS) R4079247-5 06/09/24 10:02 • (MSD) R4079247-6 06/09/24 10:04

| Analyte | Spike Amount mg/kg | Original Result mg/kg | MS Result mg/kg | MSD Result mg/kg | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 100 | 116 | 218 | 221 | 103 | 106 | 1 | 75.0-125 | | | 1.36 | 20 |
| Cadmium | 100 | ND | 95.7 | 96.1 | 95.7 | 96.1 | 1 | 75.0-125 | | | 0.357 | 20 |
| Selenium | 100 | ND | 92.1 | 90.1 | 92.1 | 90.1 | 1 | 75.0-125 | | | 2.20 | 20 |

## Method Blank (MB)

(MB) R4081997-1 06/14/24 16:51

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| Arsenic | U | | 0.100 | 1.00 |

## Laboratory Control Sample (LCS)

(LCS) R4081997-2 06/14/24 16:54

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Arsenic | 100 | 107 | 107 | 80.0-120 | |

## L1743984-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1743984-01 06/14/24 16:58 • (MS) R4081997-5 06/14/24 17:08 • (MSD) R4081997-6 06/14/24 17:11

| Analyte | Spike Amount mg/kg | Original Result mg/kg | MS Result mg/kg | MSD Result mg/kg | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 100 | 8.41 | 119 | 113 | 110 | 105 | 5 | 75.0-125 | | | 4.88 | 20 |

## Method Blank (MB)

(MB) R4081247-3 06/11/24 12:26

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| TPH (GC/FID) Low Fraction | U | | 0.0217 | 0.100 |
| *(S) a,a,a-Trifluorotoluene(FID)* | *110* | | | *77.0-120* |

## Laboratory Control Sample (LCS)

(LCS) R4081247-2 06/11/24 11:40

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| TPH (GC/FID) Low Fraction | 5.00 | 4.98 | 99.6 | 72.0-127 | |
| *(S) a,a,a-Trifluorotoluene(FID)* | | | *118* | *77.0-120* | |

## Method Blank (MB)

(MB) R4080743-2 06/12/24 11:44

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| Benzene | U | | 0.000467 | 0.00100 |
| 1,2,4-Trimethylbenzene | U | | 0.00158 | 0.00500 |
| *(S) Toluene-d8* | *111* | | | *75.0-131* |
| *(S) 4-Bromofluorobenzene* | *95.3* | | | *67.0-138* |
| *(S) 1,2-Dichloroethane-d4* | *103* | | | *70.0-130* |

## Laboratory Control Sample (LCS)

(LCS) R4080743-1 06/12/24 10:23

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Benzene | 0.125 | 0.119 | 95.2 | 70.0-123 | |
| 1,2,4-Trimethylbenzene | 0.125 | 0.135 | 108 | 70.0-126 | |
| *(S) Toluene-d8* | | | *108* | *75.0-131* | |
| *(S) 4-Bromofluorobenzene* | | | *95.3* | *67.0-138* | |
| *(S) 1,2-Dichloroethane-d4* | | | *111* | *70.0-130* | |

## Method Blank (MB)

(MB) R4081602-1 06/13/24 22:38

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| C10-C28 Diesel Range | U | | 1.61 | 4.00 |
| C28-C36 Motor Oil Range | 0.395 | J | 0.274 | 4.00 |
| *(S) o-Terphenyl* | *86.9* | | | *18.0-148* |

## Laboratory Control Sample (LCS)

(LCS) R4081602-2 06/13/24 23:37

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| C10-C28 Diesel Range | 50.0 | 39.1 | 78.2 | 50.0-150 | |
| *(S) o-Terphenyl* | | | *89.8* | *18.0-148* | |

## L1743982-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1743982-02 06/14/24 02:36 • (MS) R4081602-3 06/14/24 02:49 • (MSD) R4081602-4 06/14/24 03:03

| Analyte | Spike Amount mg/kg | Original Result mg/kg | MS Result mg/kg | MSD Result mg/kg | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C10-C28 Diesel Range | 50.0 | 14.2 | 30.1 | 26.0 | 31.8 | 23.6 | 1 | 50.0-150 | J6 | J6 | 14.6 | 20 |
| *(S) o-Terphenyl* | | | | | *60.7* | *52.0* | | *18.0-148* | | | | |

## Method Blank (MB)

(MB) R4080933-2 06/12/24 03:07

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| 1-Methylnaphthalene | U | | 0.00449 | 0.0200 |
| 2-Methylnaphthalene | U | | 0.00427 | 0.0200 |
| Naphthalene | U | | 0.00408 | 0.0200 |
| *(S) p-Terphenyl-d14* | *101* | | | *23.0-120* |
| *(S) Nitrobenzene-d5* | *83.6* | | | *14.0-149* |
| *(S) 2-Fluorobiphenyl* | *110* | | | *34.0-125* |

