December 22, 2021

Mr. Jake Janicek
EHS Specialist
Caerus Operating LLC
143 Diamond Ave.
Parachute, CO 81635

# REPORT OF WORK COMPLETED

**Project Name**: E34-496 P&A Assessment
**Well Names (API#)**: SG 8508F-33 E34496 (045-21900); SG 8508E-33 E34496 (045-21901)
**Legal Description**: SWNW Sec. 34, T4S-R96W Garfield County, CO
**Location (Lat/Long)**: 39.659949, -108.160605 / 39.659723, -108.160645

On behalf of Caerus Operating LLC (Caerus), Campos EPC (CEPC) has prepared this Report of Work Completed (ROWC) to document recent assessment activities at the E34-496 (Site). This ROWC provides background and purpose of the assessment, methodology, summarized results, and recommendations for additional action. Attachments to this ROWC include field notes and photos, Site exhibit with sample locations, soil analytical data table, historical background data, and laboratory reports.

## BACKGROUND

The Site is approximately 15.3 miles northwest of Parachute, CO within the Grand Valley Field. Land use is primarily oil and gas operations and high mountain desert rangeland. Lithology consists mostly of organic silts and clays. Surrounding topography slopes to the east and west away from the site, which sits upon a ridge. The nearest watercourse is a branch of Dry Fork, an ephemeral stream situated approximately 0.25 mile to the east of the Site, which is a tributary to East Stewart Creek -receiving waters- approximately 3.6 miles north-northeast of the Site.

To the purpose of decommissioning a wellhead and associated flowline per Colorado Oil and Gas Conservation Commission (COGCC) Rule 913.c.(9), a Proposed Sampling Plan (PSP) was submitted as part of a Form 27 (Doc. #402848814). Cut and cap operations were recently completed for wells SG 8508F-33 and SG 8508E and the associated flowlines. Excavations with safety fencing were left onsite to accommodate the assessment at the flowline connection points.

## METHODOLOGY

On November 3, 2021, CEPC personnel conducted the assessment in accordance with the PSP and Conditions of Approval (COAs) outlined in the associated Form 27 as approved by the COGCC. CEPC completed visual inspection and field screening of the base within the concrete vaults at the abandoned wellheads and the adjacent wellhead/flowline tie-in area. Visual inspection and field screening were also completed at the base of excavation for the flowline connection point at the gas meter tie-in area. Field screening was conducted with a Photo Ionization Detector (PID) and hand tools with strict decontamination practices were used to collect soil samples. Soil samples were collected from the base of the wellhead vaults and at the base of the wellhead/flowline tie-in excavation at five ft below ground surface (bgs), and at six ft bgs from the base of the gas meter/flowline tie-in excavation. Five-point composite soil samples were collected from the excavated material stockpiles adjacent to the wellhead and gas meter (see Site exhibit for all sample locations). All samples were collected in laboratory provided jars, immediately packed on ice, and submitted via courier to Pace Analytical for analysis of all constituents listed on COGCC Table 915-1. Soil samples and pertinent features onsite were surveyed using a Trimble RTX Data Collector with sub-inch accuracy. An aerial survey to gather updated imagery of the Site was conducted with an Autel Evo II drone.

On December 2, 2021, CEPC personnel conducted a supplemental assessment to investigate and remove impacts found at wellhead SG 8508F-33 and the associated flowline connection to the gas meter. A hydro-vac truck was used to remove impacted soils. All remaining soils within the concrete wellhead cellar were removed

and no additional material was available for field screening or confirmation sampling. A concrete base was encountered at eight ft bgs within the flowline-gas meter tie-in excavation and a confirmation soil sample was collected from the north wall, below the flowline connection point, at eight ft bgs (sample name 20211202-E34-496(FL-SEP)@8'). An additional soil sample was collected from the stockpile material adjacent to the flowline-gas meter tie-in excavation. Visual inspection and field screening via PID were completed, and hand tools with strict decontamination practices were used to collect soil samples. All samples were collected in laboratory provided jars, immediately packed on ice, and submitted via courier to Pace Analytical for analysis of all constituents listed on COGCC Table 915-1. Soil samples and pertinent features onsite were surveyed using a Trimble RTX Data Collector with sub-inch accuracy.

As part of this investigation, waste stream analysis from the Site was referenced to determine the source of impacts. Additionally, historic background soil data was used for comparison to conditions at the Site.

## RESULTS

During the initial assessment, visual inspection of the Site indicated no staining or odors from the areas of concern. Results of field screening via PID within the respective excavations and stockpiles ranged from 0.5 to 29.0 parts per million (ppm).

Laboratory results indicated that the soil sample at the gas meter flowline tie-in area exceeded the applicable COGCC standard for Total Petroleum Hydrocarbons (TPH) with a concentration of 927.81 milligrams per kilogram (mg/kg) in sample 20211103-E34-496(FL-SEP)@6'. All other samples collected indicate compliance with COGCC standards for organic compounds. Arsenic results exceeded COGCC standards in all samples, ranging from 3.64 to 7.50 mg/kg. Laboratory results also indicate pH exceedances in the wellhead vault samples and one of the wellhead/flowline tie-in samples, ranging from 8.71 to 9.64. Sodium Adsorption Ratio (SAR) exceeded COGCC standards in the sample obtained at the base of the vault for wellhead SG 8508F with a result of 6.42. Background soil sampling data, collected by Encana Oil and Gas in August 2010, indicated an arsenic level of 4.4 mg/kg, pH of 7.0, and SAR of 0.38.

All other samples and analyses are compliant with COGCC Table 915-1 standards as compared to residential soil screening level concentrations.

During the supplemental assessment, visual inspection of the Site following hydro-vac activities indicated no staining or odors from the areas of concern. Results of field screening via PID at the flowline-gas meter tie-in excavation and associated stockpile were below 1.0 ppm.

Laboratory results for the sample collected from the flowline-gas meter tie-in excavation (sample name20211202-E34-496(FL-SEP)@8') indicate compliance with all COGCC Table 915-1 constituents, with exception to an Arsenic concentration of 2.75 mg/kg. Results of produced water analysis from the Site indicate a pH level of 6.84 in the associated waste stream (laboratory report attached).

## CONCLUSION

Based on laboratory results, TPH impacts found during the initial assessment have been removed from the flowline-gas meter tie-in excavation. Additionally, all impacted material has been removed from the SG 8508F-33 wellhead cellar. Historic background data indicates naturally occurring elevated concentrations of Arsenic. Waste stream analysis indicates that a release of produced water would not increase pH levels at the Site. Laboratory results and background data indicate stockpile material is suitable for backfill of the excavations onsite.

Based on these investigative results, CEPC concludes that a no further action request is warranted.

Thank you for the opportunity to support you on this project. Please reach out anytime with questions regarding this report and associated field work.

Steve Sivigliano, CES
Environmental Project Manager | Campos EPC, LLC

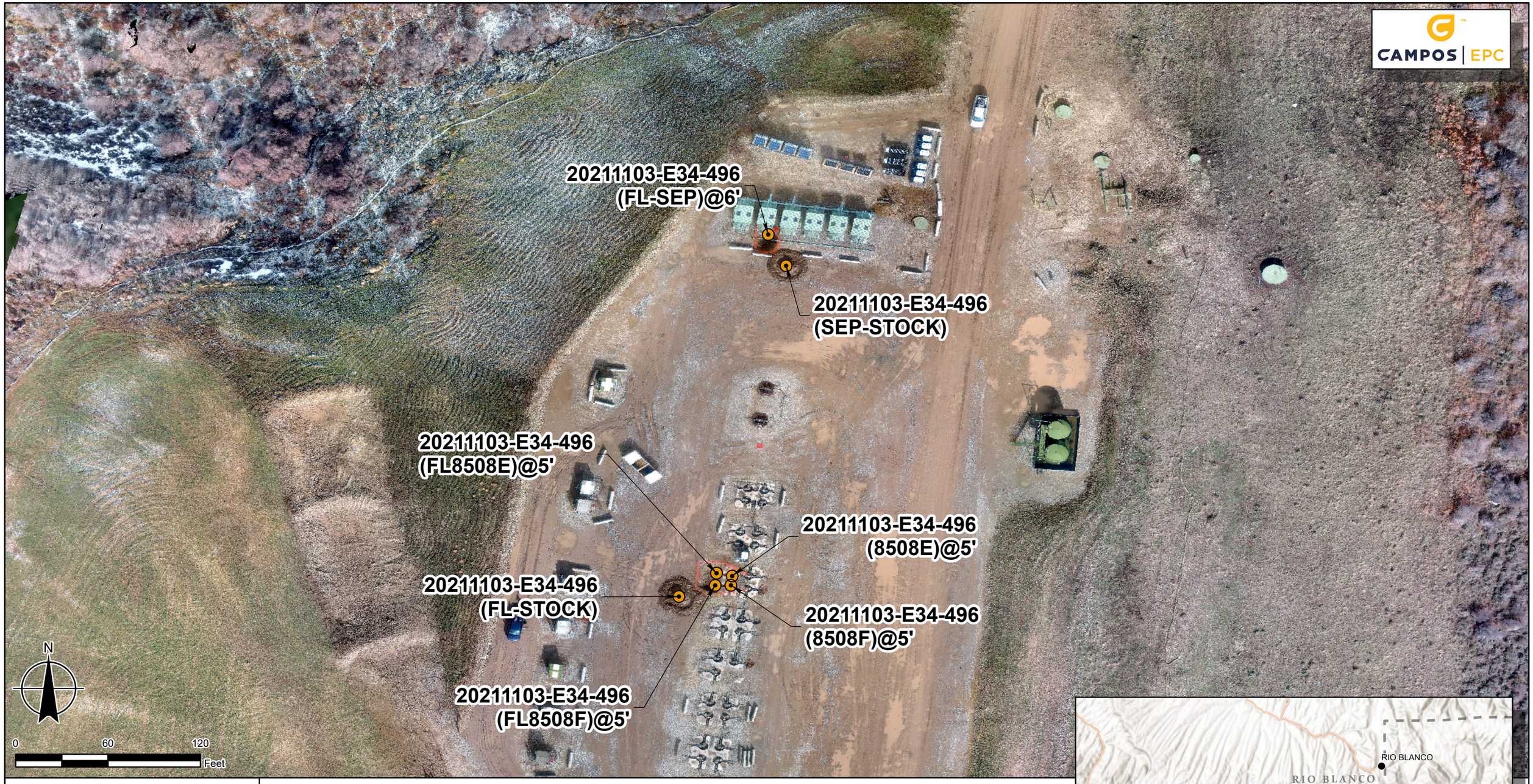
**1401 Blake St | Denver, Colorado 80202**
**Main 303-623-3345 | Cell 970-619-0600**
**Toll Free 1-855-CAMPOS1 (226-7671) | Fax 303-904-0570**
steve.sivigliano@camposepc.com | www.camposepc.com

## Attachments

- Site Exhibits with sample locations
- Soil Analytical Table
- Laboratory Report
- Field Notes and Photos
- Historical data/records



CAMPOS | EPC




CAERUS OPERATING LLC

E34-496
SWNW 34 4S96W 6 / E34 496
COGCC LOCATION ID: 335928
GARFIELD COUNTY, CO
SWNW SEC. 34 T4S-R96W

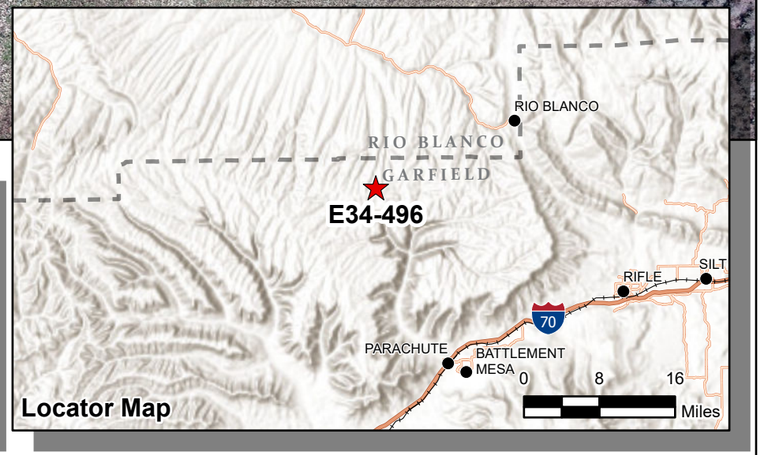
DRAFTER: AW | DATE: 11/8/2021

Legend

- Soil Sample Location

COORDINATE SYSTEM
GCS NORTH AMERICAN 1983

| Sample Name | Latitude NAD83 | Longitude NAD83 |
|---|---|---|
| 20211103-E34-496(8508E)@5' | 39.659947 | -108.160605 |
| 20211103-E34-496(8508F)@5' | 39.659930 | -108.160608 |
| 20211103-E34-496(FL-SEP)@6' | 39.660554 | -108.160541 |
| 20211103-E34-496(FL-STOCK) | 39.659910 | -108.160700 |
| 20211103-E34-496(FL8508E)@5' | 39.659952 | -108.160633 |
| 20211103-E34-496(FL8508F)@5' | 39.659930 | -108.160636 |
| 20211103-E34-496(SEP-STOCK) | 39.660499 | -108.160509 |




Locator Map


CAERUS OPERATING LLC

E34-496

SWNW 34 4S96W 6 / E34 496

COGCC LOCATION ID: 335928

GARFIELD COUNTY, CO

SWNW SEC. 34 T4S-R96W

| DRAFTER: AM | DATE: 12/6/2021 |
|---|---|

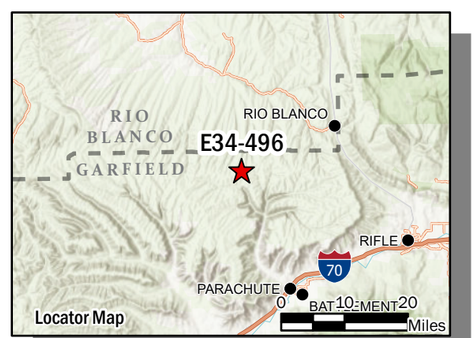
COORDINATE SYSTEM
GCS NORTH AMERICAN 1983

**Sample Type**

Soil Sample

| Name | Elevation | Longitude | Latitude |
|---|---|---|---|
| 20211103-E34-496(8508E)@5' | 8326.301 | -108.160603 | 39.659945 |
| 20211103-E34-496(8508F)@5' | 8326.217 | -108.160606 | 39.659929 |
| 20211103-E34-496(FL-SEP)@6' | 8322.591 | -108.160539 | 39.660553 |
| 20211103-E34-496(FL-STOCK) | 8329.828 | -108.160698 | 39.659909 |

| Name | Elevation | Longitude | Latitude |
|---|---|---|---|
| 20211103-E34-496(FL8508E)@5' | 8321.5 | -108.160631 | 39.65995 |
| 20211103-E34-496(FL8508F)@5' | 8321.281 | -108.160634 | 39.659928 |
| 20211202-E34-496(SEP-STOCK) | 8324.085 | -108.160509 | 39.660499 |
| 20211202-E34-496(FL-SEP)@8' | 8325.48 | -108.16054 | 39.660547 |



# SOIL ANALYTICAL RESULTS TABLE
## E34-496

CAMPOS | EPC

| | ORGANIC COMPOUNDS in mg/kg | | | | | | | | SOIL SUITABILITY | | | | METALS in mg/kg | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Name** | GRO | DRO | ORO | TPH | Benzene | Toluene | Ethylbenzene | Total Xylenes | Electrical Conductivity (mmhos/cm) | Sodium Adsorption Ratio | pH (su) | Boron-hot water soluble (mg/L) | Arsenic | Barium | Cadmium | Chromium (VI) | Copper | Lead | Nickel | Selenium | Silver | Zinc |
| 20211103-E34-496(8508F)@5' | 0.321 | 165 | 297 | 462.32 | <.00100 | <.00500 | <.0250 | <.0065 | 0.522 | **6.42** | **9.64** | 0.615 | **4.63** | 3030 | 0.124 | <1.00 | 87.9 | 10.8 | 18.3 | <2.00 | <1.00 | 43.1 |
| 20211103-E34-496(8508E)@5' | <0.1 | 104 | 292 | 396.00 | <.00100 | <.00500 | <.0250 | <.0065 | 0.291 | 2.85 | **8.77** | 0.502 | **4.13** | 2060 | 0.259 | <1.00 | 15.6 | 10.5 | 20.0 | <2.00 | <1.00 | 42.5 |
| 20211103-E34-496(FL-8508E)@5' | <0.1 | 33 | 103 | 136.00 | <.00100 | <.00500 | <.0250 | <.0065 | 0.262 | 1.51 | **8.71** | 0.387 | **4.27** | 5060 | <.500 | <1.00 | 20.2 | 9.97 | 17.7 | <2.00 | <1.00 | 37.3 |
| 20211103-E34-496(FL-8508F)@5' | <0.1 | 24.1 | 46 | 70.10 | <.00100 | <.00500 | <.0250 | <.0065 | 0.284 | 2.64 | 8.19 | 0.342 | **3.64** | 4280 | <.500 | <1.00 | 15.7 | 9.27 | 16.1 | <2.00 | <1.00 | 43.0 |
| 20211103-E34-496(FL-SEP)@6' | 0.805 | 286 | 641 | **927.81** | <.00100 | 0.0222 | <.0250 | <.0065 | 0.459 | 0.808 | 7.44 | 0.829 | **7.50** | 463 | 0.71 | <1.00 | 12.8 | 15.2 | 10.2 | <2.00 | <1.00 | 44.2 |
| 20211202-E34-496(FL-SEP)@8' | <0.1 | 5.78 | <4 | **5.78** | <.00100 | <.00500 | <.0025 | <.0065 | 0.26 | 1 | 8.09 | 0.36 | **2.75** | 281 | <.500 | <1.00 | 10.6 | 10.9 | 12.7 | <2.00 | <1.00 | 29.6 |
| 20211202-E34-496(SEP-STOCK) | 0.11 | 35.2 | 85.6 | 120.91 | <.00100 | <.00500 | <.0025 | <.0065 | 0.375 | 1.19 | 8.2 | 0.438 | **12.70** | 582 | <.500 | <1.00 | 14.9 | 11.8 | 14.3 | <2.00 | <1.00 | 40.8 |
| E34-NW BACK 072910 | na | na | na | na | na | na | na | na | na | na | na | na | **4.1** | na | na | na | na | na | na | na | na | na |
| E34-SW BACK 072910 | <0.5 | 32 | na | 32 | <.0025 | <.025 | <.0025 | <.0075 | 0.07 | 0.38 | 7.0 | na | **4.4** | 350 | 0.3 | <10 | 11 | 0.78 | 25 | 4.8 | <0.50 | 39 |
| **COGCC TABLE 915-1** RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS | 500 mg/kg | | | | 1.2 mg/kg | 490 mg/kg | 5.8 mg/kg | 58 mg/kg | <4.0 mmhos/cm | <6 unitless | 6 - 8.3 su | 2 mg/L | 0.68 mg/kg | 15,000 mg/kg | 71 mg/kg | 0.3 mg/kg | 3,100 mg/kg | 400 mg/kg | 1,500 mg/kg | 390 mg/kg | 390 mg/kg | 23,000 mg/kg |
| PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS | 500 mg/kg | | | | 0.0026 mg/kg | 0.69 mg/kg | 0.78 mg/kg | 9.9 mg/kg | <4.0 mmhos/cm | <6 unitless | 6 - 8.3 su | 2 mg/L | 0.29 mg/kg | 82 mg/kg | 0.38 mg/kg | 0.00067 mg/kg | 46 mg/kg | 14 mg/kg | 26 mg/kg | 0.26 mg/kg | 0.8 mg/kg | 370 mg/kg |

Notes:

**Bold with yellow highlight** - exceeds applicable COGCC Table 915-1 soil screening level concentration

**Bold with blue highlight** - confirmation sample compliant with applicable COGCC Table 915-1 soil screening level concentration

< - less than laboratory reporting detection limit (RDL)

COGCC - Colorado Oil and Gas Convservation Commission

TPH - Total Petroleum Hydrocarbons (volatile and extractable)