## Laboratory Control Sample (LCS)

(LCS) R4080933-1 06/12/24 02:49

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| 1-Methylnaphthalene | 0.0800 | 0.0830 | 104 | 51.0-121 | |
| 2-Methylnaphthalene | 0.0800 | 0.0824 | 103 | 50.0-120 | |
| Naphthalene | 0.0800 | 0.0813 | 102 | 50.0-120 | |
| *(S) p-Terphenyl-d14* | | | *116* | *23.0-120* | |
| *(S) Nitrobenzene-d5* | | | *92.4* | *14.0-149* | |
| *(S) 2-Fluorobiphenyl* | | | *122* | *34.0-125* | |

## L1743747-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1743747-03 06/12/24 06:06 • (MS) R4080933-3 06/12/24 06:24 • (MSD) R4080933-4 06/12/24 06:42

| Analyte | Spike Amount mg/kg | Original Result mg/kg | MS Result mg/kg | MSD Result mg/kg | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | 0.0784 | ND | 0.0597 | 0.0611 | 76.1 | 76.8 | 1 | 10.0-142 | | | 2.32 | 28 |
| 2-Methylnaphthalene | 0.0784 | ND | 0.0598 | 0.0617 | 76.3 | 77.5 | 1 | 10.0-137 | | | 3.13 | 28 |
| Naphthalene | 0.0784 | ND | 0.0592 | 0.0605 | 75.5 | 76.0 | 1 | 10.0-135 | | | 2.17 | 27 |
| *(S) p-Terphenyl-d14* | | | | | *83.5* | *80.8* | | *23.0-120* | | | | |
| *(S) Nitrobenzene-d5* | | | | | *66.5* | *66.1* | | *14.0-149* | | | | |
| *(S) 2-Fluorobiphenyl* | | | | | *86.5* | *84.3* | | *34.0-125* | | | | |

# 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

| | | | |
|---|---|---|---|
| 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 Piceance LLC**
**143 Diamond Avenue**
**Parachute, CO 81635**
**970-285-9606**

Billing Information: **Same as above**

Report to: **bmiddleton@caerusoilandgas.com**

Email To: **bmiddleton@caerusoilandgas.com**

Project Description: **L9 Facility Decommissioning**

City/State Collected:

Phone:
Fax:

Client Project # **L9**

Lab Project # **L9**

Collected by (print): **Logan Permenter**

Site/Facility ID # **L9**

P.O. # **L9**

Collected by (signature):

Immediately Packed on Ice N ___ Y X

***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 TAT**

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation

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

L# 174389
A092

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

| Sample ID | Comp/Grab | Matrix * | Depth | Date | Time | No. of Cntrs | TPH- GRO,DRO,ORO | Benzene | 1-&2-methylnaphthalene 802 | naphthalene | cadmium, arsenic, selenium, barium | 1,2,4-trimethylbenzene | Remarks | Sample # (lab only) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20240603-L9-(STOCK) | Comp | SS | | 6/3/24 | 1555 | 1 | X | X | X | X | X | X | | -01 |

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

**Remarks:**

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking # 6426 8306 6514

Sample Receipt Checklist

| | | |
|---|---|---|
| COC Seal Present/Intact: | NP | Y N |
| COC Signed/Accurate: | | Y N |
| Bottles arrive intact: | | Y N |
| Correct bottles used: | | Y N |
| Sufficient volume sent: | | Y N |
| If Applicable | | |
| VOA Zero Headspace: | | Y N |
| Preservation Correct/Checked: | | Y N |

| | Date: | Time: | | | |
|---|---|---|---|---|---|
| Relinquished by : (Signature) | 6424 | 1200 | Received by: (Signature) | Trip Blank Received: Yes / No HCL / MeoH TBR | |
| Relinquished by : (Signature) | 6424 | 1500 | Received by: (Signature) | Temp: °C EDA6 | Bottles Received: 6 7 3 2 9 |
| Relinquished by : (Signature) | Date: | Time: | Received for lab by: (Signature) | Date: 6-6-24 | Time: 9:00 |

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

# ANALYTICAL REPORT

May 01, 2023



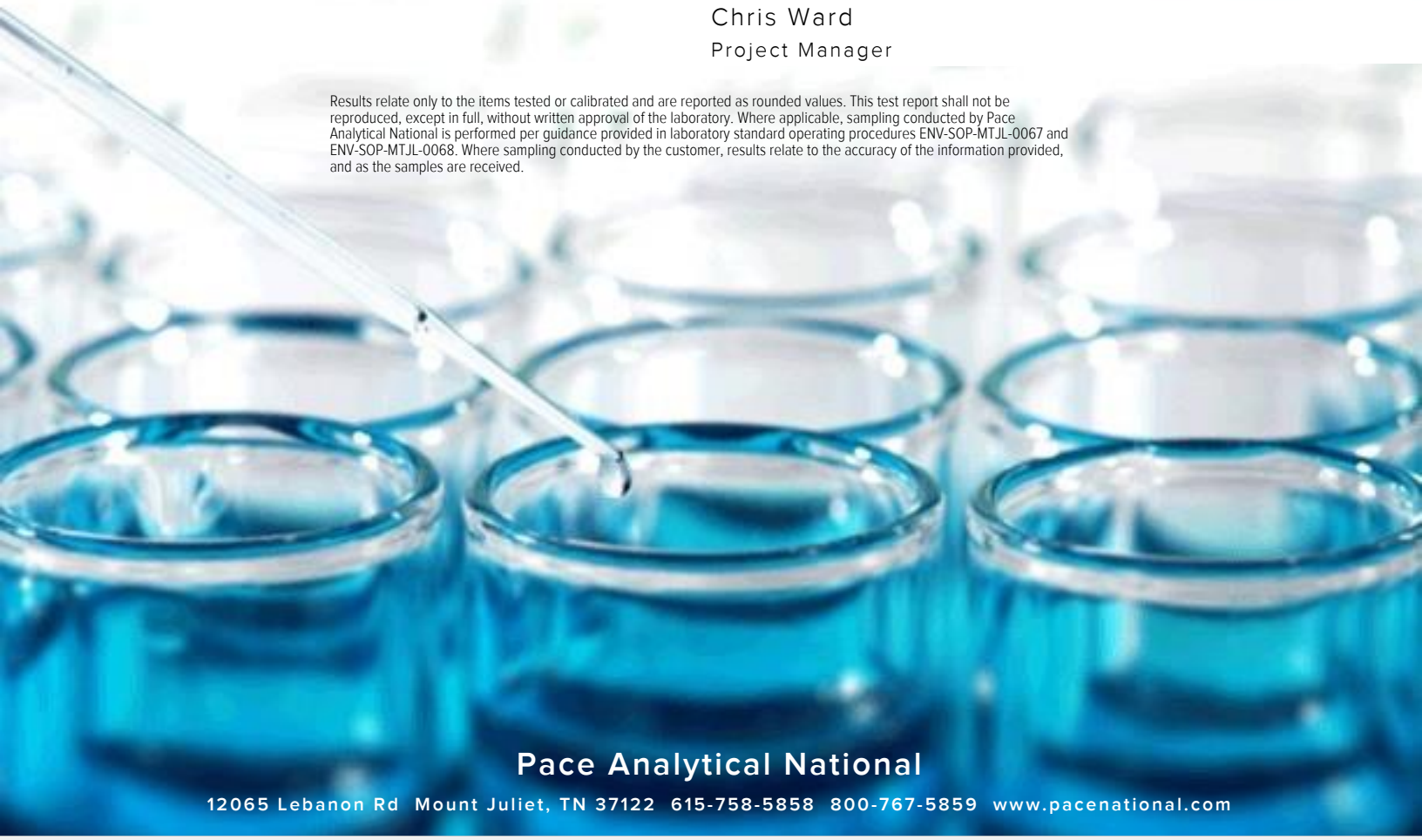
## Caerus Oil and Gas

| | |
|---|---|
| Sample Delivery Group: | L1605744 |
| Samples Received: | 04/15/2023 |
| Project Number: | L9 |
| Description: | L9 Facility Decommissioning |
| Site: | L9 |
| Report To: | Brett M. , Jake J. , Blair R.<br>143 Diamond Avenue<br>Parachute, CO 81635 |

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager





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

## 20230413-L9-(BG1)@0.5-1 L1605744-01 Solid

Collected by: Kevin Fletcher | Collected date/time: 04/13/23 14:30 | Received date/time: 04/15/23 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Calculated Results | WG2043100 | 1 | 04/21/23 15:43 | 04/21/23 15:43 | KMG | Mt. Juliet, TN |
| Wet Chemistry by Method 7199 | WG2044448 | 1 | 04/19/23 02:54 | 04/20/23 03:06 | SET | Mt. Juliet, TN |
| Wet Chemistry by Method 9045D | WG2043721 | 1 | 04/18/23 08:57 | 04/18/23 14:11 | DB | Mt. Juliet, TN |
| Wet Chemistry by Method 9050AMod | WG2044560 | 1 | 04/20/23 11:30 | 04/20/23 14:07 | NTG | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B-NE493 Ch 2 | WG2043095 | 1 | 04/18/23 08:29 | 04/20/23 00:54 | ABL | Mt. Juliet, TN |
| Metals (ICPMS) by Method 6020 | WG2043643 | 10 | 04/18/23 15:16 | 04/19/23 14:39 | JPD | Mt. Juliet, TN |
| Metals (ICPMS) by Method 6020 | WG2043643 | 5 | 04/18/23 15:16 | 04/19/23 13:46 | JPD | Mt. Juliet, TN |