GRO - Gasoline Range Organics

DRO - Diesel Range Organics

ORO - Oil Range Organics

mg/kg - milligrams per kilogram

mg/L - milligrams per Liter

mmhos/cm - millimhos per centimeter

su - standard unit

na - not analyzed

## SOIL ANALYTICAL RESULTS TABLE (continued)
## E34-496

CAMPOS | EPC

| Sample Name | ORGANIC COMPOUNDS in mg/kg (continued) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1, 2, 4-trimethylbenzene | 1, 3, 5-trimethylbenzene | Acenaphthene | Anthracene | Benz(a) anthracene | Benzo(b) fluoranthene | Benzo(k) fluoranthene | Benzo(a) pyrene | Chrysene | Dibenzo(a,h) anthracene | Fluoranthene | Fluorene | Indeno (1, 2, 3-cd) pyrene | 1-methylnaphthalene | 2-mehtylnaphthalene | Naphthalene | Pyrene |
| 20211103-E34-496(8508F)@5' | <.00500 | <.00500 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | 0.00842 | <.00600 | <.0200 | <.0200 | <.0200 | <.00600 |
| 20211103-E34-496(8508E)@5' | <.00500 | <.00500 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.0200 | <.0200 | <.0200 | <.00600 |
| 20211103-E34-496(FL-8508E)@5' | <.00500 | <.00500 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.0200 | <.0200 | <.0200 | <.00600 |
| 20211103-E34-496(FL-8508F)@5' | <.00500 | <.00500 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.0200 | <.0200 | <.0200 | <.00600 |
| 20211103-E34-496(FL-SEP)@6' | <.00500 | <.00500 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.0200 | <.0200 | <.0200 | <.00600 |
| 20211202-E34-496(FL-SEP)@8' | <.00500 | <.00500 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.0200 | <.0200 | <.0200 | <.00600 |
| 20211202-E34-496(SEP-STOCK) | <.00500 | <.00500 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.00600 | <.0200 | <.0200 | <.0200 | <.00600 |
| **COGCC TABLE 915-1** RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS | 30 mg/kg | 27 mg/kg | 360 mg/kg | 1800 mg/kg | 1.1 mg/kg | 1.1 mg/kg | 11 mg/kg | 0.11 mg/kg | 110 mg/kg | 0.11 mg/kg | 240 mg/kg | 240 mg/kg | 1.1 mg/kg | 18 mg/kg | 24 mg/kg | 2 mg/kg | 180 mg/kg |
| PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS | 0.0081 mg/kg | 0.0087 mg/kg | 0.55 mg/kg | 5.8 mg/kg | 0.011 mg/kg | 0.3 mg/kg | 2.9 mg/kg | 0.24 mg/kg | 9 mg/kg | 0.096 mg/kg | 8.9 mg/kg | 0.54 mg/kg | 0.98 mg/kg | 0.006 mg/kg | 0.019 mg/kg | 0.0038 mg/kg | 1.3 mg/kg |

Notes:

**Bold with yellow highlight** - exceeds applicable COGCC Table 915-1 soil screening level concentration

< - less than laboratory reporting detection limit (RDL)
COGCC - Colorado Oil and Gas Convservation Commission
mg/kg - milligrams per kilogram
mmhos/cm - millimhos per centimeter
su - standard unit
na - not analyzed

# ANALYTICAL REPORT

November 16, 2021



## Caerus Oil and Gas

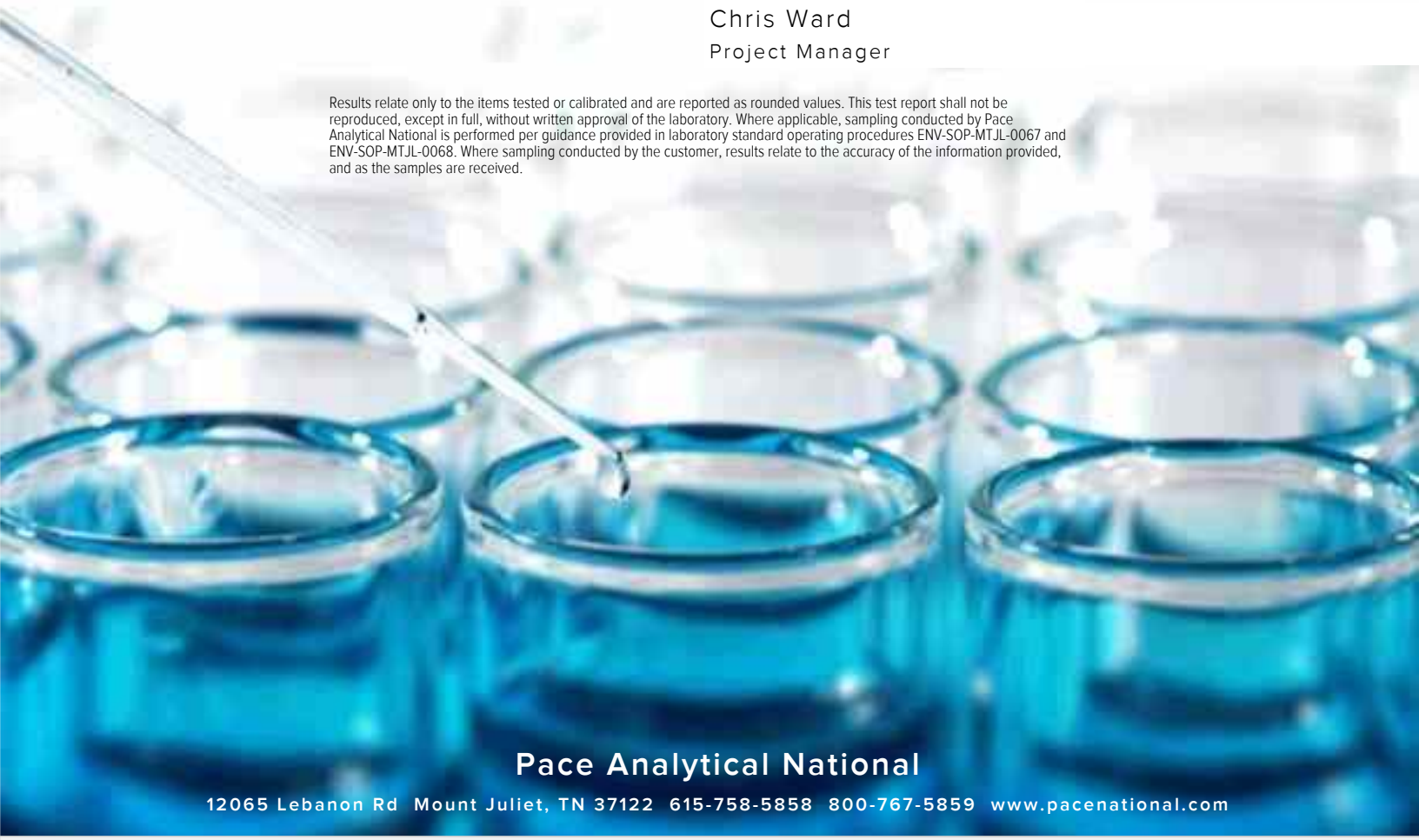
| | |
|---|---|
| Sample Delivery Group: | L1427665 |
| Samples Received: | 11/05/2021 |
| Project Number: | E34-496 |
| Description: | E34-496 |
| Site: | E34-496 |
| Report To: | Brett Middleton<br>143 Diamond Avenue<br>Parachute, CO 81635 |

Entire Report Reviewed By:

Chris Ward

Project Manager





Pace Analytical National

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

# TABLE OF CONTENTS

## 20211103-E34-496(8508F)@5' L1427665-01 Solid

Collected by: Evan Mason | Collected date/time: 11/03/21 10:15 | Received date/time: 11/05/21 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Calculated Results | WG1771259 | 1 | 11/12/21 11:28 | 11/12/21 11:28 | CCE | Mt. Juliet, TN |
| Wet Chemistry by Method 7199 | WG1771662 | 1 | 11/10/21 21:00 | 11/11/21 20:29 | JER | Mt. Juliet, TN |
| Wet Chemistry by Method 9045D | WG1770243 | 1 | 11/07/21 07:38 | 11/07/21 13:00 | PSN | Mt. Juliet, TN |
| Wet Chemistry by Method 9050AMod | WG1773981 | 1 | 11/14/21 06:44 | 11/14/21 09:24 | ARD | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B | WG1771234 | 1 | 11/10/21 14:34 | 11/11/21 18:51 | CCE | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B-NE493 Ch 2 | WG1771255 | 1 | 11/11/21 08:05 | 11/12/21 15:28 | CCE | Mt. Juliet, TN |
| Metals (ICPMS) by Method 6020 | WG1771244 | 5 | 11/10/21 14:23 | 11/10/21 23:50 | LD | Mt. Juliet, TN |
| Volatile Organic Compounds (GC) by Method 8015D/GRO | WG1770533 | 1 | 11/06/21 18:33 | 11/09/21 08:14 | DWR | Mt. Juliet, TN |
| Volatile Organic Compounds (GC/MS) by Method 8260B | WG1771321 | 1 | 11/06/21 18:33 | 11/09/21 16:08 | DWR | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG1772007 | 1 | 11/10/21 13:33 | 11/11/21 04:28 | JAS | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG1772007 | 5 | 11/10/21 13:33 | 11/11/21 16:02 | JAS | Mt. Juliet, TN |
| Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM | WG1772075 | 1 | 11/11/21 08:29 | 11/11/21 17:38 | LEA | Mt. Juliet, TN |

## 20211103-E34-496(8508E)@5' L1427665-02 Solid

Collected by: Evan Mason | Collected date/time: 11/03/21 10:20 | Received date/time: 11/05/21 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Calculated Results | WG1771259 | 1 | 11/12/21 11:36 | 11/12/21 11:36 | CCE | Mt. Juliet, TN |
| Wet Chemistry by Method 7199 | WG1771662 | 1 | 11/10/21 21:00 | 11/11/21 20:44 | JER | Mt. Juliet, TN |
| Wet Chemistry by Method 9045D | WG1770243 | 1 | 11/07/21 07:38 | 11/07/21 13:00 | PSN | Mt. Juliet, TN |
| Wet Chemistry by Method 9050AMod | WG1773981 | 1 | 11/14/21 06:44 | 11/14/21 09:24 | ARD | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B | WG1771234 | 1 | 11/10/21 14:34 | 11/11/21 18:04 | CCE | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B-NE493 Ch 2 | WG1771255 | 1 | 11/11/21 08:05 | 11/12/21 15:31 | CCE | Mt. Juliet, TN |
| Metals (ICPMS) by Method 6020 | WG1771244 | 5 | 11/10/21 14:23 | 11/10/21 22:47 | LD | Mt. Juliet, TN |
| Volatile Organic Compounds (GC) by Method 8015D/GRO | WG1770533 | 1 | 11/06/21 18:33 | 11/09/21 08:36 | DWR | Mt. Juliet, TN |
| Volatile Organic Compounds (GC/MS) by Method 8260B | WG1771321 | 1 | 11/06/21 18:33 | 11/09/21 16:27 | DWR | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG1772007 | 1 | 11/10/21 13:33 | 11/11/21 04:41 | JAS | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG1772007 | 5 | 11/10/21 13:33 | 11/11/21 15:35 | JAS | Mt. Juliet, TN |
| Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM | WG1772075 | 1 | 11/11/21 08:29 | 11/11/21 17:58 | LEA | Mt. Juliet, TN |

## 20211103-E34-496(FL-8508E)@5' L1427665-03 Solid

Collected by: Evan Mason | Collected date/time: 11/03/21 10:30 | Received date/time: 11/05/21 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Calculated Results | WG1771259 | 1 | 11/12/21 11:39 | 11/12/21 11:39 | CCE | Mt. Juliet, TN |
| Wet Chemistry by Method 7199 | WG1771662 | 1 | 11/10/21 21:00 | 11/11/21 20:49 | JER | Mt. Juliet, TN |
| Wet Chemistry by Method 9045D | WG1770243 | 1 | 11/07/21 07:38 | 11/07/21 13:00 | PSN | Mt. Juliet, TN |
| Wet Chemistry by Method 9050AMod | WG1773981 | 1 | 11/14/21 06:44 | 11/14/21 09:24 | ARD | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B | WG1771234 | 1 | 11/10/21 14:34 | 11/11/21 18:54 | CCE | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B | WG1771234 | 5 | 11/10/21 14:34 | 11/12/21 11:08 | CCE | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B-NE493 Ch 2 | WG1771255 | 1 | 11/11/21 08:05 | 11/12/21 15:34 | CCE | Mt. Juliet, TN |
| Metals (ICPMS) by Method 6020 | WG1771244 | 5 | 11/10/21 14:23 | 11/10/21 23:54 | LD | Mt. Juliet, TN |
| Volatile Organic Compounds (GC) by Method 8015D/GRO | WG1770533 | 1 | 11/06/21 18:33 | 11/09/21 08:58 | DWR | Mt. Juliet, TN |
| Volatile Organic Compounds (GC/MS) by Method 8260B | WG1771559 | 1 | 11/06/21 18:33 | 11/10/21 05:41 | JAH | Mt. Juliet, TN |
| Volatile Organic Compounds (GC/MS) by Method 8260B | WG1774477 | 1 | 11/06/21 18:33 | 11/16/21 11:04 | JHH | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG1772007 | 1 | 11/10/21 13:33 | 11/11/21 04:54 | JAS | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG1772007 | 2 | 11/10/21 13:33 | 11/11/21 15:09 | JAS | Mt. Juliet, TN |
| Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM | WG1772075 | 1 | 11/11/21 08:29 | 11/11/21 18:38 | LEA | Mt. Juliet, TN |

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

# SAMPLE SUMMARY

## 20211103-E34-496(FL-8508F)@5' L1427665-04 Solid

Collected by: Evan Mason
Collected date/time: 11/03/21 10:40
Received date/time: 11/05/21 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Calculated Results | WG1771259 | 1 | 11/12/21 11:42 | 11/12/21 11:42 | CCE | Mt. Juliet, TN |
| Wet Chemistry by Method 7199 | WG1771662 | 1 | 11/10/21 21:00 | 11/11/21 20:55 | JER | Mt. Juliet, TN |
| Wet Chemistry by Method 9045D | WG1770243 | 1 | 11/07/21 07:38 | 11/07/21 13:00 | PSN | Mt. Juliet, TN |
| Wet Chemistry by Method 9050AMod | WG1773981 | 1 | 11/14/21 06:44 | 11/14/21 09:24 | ARD | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B | WG1771234 | 1 | 11/10/21 14:34 | 11/11/21 18:57 | CCE | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B-NE493 Ch 2 | WG1771255 | 1 | 11/11/21 08:05 | 11/12/21 15:37 | CCE | Mt. Juliet, TN |
| Metals (ICPMS) by Method 6020 | WG1771244 | 5 | 11/10/21 14:23 | 11/10/21 23:58 | LD | Mt. Juliet, TN |
| Volatile Organic Compounds (GC) by Method 8015D/GRO | WG1770533 | 1 | 11/06/21 18:33 | 11/09/21 09:20 | DWR | Mt. Juliet, TN |
| Volatile Organic Compounds (GC/MS) by Method 8260B | WG1771559 | 1 | 11/06/21 18:33 | 11/10/21 06:00 | JAH | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG1772007 | 1 | 11/10/21 13:33 | 11/11/21 05:07 | JAS | Mt. Juliet, TN |
| Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM | WG1772075 | 1 | 11/11/21 08:29 | 11/11/21 18:58 | LEA | Mt. Juliet, TN |

## 20211103-E34-496(FL-SEP)@6' L1427665-06 Solid

Collected by: Evan Mason
Collected date/time: 11/03/21 11:00
Received date/time: 11/05/21 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Calculated Results | WG1771259 | 1 | 11/12/21 11:45 | 11/12/21 11:45 | CCE | Mt. Juliet, TN |
| Wet Chemistry by Method 7199 | WG1771662 | 1 | 11/10/21 21:00 | 11/11/21 21:05 | JER | Mt. Juliet, TN |
| Wet Chemistry by Method 9045D | WG1770243 | 1 | 11/07/21 07:38 | 11/07/21 13:00 | PSN | Mt. Juliet, TN |
| Wet Chemistry by Method 9050AMod | WG1773983 | 1 | 11/15/21 01:24 | 11/15/21 08:53 | ARD | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B | WG1771234 | 1 | 11/10/21 14:34 | 11/11/21 19:05 | CCE | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B-NE493 Ch 2 | WG1771255 | 1 | 11/11/21 08:05 | 11/12/21 15:40 | CCE | Mt. Juliet, TN |
| Metals (ICPMS) by Method 6020 | WG1771244 | 5 | 11/10/21 14:23 | 11/11/21 00:10 | LD | Mt. Juliet, TN |
| Volatile Organic Compounds (GC) by Method 8015D/GRO | WG1771404 | 1.01 | 11/06/21 18:33 | 11/09/21 18:50 | MGF | Mt. Juliet, TN |
| Volatile Organic Compounds (GC/MS) by Method 8260B | WG1771559 | 1 | 11/06/21 18:33 | 11/10/21 06:19 | JAH | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG1772007 | 1 | 11/10/21 13:33 | 11/11/21 05:20 | JAS | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG1772007 | 10 | 11/10/21 13:33 | 11/11/21 15:49 | JAS | Mt. Juliet, TN |
| Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM | WG1772075 | 1 | 11/11/21 08:29 | 11/11/21 19:18 | LEA | 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 | 6.42 | | 1 | 11/12/2021 11:28 | WG1771259 |

## Wet Chemistry by Method 7199

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 0.364 | J | 0.255 | 1.00 | 1 | 11/11/2021 20:29 | WG1771662 |

## Wet Chemistry by Method 9045D

| Analyte | Result su | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| pH | 9.64 | T8 | 1 | 11/07/2021 13:00 | WG1770243 |

Sample Narrative:

L1427665-01 WG1770243: 9.64 at 18.9C

## Wet Chemistry by Method 9050AMod

| Analyte | Result umhos/cm | Qualifier | RDL umhos/cm | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| Specific Conductance | 522 | | 10.0 | 1 | 11/14/2021 09:24 | WG1773981 |

Sample Narrative:

L1427665-01 WG1773981: at 25C

## Metals (ICP) by Method 6010B

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Barium | 3030 | | 0.0852 | 0.500 | 1 | 11/11/2021 18:51 | WG1771234 |
| Cadmium | 0.124 | J | 0.0471 | 0.500 | 1 | 11/11/2021 18:51 | WG1771234 |
| Copper | 87.9 | | 0.400 | 2.00 | 1 | 11/11/2021 18:51 | WG1771234 |
| Lead | 10.8 | | 0.208 | 0.500 | 1 | 11/11/2021 18:51 | WG1771234 |
| Nickel | 18.3 | | 0.132 | 2.00 | 1 | 11/11/2021 18:51 | WG1771234 |
| Selenium | U | | 0.764 | 2.00 | 1 | 11/11/2021 18:51 | WG1771234 |
| Silver | U | | 0.127 | 1.00 | 1 | 11/11/2021 18:51 | WG1771234 |
| Zinc | 43.1 | | 0.832 | 5.00 | 1 | 11/11/2021 18:51 | WG1771234 |

## 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 | 0.615 | | 0.0167 | 0.200 | 1 | 11/12/2021 15:28 | WG1771255 |

## Metals (ICPMS) by Method 6020

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Arsenic | 4.63 | | 0.100 | 1.00 | 5 | 11/10/2021 23:50 | WG1771244 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| TPH (GC/FID) Low Fraction | 0.321 | | 0.0217 | 0.100 | 1 | 11/09/2021 08:14 | WG1770533 |
| *(S) a,a,a-Trifluorotoluene(FID)* | *91.6* | | | *77.0-120* | | *11/09/2021 08:14* | WG1770533 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Benzene | U | | 0.000467 | 0.00100 | 1 | 11/09/2021 16:08 | WG1771321 |
| Toluene | 0.00153 | J | 0.00130 | 0.00500 | 1 | 11/09/2021 16:08 | WG1771321 |
| Ethylbenzene | U | | 0.000737 | 0.00250 | 1 | 11/09/2021 16:08 | WG1771321 |
| Xylenes, Total | 0.00448 | J | 0.000880 | 0.00650 | 1 | 11/09/2021 16:08 | WG1771321 |
| 1,2,4-Trimethylbenzene | 0.00213 | J | 0.00158 | 0.00500 | 1 | 11/09/2021 16:08 | WG1771321 |
| 1,3,5-Trimethylbenzene | U | | 0.00200 | 0.00500 | 1 | 11/09/2021 16:08 | WG1771321 |
| *(S) Toluene-d8* | *110* | | | *75.0-131* | | *11/09/2021 16:08* | WG1771321 |
| *(S) 4-Bromofluorobenzene* | *93.6* | | | *67.0-138* | | *11/09/2021 16:08* | WG1771321 |
| *(S) 1,2-Dichloroethane-d4* | *97.9* | | | *70.0-130* | | *11/09/2021 16:08* | WG1771321 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| C10-C28 Diesel Range | 165 | | 1.61 | 4.00 | 1 | 11/11/2021 04:28 | WG1772007 |
| C28-C36 Motor Oil Range | 297 | | 1.37 | 20.0 | 5 | 11/11/2021 16:02 | WG1772007 |
| *(S) o-Terphenyl* | *39.7* | | | *18.0-148* | | *11/11/2021 16:02* | WG1772007 |
| *(S) o-Terphenyl* | *35.1* | | | *18.0-148* | | *11/11/2021 04:28* | WG1772007 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Anthracene | 0.00258 | J | 0.00230 | 0.00600 | 1 | 11/11/2021 17:38 | WG1772075 |
| Acenaphthene | 0.00381 | J | 0.00209 | 0.00600 | 1 | 11/11/2021 17:38 | WG1772075 |
| Acenaphthylene | U | | 0.00216 | 0.00600 | 1 | 11/11/2021 17:38 | WG1772075 |
| Benzo(a)anthracene | U | | 0.00173 | 0.00600 | 1 | 11/11/2021 17:38 | WG1772075 |
| Benzo(a)pyrene | U | | 0.00179 | 0.00600 | 1 | 11/11/2021 17:38 | WG1772075 |
| Benzo(b)fluoranthene | U | | 0.00153 | 0.00600 | 1 | 11/11/2021 17:38 | WG1772075 |
| Benzo(g,h,i)perylene | U | | 0.00177 | 0.00600 | 1 | 11/11/2021 17:38 | WG1772075 |
| Benzo(k)fluoranthene | U | | 0.00215 | 0.00600 | 1 | 11/11/2021 17:38 | WG1772075 |
| Chrysene | U | | 0.00232 | 0.00600 | 1 | 11/11/2021 17:38 | WG1772075 |
| Dibenz(a,h)anthracene | U | | 0.00172 | 0.00600 | 1 | 11/11/2021 17:38 | WG1772075 |
| Fluoranthene | 0.00400 | J | 0.00227 | 0.00600 | 1 | 11/11/2021 17:38 | WG1772075 |
| Fluorene | 0.00842 | | 0.00205 | 0.00600 | 1 | 11/11/2021 17:38 | WG1772075 |
| Indeno(1,2,3-cd)pyrene | U | | 0.00181 | 0.00600 | 1 | 11/11/2021 17:38 | WG1772075 |
| Naphthalene | U | | 0.00408 | 0.0200 | 1 | 11/11/2021 17:38 | WG1772075 |
| Phenanthrene | 0.0441 | | 0.00231 | 0.00600 | 1 | 11/11/2021 17:38 | WG1772075 |
| Pyrene | 0.00404 | J | 0.00200 | 0.00600 | 1 | 11/11/2021 17:38 | WG1772075 |
| 1-Methylnaphthalene | U | | 0.00449 | 0.0200 | 1 | 11/11/2021 17:38 | WG1772075 |
| 2-Methylnaphthalene | U | | 0.00427 | 0.0200 | 1 | 11/11/2021 17:38 | WG1772075 |
| 2-Chloronaphthalene | U | | 0.00466 | 0.0200 | 1 | 11/11/2021 17:38 | WG1772075 |
| *(S) p-Terphenyl-d14* | *84.2* | | | *23.0-120* | | *11/11/2021 17:38* | WG1772075 |
| *(S) Nitrobenzene-d5* | *53.2* | | | *14.0-149* | | *11/11/2021 17:38* | WG1772075 |
| *(S) 2-Fluorobiphenyl* | *64.8* | | | *34.0-125* | | *11/11/2021 17:38* | WG1772075 |