## 20230413-L9-(BG1)@1.5-2 L1605744-02 Solid

Collected by: Kevin Fletcher | Collected date/time: 04/13/23 14:35 | Received date/time: 04/15/23 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Calculated Results | WG2043100 | 1 | 04/21/23 15:46 | 04/21/23 15:46 | KMG | Mt. Juliet, TN |
| Wet Chemistry by Method 7199 | WG2044448 | 1 | 04/19/23 02:54 | 04/20/23 03:34 | VSS | Mt. Juliet, TN |
| Wet Chemistry by Method 9045D | WG2043721 | 1 | 04/18/23 08:57 | 04/18/23 14:11 | DB | Mt. Juliet, TN |
| Wet Chemistry by Method 9050AMod | WG2044560 | 1 | 04/20/23 11:30 | 04/20/23 14:07 | NTG | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B-NE493 Ch 2 | WG2043095 | 1 | 04/18/23 08:29 | 04/20/23 00:57 | ABL | Mt. Juliet, TN |
| Metals (ICPMS) by Method 6020 | WG2043643 | 10 | 04/18/23 15:16 | 04/19/23 14:22 | JPD | Mt. Juliet, TN |
| Metals (ICPMS) by Method 6020 | WG2043643 | 5 | 04/18/23 15:16 | 04/19/23 13:10 | JPD | Mt. Juliet, TN |

## 20230413-L9-(BG2)@1-1.5 L1605744-03 Solid

Collected by: Kevin Fletcher | Collected date/time: 04/13/23 14:55 | Received date/time: 04/15/23 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Calculated Results | WG2043100 | 1 | 04/21/23 15:57 | 04/21/23 15:57 | KMG | Mt. Juliet, TN |
| Wet Chemistry by Method 7199 | WG2044448 | 1 | 04/19/23 02:54 | 04/20/23 03:39 | VSS | Mt. Juliet, TN |
| Wet Chemistry by Method 9045D | WG2043721 | 1 | 04/18/23 08:57 | 04/18/23 14:11 | DB | Mt. Juliet, TN |
| Wet Chemistry by Method 9050AMod | WG2040784 | 1 | 04/19/23 09:00 | 04/19/23 11:36 | NTG | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B-NE493 Ch 2 | WG2043095 | 1 | 04/18/23 08:29 | 04/20/23 00:59 | ABL | Mt. Juliet, TN |
| Metals (ICPMS) by Method 6020 | WG2043643 | 10 | 04/18/23 15:16 | 04/19/23 14:42 | JPD | Mt. Juliet, TN |
| Metals (ICPMS) by Method 6020 | WG2043643 | 5 | 04/18/23 15:16 | 04/19/23 13:49 | JPD | Mt. Juliet, TN |

## 20230413-L9-(BG2)@2-2.5 L1605744-04 Solid

Collected by: Kevin Fletcher | Collected date/time: 04/13/23 15:00 | Received date/time: 04/15/23 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Calculated Results | WG2043100 | 1 | 04/21/23 15:49 | 04/21/23 15:49 | KMG | Mt. Juliet, TN |
| Wet Chemistry by Method 7199 | WG2044448 | 1 | 04/19/23 02:54 | 04/20/23 03:44 | VSS | Mt. Juliet, TN |
| Wet Chemistry by Method 9045D | WG2043721 | 1 | 04/18/23 08:57 | 04/18/23 14:11 | DB | Mt. Juliet, TN |
| Wet Chemistry by Method 9050AMod | WG2044560 | 1 | 04/20/23 11:30 | 04/20/23 14:07 | NTG | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B-NE493 Ch 2 | WG2043095 | 1 | 04/18/23 08:29 | 04/19/23 23:54 | ABL | Mt. Juliet, TN |
| Metals (ICPMS) by Method 6020 | WG2043643 | 5 | 04/18/23 15:16 | 04/19/23 13:53 | JPD | 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

## Calculated Results

| Analyte | Result | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| Sodium Adsorption Ratio | 0.237 | | 1 | 04/21/2023 15:43 | WG2043100 |

## Wet Chemistry by Method 7199

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | U | J6 | 0.255 | 1.00 | 1 | 04/20/2023 03:06 | WG2044448 |

## Wet Chemistry by Method 9045D

| Analyte | Result pH | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| pH | 8.05 | T8 | 1 | 04/18/2023 14:11 | WG2043721 |

Sample Narrative:

L1605744-01 WG2043721: 8.05 at 19.4C

## Wet Chemistry by Method 9050AMod

| Analyte | Result umhos/cm | Qualifier | RDL umhos/cm | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| Specific Conductance | 198 | | 10.0 | 1 | 04/20/2023 14:07 | WG2044560 |

Sample Narrative:

L1605744-01 WG2044560: at 25C

## Metals (ICP) by Method 6010B-NE493 Ch 2

| Analyte | Result mg/l | Qualifier | MDL mg/l | RDL mg/l | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Hot Water Sol. Boron | 0.404 | | 0.0167 | 0.200 | 1 | 04/20/2023 00:54 | WG2043095 |

## Metals (ICPMS) by Method 6020

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Arsenic | 5.31 | | 0.100 | 1.00 | 5 | 04/19/2023 13:46 | WG2043643 |
| Barium | 138 | | 0.304 | 5.00 | 10 | 04/19/2023 14:39 | WG2043643 |
| Cadmium | 0.232 | J | 0.0855 | 1.00 | 5 | 04/19/2023 13:46 | WG2043643 |
| Copper | 10.7 | | 0.132 | 5.00 | 5 | 04/19/2023 13:46 | WG2043643 |
| Lead | 11.4 | | 0.0990 | 2.00 | 5 | 04/19/2023 13:46 | WG2043643 |
| Nickel | 11.4 | | 0.197 | 2.50 | 5 | 04/19/2023 13:46 | WG2043643 |
| Selenium | 0.620 | J | 0.180 | 2.50 | 5 | 04/19/2023 13:46 | WG2043643 |
| Silver | U | | 0.0865 | 0.500 | 5 | 04/19/2023 13:46 | WG2043643 |
| Zinc | 45.3 | | 0.740 | 25.0 | 5 | 04/19/2023 13:46 | WG2043643 |

## Calculated Results

| Analyte | Result | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| Sodium Adsorption Ratio | 0.212 | | 1 | 04/21/2023 15:46 | WG2043100 |

## Wet Chemistry by Method 7199

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | U | | 0.255 | 1.00 | 1 | 04/20/2023 03:34 | WG2044448 |

## Wet Chemistry by Method 9045D

| Analyte | Result pH | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| pH | 8.05 | T8 | 1 | 04/18/2023 14:11 | WG2043721 |

Sample Narrative:

L1605744-02 WG2043721: 8.05 at 19.5C

## Wet Chemistry by Method 9050AMod

| Analyte | Result umhos/cm | Qualifier | RDL umhos/cm | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| Specific Conductance | 195 | | 10.0 | 1 | 04/20/2023 14:07 | WG2044560 |

Sample Narrative:

L1605744-02 WG2044560: at 25C

## Metals (ICP) by Method 6010B-NE493 Ch 2

| Analyte | Result mg/l | Qualifier | MDL mg/l | RDL mg/l | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Hot Water Sol. Boron | 0.324 | | 0.0167 | 0.200 | 1 | 04/20/2023 00:57 | WG2043095 |

## Metals (ICPMS) by Method 6020

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Arsenic | 7.96 | O1 | 0.100 | 1.00 | 5 | 04/19/2023 13:10 | WG2043643 |
| Barium | 119 | | 0.304 | 5.00 | 10 | 04/19/2023 14:22 | WG2043643 |
| Cadmium | 0.235 | J | 0.0855 | 1.00 | 5 | 04/19/2023 13:10 | WG2043643 |
| Copper | 7.90 | O1 | 0.132 | 5.00 | 5 | 04/19/2023 13:10 | WG2043643 |
| Lead | 11.0 | O1 | 0.0990 | 2.00 | 5 | 04/19/2023 13:10 | WG2043643 |
| Nickel | 9.01 | O1 | 0.197 | 2.50 | 5 | 04/19/2023 13:10 | WG2043643 |
| Selenium | 0.539 | J | 0.180 | 2.50 | 5 | 04/19/2023 13:10 | WG2043643 |
| Silver | U | | 0.0865 | 0.500 | 5 | 04/19/2023 13:10 | WG2043643 |
| Zinc | 35.6 | O1 | 0.740 | 25.0 | 5 | 04/19/2023 13:10 | WG2043643 |

## Calculated Results

| Analyte | Result | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| Sodium Adsorption Ratio | 0.161 | | 1 | 04/21/2023 15:57 | WG2043100 |

## Wet Chemistry by Method 7199

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | U | | 0.255 | 1.00 | 1 | 04/20/2023 03:39 | WG2044448 |

## Wet Chemistry by Method 9045D

| Analyte | Result pH | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| pH | 8.22 | T8 | 1 | 04/18/2023 14:11 | WG2043721 |

Sample Narrative:

L1605744-03 WG2043721: 8.22 at 19.5C

## Wet Chemistry by Method 9050AMod

| Analyte | Result umhos/cm | Qualifier | RDL umhos/cm | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| Specific Conductance | 143 | | 10.0 | 1 | 04/19/2023 11:36 | WG2040784 |

Sample Narrative:

L1605744-03 WG2040784: at 25C

## Metals (ICP) by Method 6010B-NE493 Ch 2

| Analyte | Result mg/l | Qualifier | MDL mg/l | RDL mg/l | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Hot Water Sol. Boron | 0.406 | | 0.0167 | 0.200 | 1 | 04/20/2023 00:59 | WG2043095 |

## Metals (ICPMS) by Method 6020

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Arsenic | 6.08 | | 0.100 | 1.00 | 5 | 04/19/2023 13:49 | WG2043643 |
| Barium | 124 | | 0.304 | 5.00 | 10 | 04/19/2023 14:42 | WG2043643 |
| Cadmium | 0.166 | J | 0.0855 | 1.00 | 5 | 04/19/2023 13:49 | WG2043643 |
| Copper | 9.00 | | 0.132 | 5.00 | 5 | 04/19/2023 13:49 | WG2043643 |
| Lead | 10.6 | | 0.0990 | 2.00 | 5 | 04/19/2023 13:49 | WG2043643 |
| Nickel | 9.30 | | 0.197 | 2.50 | 5 | 04/19/2023 13:49 | WG2043643 |
| Selenium | 0.574 | J | 0.180 | 2.50 | 5 | 04/19/2023 13:49 | WG2043643 |
| Silver | U | | 0.0865 | 0.500 | 5 | 04/19/2023 13:49 | WG2043643 |
| Zinc | 35.0 | | 0.740 | 25.0 | 5 | 04/19/2023 13:49 | WG2043643 |