## Calculated Results

| Analyte | Result | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| Sodium Adsorption Ratio | 2.85 | | 1 | 11/12/2021 11:36 | WG1771259 |

## Wet Chemistry by Method 7199

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 0.527 | J | 0.255 | 1.00 | 1 | 11/11/2021 20:44 | WG1771662 |

## Wet Chemistry by Method 9045D

| Analyte | Result su | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| pH | 8.77 | T8 | 1 | 11/07/2021 13:00 | WG1770243 |

Sample Narrative:

L1427665-02 WG1770243: 8.77 at 19.1C

## Wet Chemistry by Method 9050AMod

| Analyte | Result umhos/cm | Qualifier | RDL umhos/cm | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| Specific Conductance | 291 | | 10.0 | 1 | 11/14/2021 09:24 | WG1773981 |

Sample Narrative:

L1427665-02 WG1773981: at 25C

## Metals (ICP) by Method 6010B

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Barium | 2060 | | 0.0852 | 0.500 | 1 | 11/11/2021 18:04 | WG1771234 |
| Cadmium | 0.259 | J | 0.0471 | 0.500 | 1 | 11/11/2021 18:04 | WG1771234 |
| Copper | 15.6 | | 0.400 | 2.00 | 1 | 11/11/2021 18:04 | WG1771234 |
| Lead | 10.5 | | 0.208 | 0.500 | 1 | 11/11/2021 18:04 | WG1771234 |
| Nickel | 20.0 | | 0.132 | 2.00 | 1 | 11/11/2021 18:04 | WG1771234 |
| Selenium | U | | 0.764 | 2.00 | 1 | 11/11/2021 18:04 | WG1771234 |
| Silver | U | | 0.127 | 1.00 | 1 | 11/11/2021 18:04 | WG1771234 |
| Zinc | 42.5 | | 0.832 | 5.00 | 1 | 11/11/2021 18:04 | WG1771234 |

## 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 | 0.502 | | 0.0167 | 0.200 | 1 | 11/12/2021 15:31 | WG1771255 |

## Metals (ICPMS) by Method 6020

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Arsenic | 4.13 | | 0.100 | 1.00 | 5 | 11/10/2021 22:47 | WG1771244 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| TPH (GC/FID) Low Fraction | 0.0599 | B J | 0.0217 | 0.100 | 1 | 11/09/2021 08:36 | WG1770533 |
| *(S) a,a,a-Trifluorotoluene(FID)* | *85.0* | | | *77.0-120* | | *11/09/2021 08:36* | WG1770533 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Benzene | U | | 0.000467 | 0.00100 | 1 | 11/09/2021 16:27 | WG1771321 |
| Toluene | 0.00150 | J | 0.00130 | 0.00500 | 1 | 11/09/2021 16:27 | WG1771321 |
| Ethylbenzene | U | | 0.000737 | 0.00250 | 1 | 11/09/2021 16:27 | WG1771321 |
| Xylenes, Total | 0.00333 | J | 0.000880 | 0.00650 | 1 | 11/09/2021 16:27 | WG1771321 |
| 1,2,4-Trimethylbenzene | U | | 0.00158 | 0.00500 | 1 | 11/09/2021 16:27 | WG1771321 |
| 1,3,5-Trimethylbenzene | U | | 0.00200 | 0.00500 | 1 | 11/09/2021 16:27 | WG1771321 |
| *(S) Toluene-d8* | *108* | | | *75.0-131* | | *11/09/2021 16:27* | WG1771321 |
| *(S) 4-Bromofluorobenzene* | *91.1* | | | *67.0-138* | | *11/09/2021 16:27* | WG1771321 |
| *(S) 1,2-Dichloroethane-d4* | *101* | | | *70.0-130* | | *11/09/2021 16:27* | WG1771321 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| C10-C28 Diesel Range | 104 | | 1.61 | 4.00 | 1 | 11/11/2021 04:41 | WG1772007 |
| C28-C36 Motor Oil Range | 292 | | 1.37 | 20.0 | 5 | 11/11/2021 15:35 | WG1772007 |
| *(S) o-Terphenyl* | *52.5* | | | *18.0-148* | | *11/11/2021 04:41* | WG1772007 |
| *(S) o-Terphenyl* | *61.9* | | | *18.0-148* | | *11/11/2021 15:35* | WG1772007 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Anthracene | U | | 0.00230 | 0.00600 | 1 | 11/11/2021 17:58 | WG1772075 |
| Acenaphthene | U | | 0.00209 | 0.00600 | 1 | 11/11/2021 17:58 | WG1772075 |
| Acenaphthylene | U | | 0.00216 | 0.00600 | 1 | 11/11/2021 17:58 | WG1772075 |
| Benzo(a)anthracene | U | | 0.00173 | 0.00600 | 1 | 11/11/2021 17:58 | WG1772075 |
| Benzo(a)pyrene | U | | 0.00179 | 0.00600 | 1 | 11/11/2021 17:58 | WG1772075 |
| Benzo(b)fluoranthene | U | | 0.00153 | 0.00600 | 1 | 11/11/2021 17:58 | WG1772075 |
| Benzo(g,h,i)perylene | U | | 0.00177 | 0.00600 | 1 | 11/11/2021 17:58 | WG1772075 |
| Benzo(k)fluoranthene | U | | 0.00215 | 0.00600 | 1 | 11/11/2021 17:58 | WG1772075 |
| Chrysene | U | | 0.00232 | 0.00600 | 1 | 11/11/2021 17:58 | WG1772075 |
| Dibenz(a,h)anthracene | U | | 0.00172 | 0.00600 | 1 | 11/11/2021 17:58 | WG1772075 |
| Fluoranthene | U | | 0.00227 | 0.00600 | 1 | 11/11/2021 17:58 | WG1772075 |
| Fluorene | U | | 0.00205 | 0.00600 | 1 | 11/11/2021 17:58 | WG1772075 |
| Indeno(1,2,3-cd)pyrene | U | | 0.00181 | 0.00600 | 1 | 11/11/2021 17:58 | WG1772075 |
| Naphthalene | U | | 0.00408 | 0.0200 | 1 | 11/11/2021 17:58 | WG1772075 |
| Phenanthrene | U | | 0.00231 | 0.00600 | 1 | 11/11/2021 17:58 | WG1772075 |
| Pyrene | U | | 0.00200 | 0.00600 | 1 | 11/11/2021 17:58 | WG1772075 |
| 1-Methylnaphthalene | U | | 0.00449 | 0.0200 | 1 | 11/11/2021 17:58 | WG1772075 |
| 2-Methylnaphthalene | U | | 0.00427 | 0.0200 | 1 | 11/11/2021 17:58 | WG1772075 |
| 2-Chloronaphthalene | U | | 0.00466 | 0.0200 | 1 | 11/11/2021 17:58 | WG1772075 |
| *(S) p-Terphenyl-d14* | *73.6* | | | *23.0-120* | | *11/11/2021 17:58* | WG1772075 |
| *(S) Nitrobenzene-d5* | *44.9* | | | *14.0-149* | | *11/11/2021 17:58* | WG1772075 |
| *(S) 2-Fluorobiphenyl* | *57.6* | | | *34.0-125* | | *11/11/2021 17:58* | WG1772075 |

## Calculated Results

| Analyte | Result | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| Sodium Adsorption Ratio | 1.51 | | 1 | 11/12/2021 11:39 | WG1771259 |

## Wet Chemistry by Method 7199

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 0.474 | J | 0.255 | 1.00 | 1 | 11/11/2021 20:49 | WG1771662 |

## Wet Chemistry by Method 9045D

| Analyte | Result su | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| pH | 8.71 | T8 | 1 | 11/07/2021 13:00 | WG1770243 |

Sample Narrative:

L1427665-03 WG1770243: 8.71 at 19C

## Wet Chemistry by Method 9050AMod

| Analyte | Result umhos/cm | Qualifier | RDL umhos/cm | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| Specific Conductance | 262 | | 10.0 | 1 | 11/14/2021 09:24 | WG1773981 |

Sample Narrative:

L1427665-03 WG1773981: at 25C

## Metals (ICP) by Method 6010B

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Barium | 5060 | | 0.426 | 2.50 | 5 | 11/12/2021 11:08 | WG1771234 |
| Cadmium | U | | 0.0471 | 0.500 | 1 | 11/11/2021 18:54 | WG1771234 |
| Copper | 20.2 | | 0.400 | 2.00 | 1 | 11/11/2021 18:54 | WG1771234 |
| Lead | 9.97 | | 0.208 | 0.500 | 1 | 11/11/2021 18:54 | WG1771234 |
| Nickel | 17.7 | | 0.132 | 2.00 | 1 | 11/11/2021 18:54 | WG1771234 |
| Selenium | U | | 0.764 | 2.00 | 1 | 11/11/2021 18:54 | WG1771234 |
| Silver | U | | 0.127 | 1.00 | 1 | 11/11/2021 18:54 | WG1771234 |
| Zinc | 37.3 | | 0.832 | 5.00 | 1 | 11/11/2021 18:54 | WG1771234 |

## 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 | 0.387 | | 0.0167 | 0.200 | 1 | 11/12/2021 15:34 | WG1771255 |

## Metals (ICPMS) by Method 6020

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Arsenic | 4.27 | | 0.100 | 1.00 | 5 | 11/10/2021 23:54 | WG1771244 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| TPH (GC/FID) Low Fraction | 0.0607 | B J | 0.0217 | 0.100 | 1 | 11/09/2021 08:58 | WG1770533 |
| *(S) a,a,a-Trifluorotoluene(FID)* | *89.1* | | | *77.0-120* | | *11/09/2021 08:58* | WG1770533 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Benzene | U | | 0.000467 | 0.00100 | 1 | 11/10/2021 05:41 | WG1771559 |
| Toluene | U | | 0.00130 | 0.00500 | 1 | 11/10/2021 05:41 | WG1771559 |
| Ethylbenzene | U | | 0.000737 | 0.00250 | 1 | 11/10/2021 05:41 | WG1771559 |
| Xylenes, Total | 0.00117 | J | 0.000880 | 0.00650 | 1 | 11/10/2021 05:41 | WG1771559 |
| 1,2,4-Trimethylbenzene | 0.00500 | J | 0.00158 | 0.00500 | 1 | 11/16/2021 11:04 | WG1774477 |
| 1,3,5-Trimethylbenzene | U | | 0.00200 | 0.00500 | 1 | 11/10/2021 05:41 | WG1771559 |
| *(S) Toluene-d8* | *101* | | | *75.0-131* | | *11/10/2021 05:41* | WG1771559 |
| *(S) Toluene-d8* | *115* | | | *75.0-131* | | *11/16/2021 11:04* | WG1774477 |
| *(S) 4-Bromofluorobenzene* | *101* | | | *67.0-138* | | *11/10/2021 05:41* | WG1771559 |
| *(S) 4-Bromofluorobenzene* | *97.2* | | | *67.0-138* | | *11/16/2021 11:04* | WG1774477 |
| *(S) 1,2-Dichloroethane-d4* | *100* | | | *70.0-130* | | *11/10/2021 05:41* | WG1771559 |
| *(S) 1,2-Dichloroethane-d4* | *104* | | | *70.0-130* | | *11/16/2021 11:04* | WG1774477 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| C10-C28 Diesel Range | 33.0 | | 1.61 | 4.00 | 1 | 11/11/2021 04:54 | WG1772007 |
| C28-C36 Motor Oil Range | 103 | | 0.548 | 8.00 | 2 | 11/11/2021 15:09 | WG1772007 |
| *(S) o-Terphenyl* | *42.3* | | | *18.0-148* | | *11/11/2021 15:09* | WG1772007 |
| *(S) o-Terphenyl* | *41.0* | | | *18.0-148* | | *11/11/2021 04:54* | WG1772007 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Anthracene | U | | 0.00230 | 0.00600 | 1 | 11/11/2021 18:38 | WG1772075 |
| Acenaphthene | U | | 0.00209 | 0.00600 | 1 | 11/11/2021 18:38 | WG1772075 |
| Acenaphthylene | U | | 0.00216 | 0.00600 | 1 | 11/11/2021 18:38 | WG1772075 |
| Benzo(a)anthracene | U | | 0.00173 | 0.00600 | 1 | 11/11/2021 18:38 | WG1772075 |
| Benzo(a)pyrene | U | | 0.00179 | 0.00600 | 1 | 11/11/2021 18:38 | WG1772075 |
| Benzo(b)fluoranthene | U | | 0.00153 | 0.00600 | 1 | 11/11/2021 18:38 | WG1772075 |
| Benzo(g,h,i)perylene | U | | 0.00177 | 0.00600 | 1 | 11/11/2021 18:38 | WG1772075 |
| Benzo(k)fluoranthene | U | | 0.00215 | 0.00600 | 1 | 11/11/2021 18:38 | WG1772075 |
| Chrysene | U | | 0.00232 | 0.00600 | 1 | 11/11/2021 18:38 | WG1772075 |
| Dibenz(a,h)anthracene | U | | 0.00172 | 0.00600 | 1 | 11/11/2021 18:38 | WG1772075 |
| Fluoranthene | U | | 0.00227 | 0.00600 | 1 | 11/11/2021 18:38 | WG1772075 |
| Fluorene | U | | 0.00205 | 0.00600 | 1 | 11/11/2021 18:38 | WG1772075 |
| Indeno(1,2,3-cd)pyrene | U | | 0.00181 | 0.00600 | 1 | 11/11/2021 18:38 | WG1772075 |
| Naphthalene | U | | 0.00408 | 0.0200 | 1 | 11/11/2021 18:38 | WG1772075 |
| Phenanthrene | U | | 0.00231 | 0.00600 | 1 | 11/11/2021 18:38 | WG1772075 |
| Pyrene | U | | 0.00200 | 0.00600 | 1 | 11/11/2021 18:38 | WG1772075 |
| 1-Methylnaphthalene | U | | 0.00449 | 0.0200 | 1 | 11/11/2021 18:38 | WG1772075 |
| 2-Methylnaphthalene | 0.00562 | J | 0.00427 | 0.0200 | 1 | 11/11/2021 18:38 | WG1772075 |
| 2-Chloronaphthalene | U | | 0.00466 | 0.0200 | 1 | 11/11/2021 18:38 | WG1772075 |
| *(S) p-Terphenyl-d14* | *54.4* | | | *23.0-120* | | *11/11/2021 18:38* | WG1772075 |
| *(S) Nitrobenzene-d5* | *36.6* | | | *14.0-149* | | *11/11/2021 18:38* | WG1772075 |
| *(S) 2-Fluorobiphenyl* | *44.9* | | | *34.0-125* | | *11/11/2021 18:38* | WG1772075 |

## Calculated Results

| Analyte | Result | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| Sodium Adsorption Ratio | 2.64 | | 1 | 11/12/2021 11:42 | WG1771259 |

## Wet Chemistry by Method 7199

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 0.502 | J | 0.255 | 1.00 | 1 | 11/11/2021 20:55 | WG1771662 |

## Wet Chemistry by Method 9045D

| Analyte | Result su | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| pH | 8.19 | T8 | 1 | 11/07/2021 13:00 | WG1770243 |

Sample Narrative:

L1427665-04 WG1770243: 8.19 at 19C

## Wet Chemistry by Method 9050AMod

| Analyte | Result umhos/cm | Qualifier | RDL umhos/cm | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| Specific Conductance | 284 | | 10.0 | 1 | 11/14/2021 09:24 | WG1773981 |

Sample Narrative:

L1427665-04 WG1773981: at 25C

## Metals (ICP) by Method 6010B

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Barium | 4280 | | 0.0852 | 0.500 | 1 | 11/11/2021 18:57 | WG1771234 |
| Cadmium | U | | 0.0471 | 0.500 | 1 | 11/11/2021 18:57 | WG1771234 |
| Copper | 15.7 | | 0.400 | 2.00 | 1 | 11/11/2021 18:57 | WG1771234 |
| Lead | 9.27 | | 0.208 | 0.500 | 1 | 11/11/2021 18:57 | WG1771234 |
| Nickel | 16.1 | | 0.132 | 2.00 | 1 | 11/11/2021 18:57 | WG1771234 |
| Selenium | U | | 0.764 | 2.00 | 1 | 11/11/2021 18:57 | WG1771234 |
| Silver | U | | 0.127 | 1.00 | 1 | 11/11/2021 18:57 | WG1771234 |
| Zinc | 43.0 | | 0.832 | 5.00 | 1 | 11/11/2021 18:57 | WG1771234 |