## Calculated Results

| Analyte | Result | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| Sodium Adsorption Ratio | 0.358 | | 1 | 04/21/2023 15:49 | WG2043100 |

## Wet Chemistry by Method 7199

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | U | | 0.255 | 1.00 | 1 | 04/20/2023 03:44 | WG2044448 |

## Wet Chemistry by Method 9045D

| Analyte | Result pH | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| pH | 8.22 | T8 | 1 | 04/18/2023 14:11 | WG2043721 |

Sample Narrative:

L1605744-04 WG2043721: 8.22 at 19.5C

## Wet Chemistry by Method 9050AMod

| Analyte | Result umhos/cm | Qualifier | RDL umhos/cm | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| Specific Conductance | 108 | | 10.0 | 1 | 04/20/2023 14:07 | WG2044560 |

Sample Narrative:

L1605744-04 WG2044560: at 25C

## Metals (ICP) by Method 6010B-NE493 Ch 2

| Analyte | Result mg/l | Qualifier | MDL mg/l | RDL mg/l | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Hot Water Sol. Boron | 0.283 | | 0.0167 | 0.200 | 1 | 04/19/2023 23:54 | WG2043095 |

## Metals (ICPMS) by Method 6020

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Arsenic | 4.17 | | 0.100 | 1.00 | 5 | 04/19/2023 13:53 | WG2043643 |
| Barium | 85.8 | | 0.152 | 2.50 | 5 | 04/19/2023 13:53 | WG2043643 |
| Cadmium | 0.183 | J | 0.0855 | 1.00 | 5 | 04/19/2023 13:53 | WG2043643 |
| Copper | 11.1 | | 0.132 | 5.00 | 5 | 04/19/2023 13:53 | WG2043643 |
| Lead | 11.7 | | 0.0990 | 2.00 | 5 | 04/19/2023 13:53 | WG2043643 |
| Nickel | 9.91 | | 0.197 | 2.50 | 5 | 04/19/2023 13:53 | WG2043643 |
| Selenium | 0.555 | J | 0.180 | 2.50 | 5 | 04/19/2023 13:53 | WG2043643 |
| Silver | U | | 0.0865 | 0.500 | 5 | 04/19/2023 13:53 | WG2043643 |
| Zinc | 41.9 | | 0.740 | 25.0 | 5 | 04/19/2023 13:53 | WG2043643 |

## Method Blank (MB)

(MB) R3915197-1 04/20/23 02:49

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| Hexavalent Chromium | U | | 0.255 | 1.00 |

## L1606413-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1606413-02 04/20/23 04:26 • (DUP) R3915197-7 04/20/23 04:31

| Analyte | Original Result mg/kg | DUP Result mg/kg | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Hexavalent Chromium | U | U | 1 | 0.000 | | 20 |

## L1606422-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1606422-07 04/20/23 05:33 • (DUP) R3915197-8 04/20/23 05:39

| Analyte | Original Result mg/kg | DUP Result mg/kg | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Hexavalent Chromium | U | U | 1 | 0.000 | | 20 |

## Laboratory Control Sample (LCS)

(LCS) R3915197-2 04/20/23 02:56

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Hexavalent Chromium | 10.0 | 9.57 | 95.7 | 80.0-120 | |

## L1605744-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1605744-01 04/20/23 03:06 • (MS) R3915197-4 04/20/23 03:19 • (MSD) R3915197-5 04/20/23 03:24

| Analyte | Spike Amount mg/kg | Original Result mg/kg | MS Result mg/kg | MSD Result mg/kg | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 20.0 | U | 11.4 | 12.7 | 56.8 | 63.3 | 1 | 75.0-125 | J6 | J6 | 10.9 | 20 |

## L1605744-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1605744-01 04/20/23 03:06 • (MS) R3915197-6 04/20/23 03:29

| Analyte | Spike Amount mg/kg | Original Result mg/kg | MS Result mg/kg | MS Rec. % | Dilution | Rec. Limits % | MS Qualifier |
|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 648 | U | 688 | 106 | 50 | 75.0-125 | |

## L1605649-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1605649-04 04/18/23 14:11 • (DUP) R3914447-2 04/18/23 14:11

| Analyte | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|---|---|---|---|---|---|---|
| | pH | su | | % | | % |
| pH | 7.95 | 7.92 | 1 | 0.378 | | 1 |

Sample Narrative:

OS: 7.95 at 20.5C

DUP: 7.92 at 20.5C

## L1605649-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1605649-05 04/18/23 14:11 • (DUP) R3914447-3 04/18/23 14:11

| Analyte | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|---|---|---|---|---|---|---|
| | pH | su | | % | | % |
| pH | 8.19 | 8.17 | 1 | 0.244 | | 1 |

Sample Narrative:

OS: 8.19 at 19.7C

DUP: 8.17 at 19.9C

## Laboratory Control Sample (LCS)

(LCS) R3914447-1 04/18/23 14:11

| Analyte | Spike Amount | LCS Result | LCS Rec. | Rec. Limits | LCS Qualifier |
|---|---|---|---|---|---|
| | su | su | % | % | |
| pH | 10.0 | 9.99 | 99.9 | 99.0-101 | |

Sample Narrative:

LCS: 9.99 at 19.2C

## Method Blank (MB)

(MB) R3914860-1 04/19/23 11:36

| Analyte | MB Result umhos/cm | MB Qualifier | MB MDL umhos/cm | MB RDL umhos/cm |
|---|---|---|---|---|
| Specific Conductance | U | | 10.0 | 10.0 |

Sample Narrative:
BLANK: at 25C

## L1605450-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1605450-02 04/19/23 11:36 • (DUP) R3914860-3 04/19/23 11:36

| Analyte | Original Result umhos/cm | DUP Result umhos/cm | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Specific Conductance | 13.6 | 11.2 | 1 | 18.7 | | 20 |

Sample Narrative:
OS: at 25C
DUP: at 25C

## L1605744-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1605744-03 04/19/23 11:36 • (DUP) R3914860-4 04/19/23 11:36

| Analyte | Original Result umhos/cm | DUP Result umhos/cm | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Specific Conductance | 143 | 141 | 1 | 1.55 | | 20 |

Sample Narrative:
OS: at 25C
DUP: at 25C

## Laboratory Control Sample (LCS)

(LCS) R3914860-2 04/19/23 11:36

| Analyte | Spike Amount umhos/cm | LCS Result umhos/cm | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Specific Conductance | 1120 | 1120 | 100 | 85.0-115 | |

Sample Narrative:
LCS: at 25C

## Method Blank (MB)

(MB) R3915449-1 04/20/23 14:07

| Analyte | MB Result umhos/cm | MB Qualifier | MB MDL umhos/cm | MB RDL umhos/cm |
|---|---|---|---|---|
| Specific Conductance | U | | 10.0 | 10.0 |

Sample Narrative:
BLANK: at 25C

## L1605710-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1605710-07 04/20/23 14:07 • (DUP) R3915449-3 04/20/23 14:07

| Analyte | Original Result umhos/cm | DUP Result umhos/cm | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Specific Conductance | 1140 | 1140 | 1 | 0.0876 | | 20 |

Sample Narrative:
OS: at 25C
DUP: at 25C

## L1606425-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1606425-04 04/20/23 14:07 • (DUP) R3915449-4 04/20/23 14:07

| Analyte | Original Result umhos/cm | DUP Result umhos/cm | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Specific Conductance | 57.3 | 57.0 | 1 | 0.525 | | 20 |

Sample Narrative:
OS: at 25C
DUP: at 25C

## Laboratory Control Sample (LCS)

(LCS) R3915449-2 04/20/23 14:07

| Analyte | Spike Amount umhos/cm | LCS Result umhos/cm | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Specific Conductance | 1120 | 1090 | 97.7 | 85.0-115 | |

Sample Narrative:
LCS: at 25C

## Method Blank (MB)

(MB) R3915185-1 04/20/23 00:02

| Analyte | MB Result mg/l | MB Qualifier | MB MDL mg/l | MB RDL mg/l |
|---|---|---|---|---|
| Hot Water Sol. Boron | U | | 0.0167 | 0.200 |

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

(LCS) R3915185-2 04/20/23 00:05 • (LCSD) R3915185-3 04/20/23 00:08

| 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 % |
|---|---|---|---|---|---|---|---|---|---|---|
| Hot Water Sol. Boron | 1.00 | 1.05 | 1.07 | 105 | 107 | 80.0-120 | | | 2.24 | 20 |

## Method Blank (MB)

(MB) R3914947-1 04/19/23 13:04

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| Arsenic | U | | 0.100 | 1.00 |
| Barium | 0.574 | J | 0.152 | 2.50 |
| Cadmium | U | | 0.0855 | 1.00 |
| Copper | U | | 0.133 | 5.00 |
| Lead | U | | 0.0990 | 2.00 |
| Nickel | U | | 0.197 | 2.50 |
| Selenium | U | | 0.180 | 2.50 |
| Silver | U | | 0.0865 | 0.500 |
| Zinc | U | | 0.740 | 25.0 |