## 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 | 0.342 | | 0.0167 | 0.200 | 1 | 11/12/2021 15:37 | WG1771255 |

## Metals (ICPMS) by Method 6020

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Arsenic | 3.64 | | 0.100 | 1.00 | 5 | 11/10/2021 23:58 | WG1771244 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| TPH (GC/FID) Low Fraction | 0.0665 | B J | 0.0217 | 0.100 | 1 | 11/09/2021 09:20 | WG1770533 |
| *(S) a,a,a-Trifluorotoluene(FID)* | *87.3* | | | *77.0-120* | | *11/09/2021 09:20* | WG1770533 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Benzene | U | | 0.000467 | 0.00100 | 1 | 11/10/2021 06:00 | WG1771559 |
| Toluene | U | | 0.00130 | 0.00500 | 1 | 11/10/2021 06:00 | WG1771559 |
| Ethylbenzene | U | | 0.000737 | 0.00250 | 1 | 11/10/2021 06:00 | WG1771559 |
| Xylenes, Total | 0.00100 | J | 0.000880 | 0.00650 | 1 | 11/10/2021 06:00 | WG1771559 |
| 1,2,4-Trimethylbenzene | U | | 0.00158 | 0.00500 | 1 | 11/10/2021 06:00 | WG1771559 |
| 1,3,5-Trimethylbenzene | U | | 0.00200 | 0.00500 | 1 | 11/10/2021 06:00 | WG1771559 |
| *(S) Toluene-d8* | *101* | | | *75.0-131* | | *11/10/2021 06:00* | WG1771559 |
| *(S) 4-Bromofluorobenzene* | *104* | | | *67.0-138* | | *11/10/2021 06:00* | WG1771559 |
| *(S) 1,2-Dichloroethane-d4* | *99.3* | | | *70.0-130* | | *11/10/2021 06:00* | WG1771559 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| C10-C28 Diesel Range | 24.1 | | 1.61 | 4.00 | 1 | 11/11/2021 05:07 | WG1772007 |
| C28-C36 Motor Oil Range | 46.0 | | 0.274 | 4.00 | 1 | 11/11/2021 05:07 | WG1772007 |
| *(S) o-Terphenyl* | *39.9* | | | *18.0-148* | | *11/11/2021 05:07* | WG1772007 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Anthracene | U | | 0.00230 | 0.00600 | 1 | 11/11/2021 18:58 | WG1772075 |
| Acenaphthene | U | | 0.00209 | 0.00600 | 1 | 11/11/2021 18:58 | WG1772075 |
| Acenaphthylene | U | | 0.00216 | 0.00600 | 1 | 11/11/2021 18:58 | WG1772075 |
| Benzo(a)anthracene | U | | 0.00173 | 0.00600 | 1 | 11/11/2021 18:58 | WG1772075 |
| Benzo(a)pyrene | U | | 0.00179 | 0.00600 | 1 | 11/11/2021 18:58 | WG1772075 |
| Benzo(b)fluoranthene | U | | 0.00153 | 0.00600 | 1 | 11/11/2021 18:58 | WG1772075 |
| Benzo(g,h,i)perylene | U | | 0.00177 | 0.00600 | 1 | 11/11/2021 18:58 | WG1772075 |
| Benzo(k)fluoranthene | U | | 0.00215 | 0.00600 | 1 | 11/11/2021 18:58 | WG1772075 |
| Chrysene | U | | 0.00232 | 0.00600 | 1 | 11/11/2021 18:58 | WG1772075 |
| Dibenz(a,h)anthracene | U | | 0.00172 | 0.00600 | 1 | 11/11/2021 18:58 | WG1772075 |
| Fluoranthene | U | | 0.00227 | 0.00600 | 1 | 11/11/2021 18:58 | WG1772075 |
| Fluorene | U | | 0.00205 | 0.00600 | 1 | 11/11/2021 18:58 | WG1772075 |
| Indeno(1,2,3-cd)pyrene | U | | 0.00181 | 0.00600 | 1 | 11/11/2021 18:58 | WG1772075 |
| Naphthalene | U | | 0.00408 | 0.0200 | 1 | 11/11/2021 18:58 | WG1772075 |
| Phenanthrene | U | | 0.00231 | 0.00600 | 1 | 11/11/2021 18:58 | WG1772075 |
| Pyrene | U | | 0.00200 | 0.00600 | 1 | 11/11/2021 18:58 | WG1772075 |
| 1-Methylnaphthalene | U | | 0.00449 | 0.0200 | 1 | 11/11/2021 18:58 | WG1772075 |
| 2-Methylnaphthalene | 0.00561 | J | 0.00427 | 0.0200 | 1 | 11/11/2021 18:58 | WG1772075 |
| 2-Chloronaphthalene | U | | 0.00466 | 0.0200 | 1 | 11/11/2021 18:58 | WG1772075 |
| *(S) p-Terphenyl-d14* | *69.7* | | | *23.0-120* | | *11/11/2021 18:58* | WG1772075 |
| *(S) Nitrobenzene-d5* | *44.9* | | | *14.0-149* | | *11/11/2021 18:58* | WG1772075 |
| *(S) 2-Fluorobiphenyl* | *51.6* | | | *34.0-125* | | *11/11/2021 18:58* | WG1772075 |

## Calculated Results

| Analyte | Result | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| Sodium Adsorption Ratio | 0.808 | | 1 | 11/12/2021 11:45 | WG1771259 |

## 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 | 11/11/2021 21:05 | WG1771662 |

## Wet Chemistry by Method 9045D

| Analyte | Result su | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| pH | 7.44 | T8 | 1 | 11/07/2021 13:00 | WG1770243 |

Sample Narrative:

L1427665-06 WG1770243: 7.44 at 19.6C

## Wet Chemistry by Method 9050AMod

| Analyte | Result umhos/cm | Qualifier | RDL umhos/cm | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| Specific Conductance | 459 | | 10.0 | 1 | 11/15/2021 08:53 | WG1773983 |

Sample Narrative:

L1427665-06 WG1773983: at 25C

## Metals (ICP) by Method 6010B

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Barium | 463 | | 0.0852 | 0.500 | 1 | 11/11/2021 19:05 | WG1771234 |
| Cadmium | 0.710 | | 0.0471 | 0.500 | 1 | 11/11/2021 19:05 | WG1771234 |
| Copper | 12.8 | | 0.400 | 2.00 | 1 | 11/11/2021 19:05 | WG1771234 |
| Lead | 15.2 | | 0.208 | 0.500 | 1 | 11/11/2021 19:05 | WG1771234 |
| Nickel | 10.2 | | 0.132 | 2.00 | 1 | 11/11/2021 19:05 | WG1771234 |
| Selenium | U | | 0.764 | 2.00 | 1 | 11/11/2021 19:05 | WG1771234 |
| Silver | U | | 0.127 | 1.00 | 1 | 11/11/2021 19:05 | WG1771234 |
| Zinc | 44.2 | | 0.832 | 5.00 | 1 | 11/11/2021 19:05 | WG1771234 |

## 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 | 0.829 | | 0.0167 | 0.200 | 1 | 11/12/2021 15:40 | WG1771255 |

## Metals (ICPMS) by Method 6020

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Arsenic | 7.50 | | 0.100 | 1.00 | 5 | 11/11/2021 00:10 | WG1771244 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| TPH (GC/FID) Low Fraction | 0.805 | | 0.0219 | 0.101 | 1.01 | 11/09/2021 18:50 | WG1771404 |
| *(S) a,a,a-Trifluorotoluene(FID)* | *130* | J1 | | *77.0-120* | | *11/09/2021 18:50* | WG1771404 |

Sample Narrative:

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|

L1427665-06 WG1771404: Surrogate failure due to matrix interference.

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Benzene | U | | 0.000467 | 0.00100 | 1 | 11/10/2021 06:19 | WG1771559 |
| Toluene | 0.0222 | | 0.00130 | 0.00500 | 1 | 11/10/2021 06:19 | WG1771559 |
| Ethylbenzene | 0.000775 | J | 0.000737 | 0.00250 | 1 | 11/10/2021 06:19 | WG1771559 |
| Xylenes, Total | 0.00655 | | 0.000880 | 0.00650 | 1 | 11/10/2021 06:19 | WG1771559 |
| 1,2,4-Trimethylbenzene | U | | 0.00158 | 0.00500 | 1 | 11/10/2021 06:19 | WG1771559 |
| 1,3,5-Trimethylbenzene | U | | 0.00200 | 0.00500 | 1 | 11/10/2021 06:19 | WG1771559 |
| *(S) Toluene-d8* | *101* | | | *75.0-131* | | *11/10/2021 06:19* | WG1771559 |
| *(S) 4-Bromofluorobenzene* | *101* | | | *67.0-138* | | *11/10/2021 06:19* | WG1771559 |
| *(S) 1,2-Dichloroethane-d4* | *99.9* | | | *70.0-130* | | *11/10/2021 06:19* | WG1771559 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| C10-C28 Diesel Range | 286 | | 1.61 | 4.00 | 1 | 11/11/2021 05:20 | WG1772007 |
| C28-C36 Motor Oil Range | 641 | | 2.74 | 40.0 | 10 | 11/11/2021 15:49 | WG1772007 |
| *(S) o-Terphenyl* | *30.9* | | | *18.0-148* | | *11/11/2021 05:20* | WG1772007 |
| *(S) o-Terphenyl* | *45.5* | | | *18.0-148* | | *11/11/2021 15:49* | WG1772007 |

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

| Analyte | Result mg/kg | Qualifier | MDL mg/kg | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|---|
| Anthracene | U | | 0.00230 | 0.00600 | 1 | 11/11/2021 19:18 | WG1772075 |
| Acenaphthene | U | | 0.00209 | 0.00600 | 1 | 11/11/2021 19:18 | WG1772075 |
| Acenaphthylene | U | | 0.00216 | 0.00600 | 1 | 11/11/2021 19:18 | WG1772075 |
| Benzo(a)anthracene | U | | 0.00173 | 0.00600 | 1 | 11/11/2021 19:18 | WG1772075 |
| Benzo(a)pyrene | U | | 0.00179 | 0.00600 | 1 | 11/11/2021 19:18 | WG1772075 |
| Benzo(b)fluoranthene | U | | 0.00153 | 0.00600 | 1 | 11/11/2021 19:18 | WG1772075 |
| Benzo(g,h,i)perylene | 0.00425 | J | 0.00177 | 0.00600 | 1 | 11/11/2021 19:18 | WG1772075 |
| Benzo(k)fluoranthene | U | | 0.00215 | 0.00600 | 1 | 11/11/2021 19:18 | WG1772075 |
| Chrysene | 0.00442 | J | 0.00232 | 0.00600 | 1 | 11/11/2021 19:18 | WG1772075 |
| Dibenz(a,h)anthracene | U | | 0.00172 | 0.00600 | 1 | 11/11/2021 19:18 | WG1772075 |
| Fluoranthene | U | | 0.00227 | 0.00600 | 1 | 11/11/2021 19:18 | WG1772075 |
| Fluorene | U | | 0.00205 | 0.00600 | 1 | 11/11/2021 19:18 | WG1772075 |
| Indeno(1,2,3-cd)pyrene | U | | 0.00181 | 0.00600 | 1 | 11/11/2021 19:18 | WG1772075 |
| Naphthalene | 0.00579 | J | 0.00408 | 0.0200 | 1 | 11/11/2021 19:18 | WG1772075 |
| Phenanthrene | U | | 0.00231 | 0.00600 | 1 | 11/11/2021 19:18 | WG1772075 |
| Pyrene | 0.00333 | J | 0.00200 | 0.00600 | 1 | 11/11/2021 19:18 | WG1772075 |
| 1-Methylnaphthalene | 0.00953 | J | 0.00449 | 0.0200 | 1 | 11/11/2021 19:18 | WG1772075 |
| 2-Methylnaphthalene | 0.0132 | J | 0.00427 | 0.0200 | 1 | 11/11/2021 19:18 | WG1772075 |
| 2-Chloronaphthalene | U | | 0.00466 | 0.0200 | 1 | 11/11/2021 19:18 | WG1772075 |
| *(S) p-Terphenyl-d14* | *89.1* | | | *23.0-120* | | *11/11/2021 19:18* | WG1772075 |
| *(S) Nitrobenzene-d5* | *51.9* | | | *14.0-149* | | *11/11/2021 19:18* | WG1772075 |
| *(S) 2-Fluorobiphenyl* | *70.8* | | | *34.0-125* | | *11/11/2021 19:18* | WG1772075 |

# QUALITY CONTROL SUMMARY

L1427665-01,02,03,04,06

## Method Blank (MB)

(MB) R3728725-1 11/11/21 18:40

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

## L1427109-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1427109-11 11/11/21 18:55 • (DUP) R3728725-3 11/11/21 19:00

| 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 |

## L1427665-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1427665-04 11/11/21 20:55 • (DUP) R3728725-8 11/11/21 21:00

| Analyte | Original Result mg/kg | DUP Result mg/kg | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Hexavalent Chromium | 0.502 | 0.477 | 1 | 5.15 | J | 20 |

## Laboratory Control Sample (LCS)

(LCS) R3728725-2 11/11/21 18:45

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Hexavalent Chromium | 10.0 | 10.2 | 102 | 80.0-120 | |

## L1427662-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1427662-03 11/11/21 19:42 • (MS) R3728725-4 11/11/21 19:47 • (MSD) R3728725-5 11/11/21 19:52

| 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 | 15.7 | 17.4 | 78.4 | 86.8 | 1 | 75.0-125 | | | 10.2 | 20 |

## L1427662-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1427662-03 11/11/21 19:42 • (MS) R3728725-6 11/11/21 19:57

| Analyte | Spike Amount mg/kg | Original Result mg/kg | MS Result mg/kg | MS Rec. % | Dilution | Rec. Limits % | MS Qualifier |
|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 647 | U | 668 | 103 | 50 | 75.0-125 | |

## L1427661-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1427661-01 11/07/21 13:00 • (DUP) R3726508-2 11/07/21 13:00

| Analyte | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|---|---|---|---|---|---|---|
| | su | su | | % | | % |
| pH | 9.49 | 9.49 | 1 | 0.000 | | 1 |

Sample Narrative:

OS: 9.49 at 19.3C

DUP: 9.49 at 19.3C

## L1427665-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1427665-01 11/07/21 13:00 • (DUP) R3726508-3 11/07/21 13:00

| Analyte | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|---|---|---|---|---|---|---|
| | su | su | | % | | % |
| pH | 9.64 | 9.63 | 1 | 0.104 | | 1 |

Sample Narrative:

OS: 9.64 at 18.9C

DUP: 9.63 at 19C

## Laboratory Control Sample (LCS)

(LCS) R3726508-1 11/07/21 13:00

| Analyte | Spike Amount | LCS Result | LCS Rec. | Rec. Limits | LCS Qualifier |
|---|---|---|---|---|---|
| | su | su | % | % | |
| pH | 10.0 | 10.1 | 101 | 99.0-101 | |

Sample Narrative:

LCS: 10.05 at 20C

## Method Blank (MB)

(MB) R3729194-1 11/14/21 09:24

| 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

## L1427663-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1427663-07 11/14/21 09:24 • (DUP) R3729194-3 11/14/21 09:24

| Analyte | Original Result umhos/cm | DUP Result umhos/cm | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Specific Conductance | 150 | 155 | 1 | 3.21 | | 20 |

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

## L1427663-16 Original Sample (OS) • Duplicate (DUP)

(OS) L1427663-16 11/14/21 09:24 • (DUP) R3729194-4 11/14/21 09:24

| Analyte | Original Result umhos/cm | DUP Result umhos/cm | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Specific Conductance | 134 | 136 | 1 | 1.63 | | 20 |

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

## Laboratory Control Sample (LCS)

(LCS) R3729194-2 11/14/21 09:24

| Analyte | Spike Amount umhos/cm | LCS Result umhos/cm | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Specific Conductance | 268 | 271 | 101 | 85.0-115 | |

Sample Narrative:
LCS: at 25C

## Method Blank (MB)

(MB) R3729369-1 11/15/21 08:53

| 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

## L1427912-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1427912-08 11/15/21 08:53 • (DUP) R3729369-3 11/15/21 08:53

| Analyte | Original Result umhos/cm | DUP Result umhos/cm | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Specific Conductance | 51.7 | 57.2 | 1 | 10.1 | | 20 |

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

## L1427974-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1427974-03 11/15/21 08:53 • (DUP) R3729369-4 11/15/21 08:53

| Analyte | Original Result umhos/cm | DUP Result umhos/cm | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Specific Conductance | 1320 | 1230 | 1 | 6.73 | | 20 |

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

## Laboratory Control Sample (LCS)

(LCS) R3729369-2 11/15/21 08:53

| Analyte | Spike Amount umhos/cm | LCS Result umhos/cm | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Specific Conductance | 268 | 269 | 100 | 85.0-115 | |

Sample Narrative:
LCS: at 25C

## Method Blank (MB)

(MB) R3728614-1 11/11/21 17:59

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| Barium | 0.128 | J | 0.0852 | 0.500 |
| Cadmium | U | | 0.0471 | 0.500 |
| Copper | U | | 0.400 | 2.00 |
| Lead | U | | 0.208 | 0.500 |
| Nickel | U | | 0.132 | 2.00 |
| Selenium | U | | 0.764 | 2.00 |
| Silver | U | | 0.127 | 1.00 |
| Zinc | U | | 0.832 | 5.00 |

## Laboratory Control Sample (LCS)

(LCS) R3728614-2 11/11/21 18:01

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Barium | 100 | 99.6 | 99.6 | 80.0-120 | |
| Cadmium | 100 | 94.6 | 94.6 | 80.0-120 | |
| Copper | 100 | 97.8 | 97.8 | 80.0-120 | |
| Lead | 100 | 96.7 | 96.7 | 80.0-120 | |
| Nickel | 100 | 96.1 | 96.1 | 80.0-120 | |
| Selenium | 100 | 98.4 | 98.4 | 80.0-120 | |
| Silver | 20.0 | 18.4 | 92.0 | 80.0-120 | |
| Zinc | 100 | 95.1 | 95.1 | 80.0-120 | |

## L1427665-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1427665-02 11/11/21 18:04 • (MS) R3728614-5 11/11/21 18:12 • (MSD) R3728614-6 11/11/21 18:15

| 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 | 2060 | 1350 | 3910 | 0.000 | 1850 | 1 | 75.0-125 | V | E J3 V | 97.0 | 20 |
| Cadmium | 100 | 0.259 | 88.4 | 96.4 | 88.1 | 96.2 | 1 | 75.0-125 | | | 8.71 | 20 |
| Copper | 100 | 15.6 | 113 | 131 | 97.1 | 115 | 1 | 75.0-125 | | | 15.1 | 20 |
| Lead | 100 | 10.5 | 94.6 | 114 | 84.2 | 103 | 1 | 75.0-125 | | | 18.5 | 20 |
| Nickel | 100 | 20.0 | 97.6 | 116 | 77.6 | 96.3 | 1 | 75.0-125 | | | 17.5 | 20 |
| Selenium | 100 | U | 90.1 | 100 | 90.1 | 100 | 1 | 75.0-125 | | | 10.6 | 20 |
| Silver | 20.0 | U | 16.9 | 18.4 | 84.3 | 91.9 | 1 | 75.0-125 | | | 8.60 | 20 |
| Zinc | 100 | 42.5 | 103 | 132 | 60.1 | 89.8 | 1 | 75.0-125 | J6 | J3 | 25.2 | 20 |

## Method Blank (MB)

(MB) R3728988-1 11/12/21 14:52

| 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) R3728988-2 11/12/21 14:55 • (LCSD) R3728988-3 11/12/21 14:58

| 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 | 1.04 | 1.09 | 104 | 109 | 80.0-120 | | | 5.08 | 20 |

## Method Blank (MB)

(MB) R3728062-1 11/10/21 22:39

| 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) R3728062-2 11/10/21 22:43

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Arsenic | 100 | 90.5 | 90.5 | 80.0-120 | |

## L1427665-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1427665-02 11/10/21 22:47 • (MS) R3728062-5 11/10/21 22:58 • (MSD) R3728062-6 11/10/21 23:01

| 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 | 4.13 | 81.9 | 94.8 | 77.7 | 90.6 | 5 | 75.0-125 | | | 14.6 | 20 |

## Method Blank (MB)

(MB) R3727315-1 11/09/21 03:15

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| TPH (GC/FID) Low Fraction | 0.0267 | J | 0.0217 | 0.100 |
| *(S) a,a,a-Trifluorotoluene(FID)* | *94.7* | | | *77.0-120* |

## Laboratory Control Sample (LCS)

(LCS) R3727315-2 11/09/21 03:51

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| TPH (GC/FID) Low Fraction | 5.50 | 5.49 | 99.8 | 72.0-127 | |
| *(S) a,a,a-Trifluorotoluene(FID)* | | | *104* | *77.0-120* | |

## Method Blank (MB)

(MB) R3728319-2 11/09/21 16:43

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| TPH (GC/FID) Low Fraction | 0.0242 | J | 0.0217 | 0.100 |
| *(S) a,a,a-Trifluorotoluene(FID)* | *95.6* | | | *77.0-120* |

## Laboratory Control Sample (LCS)

(LCS) R3728319-1 11/09/21 15:53

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| TPH (GC/FID) Low Fraction | 5.50 | 5.05 | 91.8 | 72.0-127 | |
| *(S) a,a,a-Trifluorotoluene(FID)* | | | *104* | *77.0-120* | |

## Method Blank (MB)

(MB) R3729404-3 11/09/21 09:50

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| Benzene | U | | 0.000467 | 0.00100 |
| Ethylbenzene | U | | 0.000737 | 0.00250 |
| Toluene | U | | 0.00130 | 0.00500 |
| 1,2,4-Trimethylbenzene | U | | 0.00158 | 0.00500 |
| 1,3,5-Trimethylbenzene | U | | 0.00200 | 0.00500 |
| Xylenes, Total | U | | 0.000880 | 0.00650 |
| *(S) Toluene-d8* | *112* | | | *75.0-131* |
| *(S) 4-Bromofluorobenzene* | *89.4* | | | *67.0-138* |
| *(S) 1,2-Dichloroethane-d4* | *97.9* | | | *70.0-130* |

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

(LCS) R3729404-1 11/09/21 05:30 • (LCSD) R3729404-2 11/09/21 06:08

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCSD Result mg/kg | LCS Rec. % | LCSD Rec. % | Rec. Limits % | LCS Qualifier | LCSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.125 | 0.110 | 0.105 | 88.0 | 84.0 | 70.0-123 | | | 4.65 | 20 |
| Ethylbenzene | 0.125 | 0.116 | 0.108 | 92.8 | 86.4 | 74.0-126 | | | 7.14 | 20 |
| Toluene | 0.125 | 0.113 | 0.110 | 90.4 | 88.0 | 75.0-121 | | | 2.69 | 20 |
| 1,2,4-Trimethylbenzene | 0.125 | 0.117 | 0.112 | 93.6 | 89.6 | 70.0-126 | | | 4.37 | 20 |
| 1,3,5-Trimethylbenzene | 0.125 | 0.123 | 0.119 | 98.4 | 95.2 | 73.0-127 | | | 3.31 | 20 |
| Xylenes, Total | 0.375 | 0.336 | 0.320 | 89.6 | 85.3 | 72.0-127 | | | 4.88 | 20 |
| *(S) Toluene-d8* | | | | *105* | *108* | *75.0-131* | | | | |
| *(S) 4-Bromofluorobenzene* | | | | *93.1* | *90.9* | *67.0-138* | | | | |
| *(S) 1,2-Dichloroethane-d4* | | | | *112* | *108* | *70.0-130* | | | | |

## Method Blank (MB)

(MB) R3729469-2 11/10/21 02:32

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| Benzene | U | | 0.000467 | 0.00100 |
| Ethylbenzene | U | | 0.000737 | 0.00250 |
| Toluene | U | | 0.00130 | 0.00500 |
| 1,2,4-Trimethylbenzene | U | | 0.00158 | 0.00500 |
| 1,3,5-Trimethylbenzene | U | | 0.00200 | 0.00500 |
| Xylenes, Total | U | | 0.000880 | 0.00650 |
| *(S) Toluene-d8* | *101* | | | *75.0-131* |
| *(S) 4-Bromofluorobenzene* | *99.5* | | | *67.0-138* |
| *(S) 1,2-Dichloroethane-d4* | *96.1* | | | *70.0-130* |

## Laboratory Control Sample (LCS)

(LCS) R3729469-1 11/10/21 01:34

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Benzene | 0.125 | 0.116 | 92.8 | 70.0-123 | |
| Ethylbenzene | 0.125 | 0.104 | 83.2 | 74.0-126 | |
| Toluene | 0.125 | 0.110 | 88.0 | 75.0-121 | |
| 1,2,4-Trimethylbenzene | 0.125 | 0.103 | 82.4 | 70.0-126 | |
| 1,3,5-Trimethylbenzene | 0.125 | 0.108 | 86.4 | 73.0-127 | |
| Xylenes, Total | 0.375 | 0.318 | 84.8 | 72.0-127 | |
| *(S) Toluene-d8* | | | *101* | *75.0-131* | |
| *(S) 4-Bromofluorobenzene* | | | *104* | *67.0-138* | |
| *(S) 1,2-Dichloroethane-d4* | | | *101* | *70.0-130* | |

## Method Blank (MB)

(MB) R3729960-3 11/16/21 06:25

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| 1,2,4-Trimethylbenzene | U | | 0.00158 | 0.00500 |
| *(S) Toluene-d8* | *116* | | | *75.0-131* |
| *(S) 4-Bromofluorobenzene* | *96.1* | | | *67.0-138* |
| *(S) 1,2-Dichloroethane-d4* | *104* | | | *70.0-130* |

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

(LCS) R3729960-1 11/16/21 05:09 • (LCSD) R3729960-2 11/16/21 05:28

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCSD Result mg/kg | LCS Rec. % | LCSD Rec. % | Rec. Limits % | LCS Qualifier | LCSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,2,4-Trimethylbenzene | 0.125 | 0.125 | 0.118 | 100 | 94.4 | 70.0-126 | | | 5.76 | 20 |
| *(S) Toluene-d8* | | | | *111* | *111* | *75.0-131* | | | | |
| *(S) 4-Bromofluorobenzene* | | | | *96.1* | *95.6* | *67.0-138* | | | | |
| *(S) 1,2-Dichloroethane-d4* | | | | *106* | *105* | *70.0-130* | | | | |

## Method Blank (MB)

(MB) R3728204-1 11/10/21 18:11

| 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 | 1.42 | J | 0.274 | 4.00 |
| *(S) o-Terphenyl* | *53.3* | | | *18.0-148* |

## Laboratory Control Sample (LCS)

(LCS) R3728204-2 11/10/21 18:24

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| C10-C28 Diesel Range | 50.0 | 26.3 | 52.6 | 50.0-150 | |
| *(S) o-Terphenyl* | | | *59.5* | *18.0-148* | |

## L1427079-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1427079-13 11/11/21 02:05 • (MS) R3728204-3 11/11/21 02:18 • (MSD) R3728204-4 11/11/21 02:31

| 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 | U | 16.8 | 29.2 | 33.6 | 60.6 | 1 | 50.0-150 | J6 | J3 | 53.9 | 20 |
| *(S) o-Terphenyl* | | | | | *35.1* | *61.2* | | *18.0-148* | | | | |

## Method Blank (MB)

(MB) R3728528-2 11/11/21 13:58

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| Anthracene | U | | 0.00230 | 0.00600 |
| Acenaphthene | U | | 0.00209 | 0.00600 |
| Acenaphthylene | U | | 0.00216 | 0.00600 |
| Benzo(a)anthracene | U | | 0.00173 | 0.00600 |
| Benzo(a)pyrene | U | | 0.00179 | 0.00600 |
| Benzo(b)fluoranthene | U | | 0.00153 | 0.00600 |
| Benzo(g,h,i)perylene | U | | 0.00177 | 0.00600 |
| Benzo(k)fluoranthene | U | | 0.00215 | 0.00600 |
| Chrysene | U | | 0.00232 | 0.00600 |
| Dibenz(a,h)anthracene | U | | 0.00172 | 0.00600 |
| Fluoranthene | U | | 0.00227 | 0.00600 |
| Fluorene | U | | 0.00205 | 0.00600 |
| Indeno(1,2,3-cd)pyrene | U | | 0.00181 | 0.00600 |
| Naphthalene | U | | 0.00408 | 0.0200 |
| Phenanthrene | U | | 0.00231 | 0.00600 |
| Pyrene | U | | 0.00200 | 0.00600 |
| 1-Methylnaphthalene | U | | 0.00449 | 0.0200 |
| 2-Methylnaphthalene | U | | 0.00427 | 0.0200 |
| 2-Chloronaphthalene | U | | 0.00466 | 0.0200 |
| *(S) Nitrobenzene-d5* | *40.2* | | | *14.0-149* |
| *(S) 2-Fluorobiphenyl* | *61.0* | | | *34.0-125* |
| *(S) p-Terphenyl-d14* | *89.3* | | | *23.0-120* |

## Laboratory Control Sample (LCS)

(LCS) R3728528-1 11/11/21 13:38

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Anthracene | 0.0800 | 0.0550 | 68.8 | 50.0-126 | |
| Acenaphthene | 0.0800 | 0.0588 | 73.5 | 50.0-120 | |
| Acenaphthylene | 0.0800 | 0.0605 | 75.6 | 50.0-120 | |
| Benzo(a)anthracene | 0.0800 | 0.0526 | 65.8 | 45.0-120 | |
| Benzo(a)pyrene | 0.0800 | 0.0504 | 63.0 | 42.0-120 | |
| Benzo(b)fluoranthene | 0.0800 | 0.0559 | 69.9 | 42.0-121 | |
| Benzo(g,h,i)perylene | 0.0800 | 0.0603 | 75.4 | 45.0-125 | |
| Benzo(k)fluoranthene | 0.0800 | 0.0573 | 71.6 | 49.0-125 | |
| Chrysene | 0.0800 | 0.0615 | 76.9 | 49.0-122 | |
| Dibenz(a,h)anthracene | 0.0800 | 0.0611 | 76.4 | 47.0-125 | |
| Fluoranthene | 0.0800 | 0.0622 | 77.8 | 49.0-129 | |

## Laboratory Control Sample (LCS)

(LCS) R3728528-1 11/11/21 13:38

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Fluorene | 0.0800 | 0.0586 | 73.3 | 49.0-120 | |
| Indeno(1,2,3-cd)pyrene | 0.0800 | 0.0528 | 66.0 | 46.0-125 | |
| Naphthalene | 0.0800 | 0.0594 | 74.3 | 50.0-120 | |
| Phenanthrene | 0.0800 | 0.0581 | 72.6 | 47.0-120 | |
| Pyrene | 0.0800 | 0.0617 | 77.1 | 43.0-123 | |
| 1-Methylnaphthalene | 0.0800 | 0.0645 | 80.6 | 51.0-121 | |
| 2-Methylnaphthalene | 0.0800 | 0.0556 | 69.5 | 50.0-120 | |
| 2-Chloronaphthalene | 0.0800 | 0.0551 | 68.9 | 50.0-120 | |
| *(S) Nitrobenzene-d5* | | | *58.8* | *14.0-149* | |
| *(S) 2-Fluorobiphenyl* | | | *82.7* | *34.0-125* | |
| *(S) p-Terphenyl-d14* | | | *109* | *23.0-120* | |

## L1427680-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1427680-06 11/11/21 20:38 • (MS) R3728528-3 11/11/21 20:58 • (MSD) R3728528-4 11/11/21 21:18

| 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 % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Anthracene | 0.0780 | 0.534 | 0.404 | 0.467 | 0.000 | 0.000 | 10 | 10.0-145 | V | V | 14.5 | 30 |
| Acenaphthene | 0.0780 | 0.151 | 0.173 | 0.242 | 28.2 | 116 | 10 | 14.0-127 | | J3 | 33.3 | 27 |
| Acenaphthylene | 0.0780 | 0.0332 | 0.0876 | 0.0875 | 69.7 | 69.3 | 10 | 21.0-124 | | | 0.114 | 25 |
| Benzo(a)anthracene | 0.0780 | 3.16 | 2.13 | 1.90 | 0.000 | 0.000 | 10 | 10.0-139 | V | V | 11.4 | 30 |
| Benzo(a)pyrene | 0.0780 | 2.82 | 2.01 | 1.71 | 0.000 | 0.000 | 10 | 10.0-141 | V | V | 16.1 | 31 |
| Benzo(b)fluoranthene | 0.0780 | 4.19 | 2.90 | 2.54 | 0.000 | 0.000 | 10 | 10.0-140 | V | V | 13.2 | 36 |
| Benzo(g,h,i)perylene | 0.0780 | 2.34 | 1.69 | 1.43 | 0.000 | 0.000 | 10 | 10.0-140 | V | V | 16.7 | 33 |
| Benzo(k)fluoranthene | 0.0780 | 1.59 | 1.15 | 1.00 | 0.000 | 0.000 | 10 | 10.0-137 | V | V | 14.0 | 31 |
| Chrysene | 0.0780 | 3.53 | 2.32 | 2.09 | 0.000 | 0.000 | 10 | 10.0-145 | V | V | 10.4 | 30 |
| Dibenz(a,h)anthracene | 0.0780 | 0.403 | 0.320 | 0.275 | 0.000 | 0.000 | 10 | 10.0-132 | V | V | 15.1 | 31 |
| Fluoranthene | 0.0780 | 10.8 | 7.00 | 6.80 | 0.000 | 0.000 | 10 | 10.0-153 | V | V | 2.90 | 33 |
| Fluorene | 0.0780 | 0.157 | 0.187 | 0.250 | 38.5 | 119 | 10 | 11.0-130 | | | 28.8 | 29 |
| Indeno(1,2,3-cd)pyrene | 0.0780 | 2.59 | 1.90 | 1.62 | 0.000 | 0.000 | 10 | 10.0-137 | V | V | 15.9 | 32 |
| Naphthalene | 0.0780 | 0.0634 | 0.111 | 0.122 | 61.0 | 74.7 | 10 | 10.0-135 | | | 9.44 | 27 |
| Phenanthrene | 0.0780 | 3.68 | 2.43 | 2.78 | 0.000 | 0.000 | 10 | 10.0-144 | V | V | 13.4 | 31 |
| Pyrene | 0.0780 | 8.36 | 5.46 | 5.44 | 0.000 | 0.000 | 10 | 10.0-148 | V | V | 0.367 | 35 |
| 1-Methylnaphthalene | 0.0780 | U | 0.0986 | 0.108 | 126 | 138 | 10 | 10.0-142 | | | 9.10 | 28 |
| 2-Methylnaphthalene | 0.0780 | U | 0.0805 | 0.0903 | 103 | 115 | 10 | 10.0-137 | | | 11.5 | 28 |
| 2-Chloronaphthalene | 0.0780 | U | 0.0487 | 0.0509 | 62.4 | 64.9 | 10 | 29.0-120 | | | 4.42 | 24 |
| *(S) Nitrobenzene-d5* | | | | | *15.9* | *38.3* | | *14.0-149* | | | | |
| *(S) 2-Fluorobiphenyl* | | | | | *69.4* | *73.8* | | *34.0-125* | | | | |
| *(S) p-Terphenyl-d14* | | | | | *88.2* | *91.8* | | *23.0-120* | | | | |

# 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. |
| (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. |
| 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. |
| J1 | Surrogate recovery limits have been exceeded; values are outside upper control limits. |
| J3 | The associated batch QC was outside the established quality control range for precision. |
| J6 | The sample matrix interfered with the ability to make any accurate determination; spike value is low. |
| T8 | Sample(s) received past/too close to holding time expiration. |
| V | The sample concentration is too high to evaluate accurate spike recoveries. |

## 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.

Pace Analytical

# CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here: J098

**ALL SHADED AREAS are for LAB USE ONLY**

| | |
|---|---|
| Company: Campos EPC | Billing Information: Caerus Oil and Gas, LLC Account: CAERUSPCO |
| Address: 1401 Blake St. Denver, CO 80202 | |
| Report To: Steve Sivigliano | Email To: steve.sivigliano@camposepc.com |
| Copy To: Evan Mason - evan.mason@camposepc.com | Site Collection Info/Address: |
| Customer Project Name/Number: E34-496 | State: CO County/City: /Garfield Time Zone Collected: [ ] PT [✓] MT [ ] CT [ ] ET |
| Phone: 970-819-0600 Email: same as above | Site/Facility ID #: E34-496 Compliance Monitoring? [ ] Yes [ ] No |
| Collected By (print): Evan Mason | Purchase Order #: Quote #: DW PWS ID #: DW Location Code: |
| Collected By (signature): | Turnaround Date Required: Immediately Packed on Ice: [ ] Yes [ ] No |
| Sample Disposal: [✓] Dispose as appropriate [ ] Return [ ] Archive: [ ] Hold: | Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [✓] 5 Day (Expedite Charges Apply) Field Filtered (if applicable): [ ] Yes [ ] No Analysis: |

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Container Preservative Type **

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

Analyses

| Customer Sample ID | Matrix * | Comp / Grab | Collected (or Composite Start) Date | Collected (or Composite Start) Time | Composite End Date | Composite End Time | Res Cl | # of Ctns | COGCC Table 915-1 | Arsenic, pH, EC, SAR, Boron (hot water sol.) | Lab Profile/Line: LAB USE ONLY Lab Sample # / Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 20211103-E34-496(BSOBF)@5' | SL | Grab | 11/3/21 | 1015 | - | - | - | 3 | X | | L1427665 -01 |
| 20211103-E34-496(BSOBE)@5' | | | | 1020 | - | - | - | 3 | X | | -02 |
| 20211103-E34-496(FL-BSOBE)@5' | | | | 1030 | - | - | - | 3 | X | | -03 |
| 20211103-E34-496(FL-BSOBF)@5' | | | | 1040 | - | - | - | 3 | X | | -04 |
| 20211103-E34-496(WELL-STOCK) | | Comp | | 1050 | - | - | - | 2 | X | | HOLD -05 |
| 20211103-E34-496(FL-SEP)@6' | | Grab | | 1100 | - | - | - | 2 | X | | -06 |
| 20211103-E34-496(SEP-STOCK) | | Comp | | 1110 | - | - | - | 2 | X | | HOLD -07 |

Lab Profile/Line: Lab Sample Receipt Checklist:

| | | |
|---|---|---|
| Custody Seals Present/Intact | Y | N NA |
| Custody Signatures Present | Y | N NA |
| Collector Signature Present | Y | N NA |
| Bottles Intact | Y | N NA |
| Correct Bottles | Y | N NA |
| Sufficient Volume | Y | N NA |
| Samples Received on Ice | Y | N NA |
| VOA - Headspace Acceptable | Y | N NA |
| USDA Regulated Soils | Y | N NA |
| Samples in Holding Time | Y | N NA |
| Residual Chlorine Present | Y | N NA |
| Cl Strips: _____ | | |
| Sample pH Acceptable | Y | N NA |
| pH Strips: _____ | | |
| Sulfide Present | Y | N NA |
| Lead Acetate Strips: _____ | | |

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 501612321990

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: _____
Cooler 1 Temp Upon Receipt: _____oC
Cooler 1 Therm Corr. Factor: _____oC
Cooler 1 Corrected Temp: _____oC
Comments: CCSI 0.7-1.5=0.6 AZBA

| Relinquished by/Company: (Signature) | Date/Time: | Received by/Company: (Signature) | Date/Time: |
|---|---|---|---|
| | 11/4/21 1300 | | 11/4 1300 |
| Relinquished by/Company: (Signature) | Date/Time: | Received by/Company: (Signature) | Date/Time: |
| | 11/4 1500 | | |
| Relinquished by/Company: (Signature) | Date/Time: | Received by/Company: (Signature) | Date/Time: |
| | | | 11/5/21 900 |

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: _____ of: _____

# ANALYTICAL REPORT

December 14, 2021



## Caerus Oil and Gas

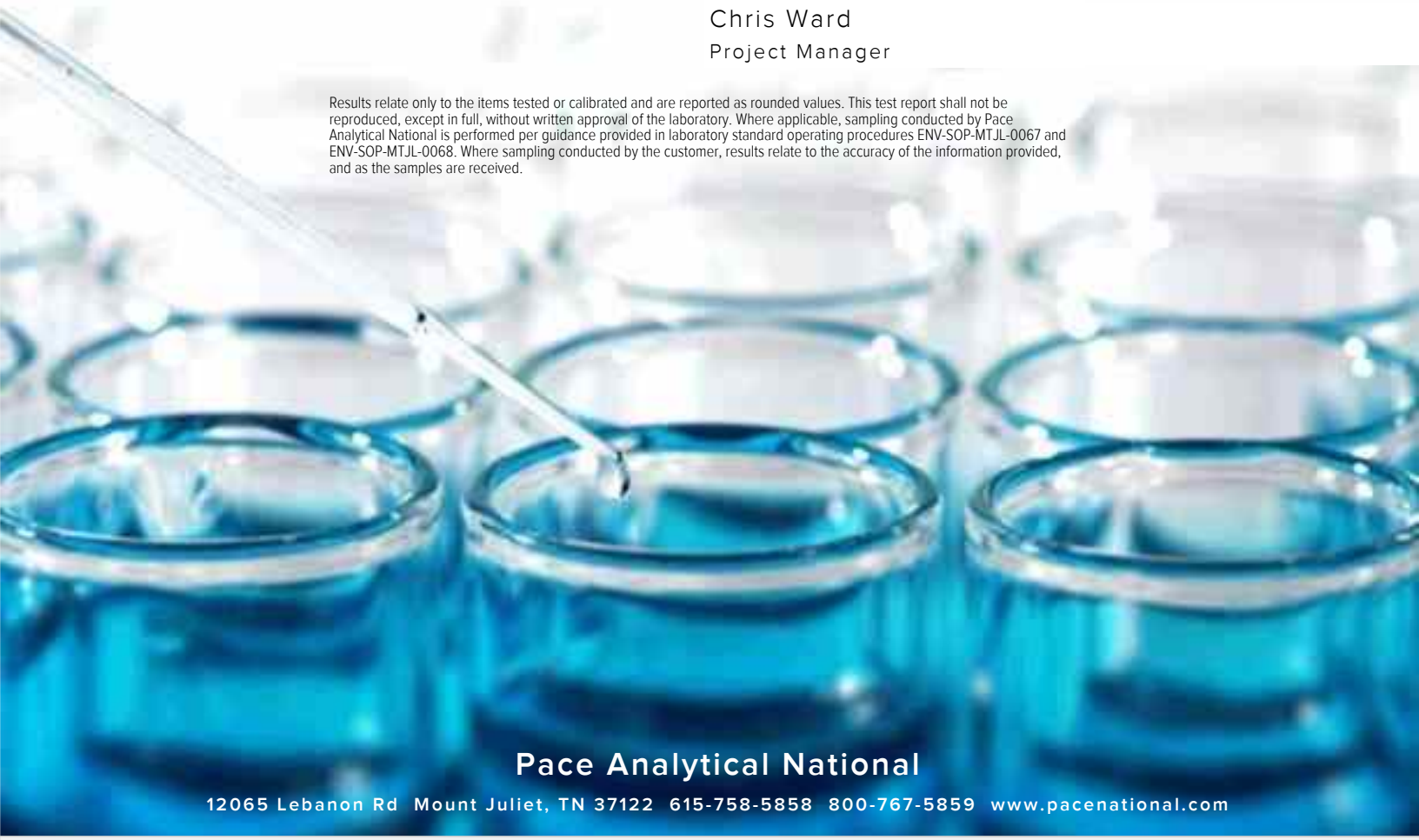
| | |
|---|---|
| Sample Delivery Group: | L1437990 |
| Samples Received: | 12/03/2021 |
| Project Number: | E34-496 |
| Description: | E34-496 |
| Site: | E34-496 |
| Report To: | Brett Middleton<br>143 Diamond Avenue<br>Parachute, CO 81635 |

Entire Report Reviewed By:

Chris Ward

Project Manager





Pace Analytical National

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

# TABLE OF CONTENTS

# SAMPLE SUMMARY

## 20211202-E34-496(SEP-STOCK) L1437990-01 Solid

Collected by: Evan Mason
Collected date/time: 12/02/21 11:30
Received date/time: 12/03/21 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Calculated Results | WG1784355 | 1 | 12/09/21 19:42 | 12/09/21 19:42 | CCE | Mt. Juliet, TN |
| Wet Chemistry by Method 7199 | WG1784885 | 1 | 12/10/21 03:44 | 12/13/21 14:17 | JER | Mt. Juliet, TN |
| Wet Chemistry by Method 9045D | WG1784415 | 1 | 12/06/21 15:00 | 12/06/21 16:08 | PSN | Mt. Juliet, TN |
| Wet Chemistry by Method 9050AMod | WG1784653 | 1 | 12/07/21 04:58 | 12/07/21 07:32 | ARD | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B | WG1786515 | 1 | 12/09/21 08:48 | 12/09/21 18:40 | CCE | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B-NE493 Ch 2 | WG1784349 | 1 | 12/08/21 12:13 | 12/09/21 21:09 | CCE | Mt. Juliet, TN |
| Metals (ICPMS) by Method 6020 | WG1786508 | 5 | 12/09/21 08:46 | 12/09/21 13:22 | JPD | Mt. Juliet, TN |
| Volatile Organic Compounds (GC) by Method 8015D/GRO | WG1784560 | 1 | 12/05/21 15:46 | 12/06/21 11:18 | MGF | Mt. Juliet, TN |
| Volatile Organic Compounds (GC/MS) by Method 8260B | WG1784545 | 1 | 12/05/21 15:46 | 12/06/21 05:40 | JAH | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG1784578 | 1 | 12/06/21 07:28 | 12/06/21 20:45 | JAS | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG1784578 | 1 | 12/06/21 07:28 | 12/07/21 10:17 | JAS | Mt. Juliet, TN |
| Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM | WG1785525 | 1 | 12/08/21 17:07 | 12/09/21 19:57 | AGW | Mt. Juliet, TN |

## 20211202-E34-496(FL-SEP)@8' L1437990-02 Solid

Collected by: Evan Mason
Collected date/time: 12/02/21 12:00
Received date/time: 12/03/21 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|---|---|---|---|---|---|---|
| Calculated Results | WG1784355 | 1 | 12/09/21 19:45 | 12/09/21 19:45 | CCE | Mt. Juliet, TN |
| Wet Chemistry by Method 7199 | WG1784885 | 1 | 12/10/21 03:44 | 12/13/21 14:22 | JER | Mt. Juliet, TN |
| Wet Chemistry by Method 9045D | WG1784415 | 1 | 12/06/21 15:00 | 12/06/21 16:08 | PSN | Mt. Juliet, TN |
| Wet Chemistry by Method 9050AMod | WG1784653 | 1 | 12/07/21 04:58 | 12/07/21 07:32 | ARD | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B | WG1786515 | 1 | 12/09/21 08:48 | 12/09/21 18:43 | CCE | Mt. Juliet, TN |
| Metals (ICP) by Method 6010B-NE493 Ch 2 | WG1784349 | 1 | 12/08/21 12:13 | 12/09/21 21:12 | CCE | Mt. Juliet, TN |
| Metals (ICPMS) by Method 6020 | WG1786508 | 5 | 12/09/21 08:46 | 12/09/21 13:25 | JPD | Mt. Juliet, TN |
| Volatile Organic Compounds (GC) by Method 8015D/GRO | WG1784560 | 1 | 12/05/21 15:46 | 12/06/21 11:40 | MGF | Mt. Juliet, TN |
| Volatile Organic Compounds (GC/MS) by Method 8260B | WG1784545 | 1 | 12/05/21 15:46 | 12/06/21 05:59 | JAH | Mt. Juliet, TN |
| Semi-Volatile Organic Compounds (GC) by Method 8015M | WG1784578 | 1 | 12/06/21 07:28 | 12/06/21 20:03 | JAS | Mt. Juliet, TN |
| Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM | WG1785525 | 1 | 12/08/21 17:07 | 12/09/21 20:14 | AGW | Mt. Juliet, TN |

# CASE NARRATIVE

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

Chris Ward
Project Manager

## Calculated Results

| Analyte | Result | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| | SAR | | | | |
| Sodium Adsorption Ratio | 1.19 | | 1 | 12/09/2021 19:42 | WG1784355 |

## Wet Chemistry by Method 7199

| Analyte | Result | Qualifier | RDL | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | | |
| Hexavalent Chromium | ND | | 1.00 | 1 | 12/13/2021 14:17 | WG1784885 |

## Wet Chemistry by Method 9045D

| Analyte | Result | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| | pH | | | | |
| pH | 8.20 | T8 | 1 | 12/06/2021 16:08 | WG1784415 |

Sample Narrative:

L1437990-01 WG1784415: 8.2 at 18.7C

## Wet Chemistry by Method 9050AMod

| Analyte | Result | Qualifier | RDL | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| | umhos/cm | | umhos/cm | | | |
| Specific Conductance | 375 | | 10.0 | 1 | 12/07/2021 07:32 | WG1784653 |

Sample Narrative:

L1437990-01 WG1784653: at 25C

## Metals (ICP) by Method 6010B

| Analyte | Result | Qualifier | RDL | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | | |
| Barium | 582 | | 0.500 | 1 | 12/09/2021 18:40 | WG1786515 |
| Cadmium | ND | | 0.500 | 1 | 12/09/2021 18:40 | WG1786515 |
| Copper | 14.9 | | 2.00 | 1 | 12/09/2021 18:40 | WG1786515 |
| Lead | 11.8 | | 0.500 | 1 | 12/09/2021 18:40 | WG1786515 |
| Nickel | 14.3 | | 2.00 | 1 | 12/09/2021 18:40 | WG1786515 |
| Selenium | ND | | 2.00 | 1 | 12/09/2021 18:40 | WG1786515 |
| Silver | ND | | 1.00 | 1 | 12/09/2021 18:40 | WG1786515 |
| Zinc | 40.8 | | 5.00 | 1 | 12/09/2021 18:40 | WG1786515 |

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

| Analyte | Result | Qualifier | RDL | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| | mg/l | | mg/l | | | |
| Hot Water Sol. Boron | 0.438 | | 0.200 | 1 | 12/09/2021 21:09 | WG1784349 |

## Metals (ICPMS) by Method 6020

| Analyte | Result | Qualifier | RDL | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | | |
| Arsenic | 12.7 | | 1.00 | 5 | 12/09/2021 13:22 | WG1786508 |

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

| Analyte | Result | Qualifier | RDL | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | | |
| TPH (GC/FID) Low Fraction | 0.110 | | 0.100 | 1 | 12/06/2021 11:18 | WG1784560 |
| *(S) a,a,a-Trifluorotoluene(FID)* | *104* | | *77.0-120* | | *12/06/2021 11:18* | WG1784560 |

## 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 | 12/06/2021 05:40 | WG1784545 |
| Toluene | ND | | 0.00500 | 1 | 12/06/2021 05:40 | WG1784545 |
| Ethylbenzene | ND | | 0.00250 | 1 | 12/06/2021 05:40 | WG1784545 |
| Xylenes, Total | ND | | 0.00650 | 1 | 12/06/2021 05:40 | WG1784545 |
| 1,2,4-Trimethylbenzene | ND | | 0.00500 | 1 | 12/06/2021 05:40 | WG1784545 |
| 1,3,5-Trimethylbenzene | ND | | 0.00500 | 1 | 12/06/2021 05:40 | WG1784545 |
| *(S) Toluene-d8* | *108* | | *75.0-131* | | *12/06/2021 05:40* | WG1784545 |
| *(S) 4-Bromofluorobenzene* | *97.6* | | *67.0-138* | | *12/06/2021 05:40* | WG1784545 |
| *(S) 1,2-Dichloroethane-d4* | *100* | | *70.0-130* | | *12/06/2021 05:40* | WG1784545 |

## 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 | 35.2 | | 4.00 | 1 | 12/06/2021 20:45 | WG1784578 |
| C28-C36 Motor Oil Range | 85.6 | | 4.00 | 1 | 12/07/2021 10:17 | WG1784578 |
| *(S) o-Terphenyl* | *59.1* | | *18.0-148* | | *12/06/2021 20:45* | WG1784578 |
| *(S) o-Terphenyl* | *57.1* | | *18.0-148* | | *12/07/2021 10:17* | WG1784578 |

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

| Analyte | Result mg/kg | Qualifier | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| Anthracene | ND | | 0.00600 | 1 | 12/09/2021 19:57 | WG1785525 |
| Acenaphthene | ND | | 0.00600 | 1 | 12/09/2021 19:57 | WG1785525 |
| Acenaphthylene | ND | | 0.00600 | 1 | 12/09/2021 19:57 | WG1785525 |
| Benzo(a)anthracene | ND | | 0.00600 | 1 | 12/09/2021 19:57 | WG1785525 |
| Benzo(a)pyrene | ND | | 0.00600 | 1 | 12/09/2021 19:57 | WG1785525 |
| Benzo(b)fluoranthene | ND | | 0.00600 | 1 | 12/09/2021 19:57 | WG1785525 |
| Benzo(g,h,i)perylene | ND | | 0.00600 | 1 | 12/09/2021 19:57 | WG1785525 |
| Benzo(k)fluoranthene | ND | | 0.00600 | 1 | 12/09/2021 19:57 | WG1785525 |
| Chrysene | ND | | 0.00600 | 1 | 12/09/2021 19:57 | WG1785525 |
| Dibenz(a,h)anthracene | ND | | 0.00600 | 1 | 12/09/2021 19:57 | WG1785525 |
| Fluoranthene | ND | | 0.00600 | 1 | 12/09/2021 19:57 | WG1785525 |
| Fluorene | ND | | 0.00600 | 1 | 12/09/2021 19:57 | WG1785525 |
| Indeno(1,2,3-cd)pyrene | ND | | 0.00600 | 1 | 12/09/2021 19:57 | WG1785525 |
| Naphthalene | ND | | 0.0200 | 1 | 12/09/2021 19:57 | WG1785525 |
| Phenanthrene | ND | | 0.00600 | 1 | 12/09/2021 19:57 | WG1785525 |
| Pyrene | ND | | 0.00600 | 1 | 12/09/2021 19:57 | WG1785525 |
| 1-Methylnaphthalene | ND | | 0.0200 | 1 | 12/09/2021 19:57 | WG1785525 |
| 2-Methylnaphthalene | ND | | 0.0200 | 1 | 12/09/2021 19:57 | WG1785525 |
| 2-Chloronaphthalene | ND | | 0.0200 | 1 | 12/09/2021 19:57 | WG1785525 |
| *(S) p-Terphenyl-d14* | *80.1* | | *23.0-120* | | *12/09/2021 19:57* | WG1785525 |
| *(S) Nitrobenzene-d5* | *73.0* | | *14.0-149* | | *12/09/2021 19:57* | WG1785525 |
| *(S) 2-Fluorobiphenyl* | *79.2* | | *34.0-125* | | *12/09/2021 19:57* | WG1785525 |

## Calculated Results

| Analyte | Result | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| | SAR | | | | |
| Sodium Adsorption Ratio | 1.00 | | 1 | 12/09/2021 19:45 | WG1784355 |

## Wet Chemistry by Method 7199

| Analyte | Result | Qualifier | RDL | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | | |
| Hexavalent Chromium | ND | | 1.00 | 1 | 12/13/2021 14:22 | WG1784885 |

## Wet Chemistry by Method 9045D

| Analyte | Result | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| | pH | | | | |
| pH | 8.09 | T8 | 1 | 12/06/2021 16:08 | WG1784415 |

Sample Narrative:

L1437990-02 WG1784415: 8.09 at 18.5C

## Wet Chemistry by Method 9050AMod

| Analyte | Result | Qualifier | RDL | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| | umhos/cm | | umhos/cm | | | |
| Specific Conductance | 260 | | 10.0 | 1 | 12/07/2021 07:32 | WG1784653 |

Sample Narrative:

L1437990-02 WG1784653: at 25C

## Metals (ICP) by Method 6010B

| Analyte | Result | Qualifier | RDL | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | | |
| Barium | 281 | | 0.500 | 1 | 12/09/2021 18:43 | WG1786515 |
| Cadmium | ND | | 0.500 | 1 | 12/09/2021 18:43 | WG1786515 |
| Copper | 10.6 | | 2.00 | 1 | 12/09/2021 18:43 | WG1786515 |
| Lead | 10.9 | | 0.500 | 1 | 12/09/2021 18:43 | WG1786515 |
| Nickel | 12.7 | | 2.00 | 1 | 12/09/2021 18:43 | WG1786515 |
| Selenium | ND | | 2.00 | 1 | 12/09/2021 18:43 | WG1786515 |
| Silver | ND | | 1.00 | 1 | 12/09/2021 18:43 | WG1786515 |
| Zinc | 29.6 | | 5.00 | 1 | 12/09/2021 18:43 | WG1786515 |

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

| Analyte | Result | Qualifier | RDL | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| | mg/l | | mg/l | | | |
| Hot Water Sol. Boron | 0.360 | | 0.200 | 1 | 12/09/2021 21:12 | WG1784349 |

## Metals (ICPMS) by Method 6020

| Analyte | Result | Qualifier | RDL | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | | |
| Arsenic | 2.75 | | 1.00 | 5 | 12/09/2021 13:25 | WG1786508 |

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

| Analyte | Result | Qualifier | RDL | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| | mg/kg | | mg/kg | | | |
| TPH (GC/FID) Low Fraction | ND | | 0.100 | 1 | 12/06/2021 11:40 | WG1784560 |
| *(S) a,a,a-Trifluorotoluene(FID)* | *109* | | *77.0-120* | | *12/06/2021 11:40* | WG1784560 |

## 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 | 12/06/2021 05:59 | WG1784545 |
| Toluene | ND | | 0.00500 | 1 | 12/06/2021 05:59 | WG1784545 |
| Ethylbenzene | ND | | 0.00250 | 1 | 12/06/2021 05:59 | WG1784545 |
| Xylenes, Total | ND | | 0.00650 | 1 | 12/06/2021 05:59 | WG1784545 |
| 1,2,4-Trimethylbenzene | ND | | 0.00500 | 1 | 12/06/2021 05:59 | WG1784545 |
| 1,3,5-Trimethylbenzene | ND | | 0.00500 | 1 | 12/06/2021 05:59 | WG1784545 |
| *(S) Toluene-d8* | *107* | | *75.0-131* | | *12/06/2021 05:59* | WG1784545 |
| *(S) 4-Bromofluorobenzene* | *98.1* | | *67.0-138* | | *12/06/2021 05:59* | WG1784545 |
| *(S) 1,2-Dichloroethane-d4* | *102* | | *70.0-130* | | *12/06/2021 05:59* | WG1784545 |

## 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 | 5.78 | | 4.00 | 1 | 12/06/2021 20:03 | WG1784578 |
| C28-C36 Motor Oil Range | ND | | 4.00 | 1 | 12/06/2021 20:03 | WG1784578 |
| *(S) o-Terphenyl* | *32.6* | | *18.0-148* | | *12/06/2021 20:03* | WG1784578 |

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

| Analyte | Result mg/kg | Qualifier | RDL mg/kg | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| Anthracene | ND | | 0.00600 | 1 | 12/09/2021 20:14 | WG1785525 |
| Acenaphthene | ND | | 0.00600 | 1 | 12/09/2021 20:14 | WG1785525 |
| Acenaphthylene | ND | | 0.00600 | 1 | 12/09/2021 20:14 | WG1785525 |
| Benzo(a)anthracene | ND | | 0.00600 | 1 | 12/09/2021 20:14 | WG1785525 |
| Benzo(a)pyrene | ND | | 0.00600 | 1 | 12/09/2021 20:14 | WG1785525 |
| Benzo(b)fluoranthene | ND | | 0.00600 | 1 | 12/09/2021 20:14 | WG1785525 |
| Benzo(g,h,i)perylene | ND | | 0.00600 | 1 | 12/09/2021 20:14 | WG1785525 |
| Benzo(k)fluoranthene | ND | | 0.00600 | 1 | 12/09/2021 20:14 | WG1785525 |
| Chrysene | ND | | 0.00600 | 1 | 12/09/2021 20:14 | WG1785525 |
| Dibenz(a,h)anthracene | ND | | 0.00600 | 1 | 12/09/2021 20:14 | WG1785525 |
| Fluoranthene | ND | | 0.00600 | 1 | 12/09/2021 20:14 | WG1785525 |
| Fluorene | ND | | 0.00600 | 1 | 12/09/2021 20:14 | WG1785525 |
| Indeno(1,2,3-cd)pyrene | ND | | 0.00600 | 1 | 12/09/2021 20:14 | WG1785525 |
| Naphthalene | ND | | 0.0200 | 1 | 12/09/2021 20:14 | WG1785525 |
| Phenanthrene | ND | | 0.00600 | 1 | 12/09/2021 20:14 | WG1785525 |
| Pyrene | ND | | 0.00600 | 1 | 12/09/2021 20:14 | WG1785525 |
| 1-Methylnaphthalene | ND | | 0.0200 | 1 | 12/09/2021 20:14 | WG1785525 |
| 2-Methylnaphthalene | ND | | 0.0200 | 1 | 12/09/2021 20:14 | WG1785525 |
| 2-Chloronaphthalene | ND | | 0.0200 | 1 | 12/09/2021 20:14 | WG1785525 |
| *(S) p-Terphenyl-d14* | *83.5* | | *23.0-120* | | *12/09/2021 20:14* | WG1785525 |
| *(S) Nitrobenzene-d5* | *74.6* | | *14.0-149* | | *12/09/2021 20:14* | WG1785525 |
| *(S) 2-Fluorobiphenyl* | *79.9* | | *34.0-125* | | *12/09/2021 20:14* | WG1785525 |

# QUALITY CONTROL SUMMARY

L1437990-01,02

## Method Blank (MB)

(MB) R3740408-1 12/13/21 13:07

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

## Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3740408-3 12/13/21 13:41

| Analyte | Original Result | DUP Result mg/kg | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Hexavalent Chromium | | 1.32 | 1 | 20.0 | | 20 |

## L1437995-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1437995-01 12/13/21 16:55 • (DUP) R3740408-7 12/13/21 15:08

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

## Laboratory Control Sample (LCS)

(LCS) R3740408-2 12/13/21 13:15

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Hexavalent Chromium | 10.0 | 10.8 | 108 | 80.0-120 | |

## L1437990-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1437990-02 12/13/21 14:22 • (MS) R3740408-4 12/13/21 14:28 • (MSD) R3740408-5 12/13/21 14:33

| 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 | ND | 21.6 | 19.8 | 106 | 97.5 | 1 | 75.0-125 | | | 8.53 | 20 |

## L1437990-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1437990-02 12/13/21 14:22 • (MS) R3740408-6 12/13/21 14:38

| Analyte | Spike Amount mg/kg | Original Result mg/kg | MS Result mg/kg | MS Rec. % | Dilution | Rec. Limits % | MS Qualifier |
|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 683 | ND | 729 | 107 | 50 | 75.0-125 | |

## L1436863-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1436863-02 12/06/21 16:08 • (DUP) R3737561-2 12/06/21 16:08

| Analyte | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|---|---|---|---|---|---|---|
| | su | su | | % | | % |
| pH | 9.08 | 9.06 | 1 | 0.221 | | 1 |

Sample Narrative:

OS: 9.08 at 19.3C

DUP: 9.06 at 19.2C

## L1438062-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1438062-10 12/06/21 16:08 • (DUP) R3737561-3 12/06/21 16:08

| Analyte | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|---|---|---|---|---|---|---|
| | su | su | | % | | % |
| pH | 6.74 | 6.71 | 1 | 0.446 | | 1 |

Sample Narrative:

OS: 6.74 at 18.4C

DUP: 6.71 at 18.4C

## Laboratory Control Sample (LCS)

(LCS) R3737561-1 12/06/21 16:08

| Analyte | Spike Amount | LCS Result | LCS Rec. | Rec. Limits | LCS Qualifier |
|---|---|---|---|---|---|
| | su | su | % | % | |
| pH | 10.0 | 9.98 | 99.8 | 99.0-101 | |

Sample Narrative:

LCS: 9.98 at 18.8C

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

## Method Blank (MB)

(MB) R3737719-1 12/07/21 07:32

| 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

## Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3737719-3 12/07/21 07:32

| Analyte | Original Result | DUP Result umhos/cm | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Specific Conductance | | 157 | 1 | 2.90 | | 20 |

Sample Narrative:
DUP: at 25C

## Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3737719-4 12/07/21 07:32

| Analyte | Original Result | DUP Result umhos/cm | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Specific Conductance | | 11200 | 1 | 3.19 | | 20 |

Sample Narrative:
DUP: at 25C

## Laboratory Control Sample (LCS)

(LCS) R3737719-2 12/07/21 07:32

| Analyte | Spike Amount umhos/cm | LCS Result umhos/cm | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Specific Conductance | 268 | 271 | 101 | 85.0-115 | |

Sample Narrative:
LCS: at 25C

## Method Blank (MB)

(MB) R3739376-1 12/09/21 18:04

| 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 |
| Copper | U | | 0.400 | 2.00 |
| Lead | U | | 0.208 | 0.500 |
| Nickel | U | | 0.132 | 2.00 |
| Selenium | U | | 0.764 | 2.00 |
| Silver | U | | 0.127 | 1.00 |
| Zinc | U | | 0.832 | 5.00 |