## Laboratory Control Sample (LCS)

(LCS) R3914947-2 04/19/23 13:07

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Arsenic | 100 | 95.3 | 95.3 | 80.0-120 | |
| Barium | 100 | 98.6 | 98.6 | 80.0-120 | |
| Cadmium | 100 | 99.4 | 99.4 | 80.0-120 | |
| Copper | 100 | 95.5 | 95.5 | 80.0-120 | |
| Lead | 100 | 95.9 | 95.9 | 80.0-120 | |
| Nickel | 100 | 97.0 | 97.0 | 80.0-120 | |
| Selenium | 100 | 110 | 110 | 80.0-120 | |
| Silver | 20.0 | 20.0 | 100 | 80.0-120 | |
| Zinc | 100 | 95.9 | 95.9 | 80.0-120 | |

## L1605744-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1605744-02 04/19/23 13:10 • (MS) R3914947-5 04/19/23 13:20 • (MSD) R3914947-6 04/19/23 13:23

| Analyte | Spike Amount mg/kg | Original Result mg/kg | MS Result mg/kg | MSD Result mg/kg | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 100 | 7.96 | 92.3 | 104 | 84.3 | 96.0 | 5 | 75.0-125 | | | 11.9 | 20 |
| Barium | 100 | 119 | 218 | 227 | 98.6 | 108 | 5 | 75.0-125 | E | E | 4.13 | 20 |
| Cadmium | 100 | 0.235 | 91.5 | 95.1 | 91.3 | 94.9 | 5 | 75.0-125 | | | 3.80 | 20 |
| Copper | 100 | 7.90 | 93.5 | 99.8 | 85.6 | 91.9 | 5 | 75.0-125 | | | 6.55 | 20 |
| Lead | 100 | 11.0 | 99.8 | 107 | 88.9 | 95.6 | 5 | 75.0-125 | | | 6.57 | 20 |
| Nickel | 100 | 9.01 | 94.4 | 101 | 85.4 | 92.3 | 5 | 75.0-125 | | | 7.12 | 20 |
| Selenium | 100 | 0.539 | 104 | 108 | 103 | 108 | 5 | 75.0-125 | | | 4.22 | 20 |
| Silver | 20.0 | U | 18.8 | 19.4 | 93.8 | 97.0 | 5 | 75.0-125 | | | 3.38 | 20 |
| Zinc | 100 | 35.6 | 120 | 130 | 84.1 | 94.8 | 5 | 75.0-125 | | | 8.54 | 20 |

# 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. |
| RDL | Reported Detection Limit. |
| Rec. | Recovery. |
| RPD | Relative Percent Difference. |
| SDG | Sample Delivery Group. |
| 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). |
| 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. |
| O1 | The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference. |
| T8 | Sample(s) received past/too close to holding time expiration. |

# 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 Piceance LLC**
**143 Diamond Avenue**
**Parachute, CO 81635**
**970-285-9606**

Billing Information: **Same as above**

Report to: **bmiddleton@caerusoilandgas.com**

Email To: **bmiddleton@caerusoilandgas.com**

Project Description: **L9 Facility Decommissioning**

City/State Collected: **Mamm, Creek**

Phone:
Fax:

Client Project # **L9**

Lab Project # **L9**

Collected by (print):

Site/Facility ID # **L9**

P.O. # **L9**

Collected by (signature): **Kevin Fletcher**

Immediately Packed on Ice N ___ Y X

***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 TAT**

Pres Chk

Analysis / Container / Preservative

| Sample ID | Comp/Grab | Matrix * | Depth | Date | Time | No. of Cntrs | TPH- GRO,DRO,ORO | BTEX | TABLE 915-1- PAH's | SAR, EC, pH, Boron (water soluble) | TABLE 915-1- Metals | Remarks | Sample # (lab only) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20230413-L9-(BG1)@0.5-1 | Grab | SS | | 4/13/2023 | 1430 | 2 | | | | X | X | | -01 |
| 20230413-L9-(BG1)@1.5-2 | Grab | SS | | 4/13/2023 | 1435 | 2 | | | | X | X | | -02 |
| 20230413-L9-(BG2)@1-1.5 | Grab | SS | | 4/13/2023 | 1455 | 2 | | | | X | X | | -03 |
| 20230413-L9-(BG2)@2-2.5 | Grab | SS | | 4/13/2023 | 1500 | 2 | | | | X | X | | -04 |

Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation

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

L # L605744 B053

Table #

Acctn

Template:

Prelogin:

TSR:

PB:

Shipped Via:

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

**Remarks:**

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking # 5982 7564 7423

Sample Receipt Checklist
COC Seal Present/Intact: __NP (Y) N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: (Y) __N

| Relinquished by : (Signature) | Date: | Time: | Received by: (Signature) |
|---|---|---|---|
| | 4/14/2023 | 1200 | |
| Relinquished by : (Signature) | Date: | Time: | Received by: (Signature) |
| | 4/14/23 | 1500 | |
| Relinquished by : (Signature) | Date: | Time: | Received for lab by: (Signature) |
| | | | |

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

Temp: 6.6 6.4 °C Bottles Received: 8

0.1 6.0 2.0.1

Date: 4.15.23 Time: 9:00

If preservation required by Login: Date/Time

Hold:

Condition: NCF / (OK)