## Laboratory Control Sample (LCS)

(LCS) R3739376-2 12/09/21 18:07

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Barium | 100 | 109 | 109 | 80.0-120 | |
| Cadmium | 100 | 104 | 104 | 80.0-120 | |
| Copper | 100 | 107 | 107 | 80.0-120 | |
| Lead | 100 | 107 | 107 | 80.0-120 | |
| Nickel | 100 | 107 | 107 | 80.0-120 | |
| Selenium | 100 | 104 | 104 | 80.0-120 | |
| Silver | 20.0 | 19.3 | 96.7 | 80.0-120 | |
| Zinc | 100 | 103 | 103 | 80.0-120 | |

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

(OS) • (MS) R3739376-5 12/09/21 18:18 • (MSD) R3739376-6 12/09/21 18:21

| Analyte | Spike Amount mg/kg | Original Result | MS Result mg/kg | MSD Result mg/kg | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 100 | | 288 | 317 | 57.7 | 86.1 | 1 | 75.0-125 | J6 | | 9.39 | 20 |
| Cadmium | 100 | | 89.7 | 102 | 89.3 | 102 | 1 | 75.0-125 | | | 12.8 | 20 |
| Copper | 100 | | 107 | 122 | 86.7 | 102 | 1 | 75.0-125 | | | 13.1 | 20 |
| Lead | 100 | | 101 | 114 | 88.1 | 102 | 1 | 75.0-125 | | | 12.5 | 20 |
| Nickel | 100 | | 103 | 117 | 90.5 | 104 | 1 | 75.0-125 | | | 12.5 | 20 |
| Selenium | 100 | | 90.5 | 103 | 88.6 | 101 | 1 | 75.0-125 | | | 13.3 | 20 |
| Silver | 20.0 | | 16.8 | 19.0 | 83.8 | 95.1 | 1 | 75.0-125 | | | 12.6 | 20 |
| Zinc | 100 | | 116 | 135 | 75.5 | 93.9 | 1 | 75.0-125 | | | 14.6 | 20 |

## Method Blank (MB)

(MB) R3739378-1 12/09/21 20:24

| 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) R3739378-2 12/09/21 20:26 • (LCSD) R3739378-3 12/09/21 20:29

| 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 | 1.03 | 0.995 | 103 | 99.5 | 80.0-120 | | | 3.00 | 20 |

## Method Blank (MB)

(MB) R3738928-1 12/09/21 12:39

| 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) R3738928-2 12/09/21 12:43

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Arsenic | 100 | 97.8 | 97.8 | 80.0-120 | |

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

(OS) • (MS) R3738928-5 12/09/21 12:56 • (MSD) R3738928-6 12/09/21 12:59

| Analyte | Spike Amount mg/kg | Original Result | MS Result mg/kg | MSD Result mg/kg | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 100 | | 81.4 | 100 | 71.9 | 90.6 | 5 | 75.0-125 | J6 | J3 | 20.6 | 20 |

## Method Blank (MB)

(MB) R3738365-2 12/06/21 06:36

| 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)* | *109* | | | *77.0-120* |

## Laboratory Control Sample (LCS)

(LCS) R3738365-1 12/06/21 05:50

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| TPH (GC/FID) Low Fraction | 5.50 | 4.61 | 83.8 | 72.0-127 | |
| *(S) a,a,a-Trifluorotoluene(FID)* | | | *95.8* | *77.0-120* | |

## Method Blank (MB)

(MB) R3737836-3 12/05/21 23:24

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| Benzene | U | | 0.000467 | 0.00100 |
| Ethylbenzene | U | | 0.000737 | 0.00250 |
| Toluene | U | | 0.00130 | 0.00500 |
| 1,2,4-Trimethylbenzene | U | | 0.00158 | 0.00500 |
| 1,3,5-Trimethylbenzene | U | | 0.00200 | 0.00500 |
| Xylenes, Total | U | | 0.000880 | 0.00650 |
| *(S) Toluene-d8* | *112* | | | *75.0-131* |
| *(S) 4-Bromofluorobenzene* | *96.1* | | | *67.0-138* |
| *(S) 1,2-Dichloroethane-d4* | *101* | | | *70.0-130* |

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

(LCS) R3737836-1 12/05/21 22:02 • (LCSD) R3737836-2 12/05/21 22:21

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCSD Result mg/kg | LCS Rec. % | LCSD Rec. % | Rec. Limits % | LCS Qualifier | LCSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.125 | 0.108 | 0.122 | 86.4 | 97.6 | 70.0-123 | | | 12.2 | 20 |
| Ethylbenzene | 0.125 | 0.103 | 0.118 | 82.4 | 94.4 | 74.0-126 | | | 13.6 | 20 |
| Toluene | 0.125 | 0.111 | 0.126 | 88.8 | 101 | 75.0-121 | | | 12.7 | 20 |
| 1,2,4-Trimethylbenzene | 0.125 | 0.108 | 0.120 | 86.4 | 96.0 | 70.0-126 | | | 10.5 | 20 |
| 1,3,5-Trimethylbenzene | 0.125 | 0.103 | 0.115 | 82.4 | 92.0 | 73.0-127 | | | 11.0 | 20 |
| Xylenes, Total | 0.375 | 0.326 | 0.360 | 86.9 | 96.0 | 72.0-127 | | | 9.91 | 20 |
| *(S) Toluene-d8* | | | | *107* | *108* | *75.0-131* | | | | |
| *(S) 4-Bromofluorobenzene* | | | | *98.6* | *97.4* | *67.0-138* | | | | |
| *(S) 1,2-Dichloroethane-d4* | | | | *105* | *106* | *70.0-130* | | | | |

## L1437995-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1437995-02 12/06/21 06:37 • (MS) R3737836-4 12/06/21 06:56 • (MSD) R3737836-5 12/06/21 07:15

| 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 % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.125 | ND | 0.102 | 0.108 | 81.6 | 86.4 | 1 | 10.0-149 | | | 5.71 | 37 |
| Ethylbenzene | 0.125 | ND | 0.101 | 0.107 | 80.8 | 85.6 | 1 | 10.0-160 | | | 5.77 | 38 |
| Toluene | 0.125 | ND | 0.109 | 0.114 | 87.2 | 91.2 | 1 | 10.0-156 | | | 4.48 | 38 |
| 1,2,4-Trimethylbenzene | 0.125 | ND | 0.107 | 0.113 | 85.6 | 90.4 | 1 | 10.0-160 | | | 5.45 | 36 |
| 1,3,5-Trimethylbenzene | 0.125 | ND | 0.103 | 0.105 | 82.4 | 84.0 | 1 | 10.0-160 | | | 1.92 | 38 |
| Xylenes, Total | 0.375 | ND | 0.321 | 0.333 | 85.3 | 88.5 | 1 | 10.0-160 | | | 3.67 | 38 |
| *(S) Toluene-d8* | | | | | *108* | *108* | | *75.0-131* | | | | |
| *(S) 4-Bromofluorobenzene* | | | | | *97.2* | *97.4* | | *67.0-138* | | | | |
| *(S) 1,2-Dichloroethane-d4* | | | | | *104* | *104* | | *70.0-130* | | | | |

## Method Blank (MB)

(MB) R3737747-1 12/06/21 17:02

| 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 | U | | 0.274 | 4.00 |
| *(S) o-Terphenyl* | *55.4* | | | *18.0-148* |

## Laboratory Control Sample (LCS)

(LCS) R3737747-2 12/06/21 17:15

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| C10-C28 Diesel Range | 50.0 | 28.3 | 56.6 | 50.0-150 | |
| *(S) o-Terphenyl* | | | *72.4* | *18.0-148* | |

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

(OS) • (MS) R3737747-3 12/06/21 21:38 • (MSD) R3737747-4 12/06/21 21:51

| Analyte | Spike Amount mg/kg | Original Result | 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 | 49.5 | | 150 | 109 | 123 | 40.2 | 20 | 50.0-150 | | J3 J6 | 31.7 | 20 |
| *(S) o-Terphenyl* | | | | | *0.000* | *0.000* | | *18.0-148* | J7 | J7 | | |

## Method Blank (MB)

(MB) R3739338-2 12/09/21 18:28

| Analyte | MB Result mg/kg | MB Qualifier | MB MDL mg/kg | MB RDL mg/kg |
|---|---|---|---|---|
| Anthracene | U | | 0.00230 | 0.00600 |
| Acenaphthene | U | | 0.00209 | 0.00600 |
| Acenaphthylene | U | | 0.00216 | 0.00600 |
| Benzo(a)anthracene | U | | 0.00173 | 0.00600 |
| Benzo(a)pyrene | U | | 0.00179 | 0.00600 |
| Benzo(b)fluoranthene | U | | 0.00153 | 0.00600 |
| Benzo(g,h,i)perylene | U | | 0.00177 | 0.00600 |
| Benzo(k)fluoranthene | U | | 0.00215 | 0.00600 |
| Chrysene | U | | 0.00232 | 0.00600 |
| Dibenz(a,h)anthracene | U | | 0.00172 | 0.00600 |
| Fluoranthene | U | | 0.00227 | 0.00600 |
| Fluorene | U | | 0.00205 | 0.00600 |
| Indeno(1,2,3-cd)pyrene | U | | 0.00181 | 0.00600 |
| Naphthalene | U | | 0.00408 | 0.0200 |
| Phenanthrene | U | | 0.00231 | 0.00600 |
| Pyrene | U | | 0.00200 | 0.00600 |
| 1-Methylnaphthalene | U | | 0.00449 | 0.0200 |
| 2-Methylnaphthalene | U | | 0.00427 | 0.0200 |
| 2-Chloronaphthalene | U | | 0.00466 | 0.0200 |
| *(S) Nitrobenzene-d5* | *80.2* | | | *14.0-149* |
| *(S) 2-Fluorobiphenyl* | *89.9* | | | *34.0-125* |
| *(S) p-Terphenyl-d14* | *99.9* | | | *23.0-120* |

## Laboratory Control Sample (LCS)

(LCS) R3739338-1 12/09/21 18:10

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Anthracene | 0.0800 | 0.0578 | 72.3 | 50.0-126 | |
| Acenaphthene | 0.0800 | 0.0651 | 81.4 | 50.0-120 | |
| Acenaphthylene | 0.0800 | 0.0632 | 79.0 | 50.0-120 | |
| Benzo(a)anthracene | 0.0800 | 0.0559 | 69.9 | 45.0-120 | |
| Benzo(a)pyrene | 0.0800 | 0.0540 | 67.5 | 42.0-120 | |
| Benzo(b)fluoranthene | 0.0800 | 0.0653 | 81.6 | 42.0-121 | |
| Benzo(g,h,i)perylene | 0.0800 | 0.0617 | 77.1 | 45.0-125 | |
| Benzo(k)fluoranthene | 0.0800 | 0.0651 | 81.4 | 49.0-125 | |
| Chrysene | 0.0800 | 0.0618 | 77.3 | 49.0-122 | |
| Dibenz(a,h)anthracene | 0.0800 | 0.0599 | 74.9 | 47.0-125 | |
| Fluoranthene | 0.0800 | 0.0606 | 75.8 | 49.0-129 | |

## Laboratory Control Sample (LCS)

(LCS) R3739338-1 12/09/21 18:10

| Analyte | Spike Amount mg/kg | LCS Result mg/kg | LCS Rec. % | Rec. Limits % | LCS Qualifier |
|---|---|---|---|---|---|
| Fluorene | 0.0800 | 0.0619 | 77.4 | 49.0-120 | |
| Indeno(1,2,3-cd)pyrene | 0.0800 | 0.0597 | 74.6 | 46.0-125 | |
| Naphthalene | 0.0800 | 0.0541 | 67.6 | 50.0-120 | |
| Phenanthrene | 0.0800 | 0.0655 | 81.9 | 47.0-120 | |
| Pyrene | 0.0800 | 0.0618 | 77.3 | 43.0-123 | |
| 1-Methylnaphthalene | 0.0800 | 0.0674 | 84.3 | 51.0-121 | |
| 2-Methylnaphthalene | 0.0800 | 0.0618 | 77.3 | 50.0-120 | |
| 2-Chloronaphthalene | 0.0800 | 0.0624 | 78.0 | 50.0-120 | |
| *(S) Nitrobenzene-d5* | | | *77.5* | *14.0-149* | |
| *(S) 2-Fluorobiphenyl* | | | *91.7* | *34.0-125* | |
| *(S) p-Terphenyl-d14* | | | *95.3* | *23.0-120* | |

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

(OS) • (MS) R3739338-3 12/09/21 22:19 • (MSD) R3739338-4 12/09/21 22:37

| Analyte | Spike Amount mg/kg | Original Result | MS Result mg/kg | MSD Result mg/kg | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Anthracene | 0.0776 | | 0.0616 | 0.0639 | 79.4 | 83.2 | 1 | 10.0-145 | | | 3.67 | 30 |
| Acenaphthene | 0.0776 | | 0.0621 | 0.0636 | 80.0 | 82.8 | 1 | 14.0-127 | | | 2.39 | 27 |
| Acenaphthylene | 0.0776 | | 0.0700 | 0.0699 | 90.2 | 91.0 | 1 | 21.0-124 | | | 0.143 | 25 |
| Benzo(a)anthracene | 0.0776 | | 0.0641 | 0.0675 | 82.6 | 87.9 | 1 | 10.0-139 | | | 5.17 | 30 |
| Benzo(a)pyrene | 0.0776 | | 0.0658 | 0.0702 | 81.7 | 88.3 | 1 | 10.0-141 | | | 6.47 | 31 |
| Benzo(b)fluoranthene | 0.0776 | | 0.0535 | 0.0591 | 68.9 | 77.0 | 1 | 10.0-140 | | | 9.95 | 36 |
| Benzo(g,h,i)perylene | 0.0776 | | 0.0635 | 0.0712 | 74.7 | 85.5 | 1 | 10.0-140 | | | 11.4 | 33 |
| Benzo(k)fluoranthene | 0.0776 | | 0.0551 | 0.0584 | 71.0 | 76.0 | 1 | 10.0-137 | | | 5.81 | 31 |
| Chrysene | 0.0776 | | 0.0628 | 0.0671 | 80.9 | 87.4 | 1 | 10.0-145 | | | 6.62 | 30 |
| Dibenz(a,h)anthracene | 0.0776 | | 0.0550 | 0.0598 | 70.9 | 77.9 | 1 | 10.0-132 | | | 8.36 | 31 |
| Fluoranthene | 0.0776 | | 0.0612 | 0.0643 | 78.9 | 83.7 | 1 | 10.0-153 | | | 4.94 | 33 |
| Fluorene | 0.0776 | | 0.0600 | 0.0612 | 77.3 | 79.7 | 1 | 11.0-130 | | | 1.98 | 29 |
| Indeno(1,2,3-cd)pyrene | 0.0776 | | 0.0615 | 0.0689 | 79.3 | 89.7 | 1 | 10.0-137 | | | 11.3 | 32 |
| Naphthalene | 0.0776 | | 0.0523 | 0.0529 | 67.4 | 68.9 | 1 | 10.0-135 | | | 1.14 | 27 |
| Phenanthrene | 0.0776 | | 0.0640 | 0.0648 | 82.5 | 84.4 | 1 | 10.0-144 | | | 1.24 | 31 |
| Pyrene | 0.0776 | | 0.0619 | 0.0651 | 77.0 | 82.0 | 1 | 10.0-148 | | | 5.04 | 35 |
| 1-Methylnaphthalene | 0.0776 | | 0.0664 | 0.0670 | 85.6 | 87.2 | 1 | 10.0-142 | | | 0.900 | 28 |
| 2-Methylnaphthalene | 0.0776 | | 0.0611 | 0.0625 | 78.7 | 81.4 | 1 | 10.0-137 | | | 2.27 | 28 |
| 2-Chloronaphthalene | 0.0776 | | 0.0602 | 0.0605 | 77.6 | 78.8 | 1 | 29.0-120 | | | 0.497 | 24 |
| *(S) Nitrobenzene-d5* | | | | | *85.4* | *85.1* | | *14.0-149* | | | | |
| *(S) 2-Fluorobiphenyl* | | | | | *90.9* | *91.4* | | *34.0-125* | | | | |
| *(S) p-Terphenyl-d14* | | | | | *90.2* | *90.4* | | *23.0-120* | | | | |

# 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 |
|---|---|
| J3 | The associated batch QC was outside the established quality control range for precision. |
| J6 | The sample matrix interfered with the ability to make any accurate determination; spike value is low. |
| J7 | Surrogate recovery cannot be used for control limit evaluation due to dilution. |
| 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.

# CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical®

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

L1437990

**ALL SHADED AREAS are for LAB USE ONLY**

| | |
|---|---|
| Company: Campos EPC | Billing Information: Caerus Oil and Gas Account: CAERUSPCO |
| Address: 1401 Blake St. Denver, CO 80202 | |
| Report To: ~~Brian Middleton~~ Jake Janicek | Email To: ~~bmiddleton@caerusoilandgas.com~~ |
| Copy To: Steve.Sivigliano@camposepc.com | Site Collection Info/Address: JJanicek@caerusoilandgas.com |
| Customer Project Name/Number: E34-496 | State: / County/City: Time Zone Collected: [ ]PT [ ]MT [ ]CT [ ]ET |
| Phone: 970-619-0600 Email: same as above | Site/Facility ID #: E34-496 |
| Collected By (print): Evan Mason | Purchase Order #: Quote #: |
| Collected By (signature): | Turnaround Date Required: |
| Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: _____ [ ] Hold: _____ | Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [✓] 5 Day (Expedite Charges Apply) |
| | Compliance Monitoring? [ ] Yes [ ] No |
| | DW PWS ID #: DW Location Code: |
| | Immediately Packed on Ice: [✓] Yes [ ] No |
| | Field Filtered (if applicable): [ ] Yes [ ] No Analysis: _____ |

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

Container Preservative Type **

Lab Project Manager:

Analyses

Lab Profile/Line:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

| Customer Sample ID | Matrix * | Comp / Grab | Collected (or Composite Start) Date | Collected (or Composite Start) Time | Composite End Date | Composite End Time | Res Cl | # of Ctns | COGCC Table 915-1 | Arsenic, pH, SAR, EC, Boron(hot water sol.) | Major Anions, Major Cations (see list) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20211202-E34-496(SEP-STOCK) | SL | Comp | 12/2/21 | 1130 | | | | 2 | X | | | | | | | | | |
| 20211202-E34-496(FL-SEP)@8' | SL | Grab | 12/2/21 | 1200 | | | | 3 | X | | | ~~X~~ | | | | | | |

Lab Sample Receipt Checklist:

| | | | |
|---|---|---|---|
| Custody Seals Present/Intact | Y | N | NA |
| Custody Signatures Present | Y | N | NA |
| Collector Signature Present | Y | N | NA |
| Bottles Intact | Y | N | NA |
| Correct Bottles | Y | N | NA |
| Sufficient Volume | Y | N | NA |
| Samples Received on Ice | Y | N | NA |
| VOA - Headspace Acceptable | Y | N | NA |
| USDA Regulated Soils | Y | N | NA |
| Samples in Holding Time | Y | N | NA |
| Residual Chlorine Present | Y | N | NA |
| Cl Strips: _____ | | | |
| Sample pH Acceptable | Y | N | NA |
| pH Strips: _____ | | | |
| Sulfide Present | Y | N | NA |
| Lead Acetate Strips: _____ | | | |

LAB USE ONLY:
Lab Sample # / Comments:

Customer Remarks / Special Conditions / Possible Hazards:
Br, Cl, Fl, SO4, NO3 as N, NO4 as N, P, Ca, Fe, Mg, Mn, K, Na

Type of Ice Used: (Wet) Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): (Y) N NA

SHORT HOLDS PRESENT (<72 hours): Y (N) N/A

Lab Tracking #:

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: _____
Cooler 1 Temp Upon Receipt: ____oC
Cooler 1 Therm Corr. Factor: ____oC
Cooler 1 Corrected Temp: ____oC
Comments: B4 A6
4.4+0=4.4

| Relinquished by/Company: (Signature) | Date/Time: | Received by/Company: (Signature) | Date/Time: |
|---|---|---|---|
| | 12/2/21 1430 | | 12/2/21 1430 |
| Relinquished by/Company: (Signature) | Date/Time: | Received by/Company: (Signature) | Date/Time: |
| | 12/2/21 1500 | | |
| Relinquished by/Company: (Signature) | Date/Time: | Received by/Company: (Signature) | Date/Time: |
| | | | 12/3/21 900 |

B070

Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: _____ of: _____

516 1232 0027

Location E34-496 Date 11/3/21

Project / Client Caerus

Sunny. 45°F. Little to no wind EM/SS

900: Meet w/ Jake & SS on site to review Ground Disturbance Permits @ L24, A03 & ES4

- Review & sign Ground Disturbance Permit
- Review & sign JSA
- Review Scope of work
- Prepare equipment for sampling

1030: Begin sampling

| Sample Name: | PID (ppm): | Time: |
|---|---|---|
| 20211103-E34-496(8508F)@5' | 0.8 | 1015 (3 jars) |
| " " (8508E)@5' | 0.5 | 1020 (3 jars) |
| " " (FL-8508E)@5' | 0.85 | 1030 (3 jars) |
| " " (FL-8508F)@5' | 2.1 | 1040 (3 jars) |
| " " (Stock) Well | 0.75 | 1050 |
| " " (FL-SEP)@6' | 29.0 | 1100 |
| " " (Stock) Sep | 3.6 | 1110 |

1130: Begin logging all sample locations & set GCPs for drone flight

1230: Conduct drone flight

1240: Load & decon all equipment

- Head to A03 location
- Off Site

11/3/21


11/3/2021


11/3/2021


11/3/2021


11/3/2021


11/3/2021


11/3/2021

52 Location E34-496 Date 12/2/21

Project / Client Caerus

Sunny. 55°F. Mild wind.

1115: Arrive on site to excavate 8508F wellhead vault & collect samples, excavate Sep corridor and collect samples, [redacted] & collect sep-stockpile samples

1130: Base of 8508F wellhead vault is all cement/rock
- No soil available to collect samples
- Document w/ photos

1140: Begin collecting Sep-Stock samples & Sep hydrovac

| Sample Name: | PID: | Time: |
|---|---|---|
| 20211202-E34-496 (SEP-STOCK) | 0.10 | 1130 |
| 20211202-E34-496 (FL-SEP)@8' | 0.[redacted]15 EM | 1200 (3 jars) |

* Hydrovacced Separator excavation ~ 2' & ran into Cement base. Sample collected at base of northern-most wall @ ~ 8' bgs. Document w/ photos

1250: All hydrovaccing & sampling complete
- Load equipment
- Off site
- Head to H03 to collect stockpile samples

12/2/21


12/2/2021


12/2/2021


12/2/2021
SG 8508 ft 33
AFE 05-045-21900

08-May-2020

Jake Janicek
Caerus Oil and Gas LLC
143 Diamond Ave.
Parachute, CO 81635

Re: **E34 Source Sample** Work Order: **20050070**

Dear Jake,

ALS Environmental received 1 sample on 01-May-2020 10:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 24.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

**Report of Laboratory Analysis**

## ALS Group, USA

Date: 08-May-20

**Client:** Caerus Oil and Gas LLC
**Project:** E34 Source Sample
**Work Order:** **20050070**

# Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 20050070-01 | 20200430-E34-496-Source | Water | | 4/30/2020 13:15 | 5/1/2020 10:00 | ☐ |

**Client:** Caerus Oil and Gas LLC
**Project:** E34 Source Sample
**Work Order:** 20050070

# Case Narrative

Batch 155508, Method ICP_6020_W, Sample 20050070-01D: The reporting limit for Selenium is elevated due to internal standard failure in the undiluted run.

Batch R287799, Method PH_9040_W, Sample LCS-R287799: Sample was processed outside of holding time for pH, as the analysis is a field test and holding time is defined as 15 minutes.

Batch R288050, Method GRO_8015_W, Sample 20050070-01A MS/MSD: The MS/MSD recovery was below the lower control limit for GRO. The corresponding result in the parent sample may be biased low.

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| ** | Estimated Value |
| a | Analyte is non-accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| Hr | BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated. |
| J | Analyte is present at an estimated concentration between the MDL and Report Limit |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |
| X | Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level. |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| LOD | Limit of Detection (see MDL) |
| LOQ | Limit of Quantitation (see PQL) |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| TDL | Target Detection Limit |
| TNTC | Too Numerous To Count |
| A | APHA Standard Methods |
| D | ASTM |
| E | EPA |
| SW | SW-846 Update III |

| Units Reported | Description |
|---|---|
| °C | Degrees Celcius |
| µg/L | Micrograms per Liter |
| µmhos/cm | Micromhos per Centimeter |
| mg/L | Milligrams per Liter |
| s.u. | Standard Units |

# ALS Group, USA

**Date:** *08-May-20*

**Client:** Caerus Oil and Gas LLC
**Project:** E34 Source Sample
**Work Order:** 20050070
**Sample ID:** 20200430-E34-496-Source
**Lab ID:** 20050070-01
**Collection Date:** 4/30/2020 01:15 PM
**Matrix:** WATER

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015D** | | Prep: SW3511 5/6/20 14:06 | Analyst: **JZB** |
| **DRO (C10-C28)** | **18** | | **1.0** | **mg/L** | 10 | 5/7/2020 06:52 PM |
| *Surr: 4-Terphenyl-d14* | *63.9* | | *35-161* | *%REC* | 10 | 5/7/2020 06:52 PM |
| **GASOLINE RANGE ORGANICS BY GC-FID** | | | **SW8015D** | | | Analyst: **JZB** |
| **GRO (C6-C10)** | **87,000** | | **2,000** | **µg/L** | 10 | 5/6/2020 10:47 PM |
| *Surr: Toluene-d8* | *93.8* | | *79-130* | *%REC* | 10 | 5/6/2020 10:47 PM |
| **METALS BY ICP-MS** | | | **SW6020B** | | Prep: SW3005A 5/6/20 12:36 | Analyst: **STP** |
| **Barium** | **31** | | **0.50** | **mg/L** | 100 | 5/6/2020 05:54 PM |
| **Boron** | **7.4** | | **0.20** | **mg/L** | 10 | 5/6/2020 05:56 PM |
| **Calcium** | **110** | | **0.50** | **mg/L** | 1 | 5/6/2020 03:26 PM |
| **Iron** | **7.1** | | **0.80** | **mg/L** | 10 | 5/6/2020 05:56 PM |
| **Magnesium** | **11** | | **2.0** | **mg/L** | 10 | 5/6/2020 05:56 PM |
| **Manganese** | **0.21** | | **0.0050** | **mg/L** | 1 | 5/6/2020 03:26 PM |
| **Potassium** | **56** | | **2.0** | **mg/L** | 10 | 5/6/2020 05:56 PM |
| Selenium | U | | 0.050 | mg/L | 10 | 5/6/2020 05:56 PM |
| **Sodium** | **4,200** | | **20** | **mg/L** | 100 | 5/6/2020 05:54 PM |
| **Strontium** | **19** | | **0.50** | **mg/L** | 100 | 5/6/2020 05:54 PM |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260C** | | | Analyst: **MF** |
| **Benzene** | **6,100** | | **100** | **µg/L** | 100 | 5/4/2020 02:50 PM |
| **Ethylbenzene** | **490** | | **100** | **µg/L** | 100 | 5/4/2020 02:50 PM |
| **m,p-Xylene** | **5,900** | | **200** | **µg/L** | 100 | 5/4/2020 02:50 PM |
| **o-Xylene** | **990** | | **100** | **µg/L** | 100 | 5/4/2020 02:50 PM |
| **Toluene** | **10,000** | | **100** | **µg/L** | 100 | 5/4/2020 02:50 PM |
| **Xylenes, Total** | **6,900** | | **300** | **µg/L** | 100 | 5/4/2020 02:50 PM |
| *Surr: 1,2-Dichloroethane-d4* | *98.6* | | *75-120* | *%REC* | 100 | 5/4/2020 02:50 PM |
| *Surr: 4-Bromofluorobenzene* | *97.0* | | *80-110* | *%REC* | 100 | 5/4/2020 02:50 PM |
| *Surr: Dibromofluoromethane* | *105* | | *85-115* | *%REC* | 100 | 5/4/2020 02:50 PM |
| *Surr: Toluene-d8* | *102* | | *85-110* | *%REC* | 100 | 5/4/2020 02:50 PM |
| **ALKALINITY** | | | **A2320 B-11** | | | Analyst: **QTN** |
| **Alkalinity, Bicarbonate (as CaCO3)** | **870** | | **10** | **mg/L** | 1 | 5/4/2020 03:16 PM |
| Alkalinity, Carbonate (as CaCO3) | U | | 10 | mg/L | 1 | 5/4/2020 03:16 PM |
| **Alkalinity, Total (as CaCO3)** | **870** | | **10** | **mg/L** | 1 | 5/4/2020 03:16 PM |
| **ANIONS BY ION CHROMATOGRAPHY** | | | **SW9056A** | | | Analyst: **JDR** |
| **Bromide** | **46** | | **3.2** | **mg/L** | 16 | 5/6/2020 03:57 PM |
| **Chloride** | **5,700** | | **500** | **mg/L** | 500 | 5/6/2020 04:16 PM |
| **Fluoride** | **41** | | **1.6** | **mg/L** | 16 | 5/6/2020 03:57 PM |
| **Sulfate** | **9.8** | J | **16** | **mg/L** | 16 | 5/6/2020 03:57 PM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

**Date:** *08-May-20*

**Client:** Caerus Oil and Gas LLC
**Project:** E34 Source Sample
**Work Order:** 20050070
**Sample ID:** 20200430-E34-496-Source
**Lab ID:** 20050070-01
**Collection Date:** 4/30/2020 01:15 PM
**Matrix:** WATER

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **NITROGEN, NITRITE** | | | **A4500-NO2 B-11** | | | Analyst: **JB** |
| Nitrogen, Nitrite | U | | 0.020 | mg/L | 1 | 5/1/2020 05:30 PM |
| **NITROGEN, NITRATE** | | | **E353.2 R2.0** | | | Analyst: **CAC** |
| **Nitrogen, Nitrate** | **0.015** | J | **0.020** | **mg/L** | 1 | 5/4/2020 11:21 AM |
| **PHOSPHORUS, TOTAL** | | | **E365.1 R2.0** | | Prep: E365.1 R2.0 5/5/20 17:56 | Analyst: **CAC** |
| **Phosphorus, Total** | **0.060** | | **0.050** | **mg/L** | 1 | 5/6/2020 12:34 PM |
| **PH (LABORATORY)** | | | **SW9040C** | | | Analyst: **QTN** |
| **pH (laboratory)** | **6.84** | H | **0.100** | **s.u.** | 1 | 5/4/2020 03:16 PM |
| **Temperature** | **20.2** | H | **0.100** | **°C** | 1 | 5/4/2020 03:16 PM |
| **SPECIFIC CONDUCTANCE @ 25°C** | | | **A2510 B-11** | | | Analyst: **DVD** |
| **Specific Conductance** | **17,000** | | **5.0** | **µmhos/cm** | 1 | 5/7/2020 10:30 AM |
| **TOTAL DISSOLVED SOLIDS** | | | **A2540 C-11** | | Prep: FILTER 5/4/20 17:17 | Analyst: **ERW** |
| **Total Dissolved Solids** | **10,000** | | **150** | **mg/L** | 1 | 5/6/2020 05:00 PM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

Batch ID: **155522** Instrument ID **GC8** Method: **SW8015D**

| **MBLK** | Sample ID: **DBLKW1-155522-155522** | | | Units: **mg/L** | | | Analysis Date: **5/7/2020 04:16 PM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Run ID: **GC8_200507B** | | | SeqNo: **6400249** | | | Prep Date: **5/6/2020** | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| DRO (C10-C28) | U | 0.10 | | | | | | | | |
| *Surr: 4-Terphenyl-d14* | *0.03917* | 0 | *0.0417* | 0 | *93.9* | *35-161* | 0 | | | |

| **LCS** | Sample ID: **DLCSW1-155522-155522** | | | Units: **mg/L** | | | Analysis Date: **5/7/2020 05:34 PM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Run ID: **GC8_200507B** | | | SeqNo: **6400254** | | | Prep Date: **5/6/2020** | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| DRO (C10-C28) | 4.565 | 0.10 | 4.17 | 0 | 109 | 60-150 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *0.041* | 0 | *0.0417* | 0 | *98.3* | *35-161* | 0 | | | |

| **LCSD** | Sample ID: **DLCSDW1-155522-155522** | | | Units: **mg/L** | | | Analysis Date: **5/7/2020 06:13 PM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Run ID: **GC8_200507B** | | | SeqNo: **6400256** | | | Prep Date: **5/6/2020** | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| DRO (C10-C28) | 4.506 | 0.10 | 4.17 | 0 | 108 | 60-150 | 4.565 | 1.3 | 30 | |
| *Surr: 4-Terphenyl-d14* | *0.04333* | 0 | *0.0417* | 0 | *104* | *35-161* | 0.041 | *5.53* | *30* | |

**The following samples were analyzed in this batch:** 20050070-01E

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC
**Work Order:** 20050070
**Project:** E34 Source Sample

# QC BATCH REPORT

Batch ID: **R288050** Instrument ID **GC9** Method: **SW8015D**

**MBLK** Sample ID: **GBLKW1-200506-R288050** Units: **µg/L** Analysis Date: **5/6/2020 10:03 PM**
Client ID: Run ID: **GC9_200506B** SeqNo: **6398170** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| GRO (C6-C10) | U | 200 | | | | | | | | |
| *Surr: Toluene-d8* | *102.4* | 0 | *100* | 0 | *102* | *79-130* | 0 | | | |

**LCS** Sample ID: **GLCSW1-200506-R288050** Units: **µg/L** Analysis Date: **5/6/2020 10:25 PM**
Client ID: Run ID: **GC9_200506B** SeqNo: **6398171** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| GRO (C6-C10) | 8999 | 200 | 10000 | 0 | 90 | 76-126 | 0 | | | |
| *Surr: Toluene-d8* | *98.2* | 0 | *100* | 0 | *98.2* | *79-130* | 0 | | | |

**MS** Sample ID: **20050070-01A MS** Units: **µg/L** Analysis Date: **5/6/2020 11:09 PM**
Client ID: **20200430-E34-496-Source** Run ID: **GC9_200506B** SeqNo: **6398173** Prep Date: DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| GRO (C6-C10) | 126000 | 2,000 | 100000 | 86650 | 39.4 | 76-126 | 0 | | | S |
| *Surr: Toluene-d8* | *924.1* | 0 | *1000* | 0 | *92.4* | *79-130* | 0 | | | |

**MSD** Sample ID: **20050070-01A MSD** Units: **µg/L** Analysis Date: **5/6/2020 11:32 PM**
Client ID: **20200430-E34-496-Source** Run ID: **GC9_200506B** SeqNo: **6398174** Prep Date: DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| GRO (C6-C10) | 152300 | 2,000 | 100000 | 86650 | 65.6 | 76-126 | 126000 | 18.9 | 30 | S |
| *Surr: Toluene-d8* | *947.1* | 0 | *1000* | 0 | *94.7* | *79-130* | 924.1 | *2.46* | *30* | |

**The following samples were analyzed in this batch:** 20050070-01A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC
**Work Order:** 20050070
**Project:** E34 Source Sample

# QC BATCH REPORT

Batch ID: **155508** Instrument ID **ICPMS4** Method: **SW6020B**

**MBLK** Sample ID: **MBLK-155508-155508** Units: **mg/L** Analysis Date: **5/6/2020 03:14 PM**
Client ID: Run ID: **ICPMS4_200506A** SeqNo: **6394527** Prep Date: **5/6/2020** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | U | 0.0050 | | | | | | | | |
| Calcium | U | 0.50 | | | | | | | | |
| Iron | U | 0.080 | | | | | | | | |
| Magnesium | U | 0.20 | | | | | | | | |
| Manganese | U | 0.0050 | | | | | | | | |
| Potassium | U | 0.20 | | | | | | | | |
| Selenium | U | 0.0050 | | | | | | | | |
| Strontium | U | 0.0050 | | | | | | | | |

**MBLK** Sample ID: **MBLK-155508-155508** Units: **mg/L** Analysis Date: **5/6/2020 05:46 PM**
Client ID: Run ID: **ICPMS3_200506B** SeqNo: **6396589** Prep Date: **5/6/2020** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Boron | U | 0.020 | | | | | | | | |
| Sodium | U | 0.20 | | | | | | | | |

**LCS** Sample ID: **LCS-155508-155508** Units: **mg/L** Analysis Date: **5/6/2020 03:19 PM**
Client ID: Run ID: **ICPMS4_200506A** SeqNo: **6394992** Prep Date: **5/6/2020** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.0999 | 0.0050 | 0.1 | 0 | 99.9 | 80-120 | 0 | | | |
| Calcium | 10.32 | 0.50 | 10 | 0 | 103 | 80-120 | 0 | | | |
| Iron | 10.2 | 0.080 | 10 | 0 | 102 | 80-120 | 0 | | | |
| Magnesium | 10.53 | 0.20 | 10 | 0 | 105 | 80-120 | 0 | | | |
| Manganese | 0.0985 | 0.0050 | 0.1 | 0 | 98.5 | 80-120 | 0 | | | |
| Potassium | 9.979 | 0.20 | 10 | 0 | 99.8 | 80-120 | 0 | | | |
| Selenium | 0.09848 | 0.0050 | 0.1 | 0 | 98.5 | 80-120 | 0 | | | |
| Strontium | 0.1024 | 0.0050 | 0.1 | 0 | 102 | 80-120 | 0 | | | |

**LCS** Sample ID: **LCS-155508-155508** Units: **mg/L** Analysis Date: **5/6/2020 05:47 PM**
Client ID: Run ID: **ICPMS3_200506B** SeqNo: **6396590** Prep Date: **5/6/2020** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Boron | 0.4717 | 0.020 | 0.5 | 0 | 94.3 | 80-120 | 0 | | | |
| Sodium | 9.827 | 0.20 | 10 | 0 | 98.3 | 80-120 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC
**Work Order:** 20050070
**Project:** E34 Source Sample

# QC BATCH REPORT

Batch ID: **155508** Instrument ID **ICPMS4** Method: **SW6020B**

**MS** Sample ID: **20050093-01AMS** Units: **mg/L** Analysis Date: **5/6/2020 03:29 PM**
Client ID: Run ID: **ICPMS4_200506A** SeqNo: **6394998** Prep Date: **5/6/2020** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.1543 | 0.0050 | 0.1 | 0.07932 | 75 | 75-125 | 0 | | | S |
| Calcium | 74.47 | 0.50 | 10 | 65.6 | 88.7 | 75-125 | 0 | | | O |
| Iron | 10.8 | 0.080 | 10 | 0.872 | 99.3 | 75-125 | 0 | | | |
| Magnesium | 30.63 | 0.20 | 10 | 20.72 | 99.1 | 75-125 | 0 | | | |
| Manganese | 0.1424 | 0.0050 | 0.1 | 0.04608 | 96.3 | 75-125 | 0 | | | |
| Potassium | 11.12 | 0.20 | 10 | 1.076 | 100 | 75-125 | 0 | | | |
| Selenium | 0.09955 | 0.0050 | 0.1 | -0.00014 | 99.7 | 75-125 | 0 | | | |
| Sodium | 14.12 | 0.20 | 10 | 5.801 | 83.2 | 75-125 | 0 | | | |
| Strontium | 0.2076 | 0.0050 | 0.1 | 0.123 | 84.7 | 75-125 | 0 | | | |

**MS** Sample ID: **20050093-01AMS** Units: **mg/L** Analysis Date: **5/6/2020 05:57 PM**
Client ID: Run ID: **ICPMS3_200506B** SeqNo: **6396596** Prep Date: **5/6/2020** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Boron | 0.4854 | 0.020 | 0.5 | 0.08007 | 81.1 | 75-125 | 0 | | | |

**MSD** Sample ID: **20050093-01AMSD** Units: **mg/L** Analysis Date: **5/6/2020 03:31 PM**
Client ID: Run ID: **ICPMS4_200506A** SeqNo: **6394999** Prep Date: **5/6/2020** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.1528 | 0.0050 | 0.1 | 0.07932 | 73.5 | 75-125 | 0.1543 | 0.96 | 20 | S |
| Calcium | 74.41 | 0.50 | 10 | 65.6 | 88.1 | 75-125 | 74.47 | 0.0759 | 20 | O |
| Iron | 11.02 | 0.080 | 10 | 0.872 | 101 | 75-125 | 10.8 | 1.99 | 20 | |
| Magnesium | 30.43 | 0.20 | 10 | 20.72 | 97.1 | 75-125 | 30.63 | 0.638 | 20 | |
| Manganese | 0.1433 | 0.0050 | 0.1 | 0.04608 | 97.3 | 75-125 | 0.1424 | 0.664 | 20 | |
| Potassium | 11.13 | 0.20 | 10 | 1.076 | 101 | 75-125 | 11.12 | 0.12 | 20 | |
| Selenium | 0.09866 | 0.0050 | 0.1 | -0.00014 | 98.8 | 75-125 | 0.09955 | 0.896 | 20 | |
| Sodium | 14.61 | 0.20 | 10 | 5.801 | 88.1 | 75-125 | 14.12 | 3.41 | 20 | |
| Strontium | 0.2068 | 0.0050 | 0.1 | 0.123 | 83.8 | 75-125 | 0.2076 | 0.396 | 20 | |

**MSD** Sample ID: **20050093-01AMSD** Units: **mg/L** Analysis Date: **5/6/2020 05:59 PM**
Client ID: Run ID: **ICPMS3_200506B** SeqNo: **6396597** Prep Date: **5/6/2020** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Boron | 0.4944 | 0.020 | 0.5 | 0.08007 | 82.9 | 75-125 | 0.4854 | 1.83 | 20 | |

**The following samples were analyzed in this batch:** 20050070-01D

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC
**Work Order:** 20050070
**Project:** E34 Source Sample

# QC BATCH REPORT

Batch ID: **R287782A** Instrument ID **VMS8** Method: **SW8260C**

**MBLK** Sample ID: **VBLKW1-200504-R287782A** Units: **µg/L** Analysis Date: **5/4/2020 12:50 PM**
Client ID: Run ID: **VMS8_200504A** SeqNo: **6390694** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | U | 1.0 | | | | | | | | |
| Ethylbenzene | U | 1.0 | | | | | | | | |
| m,p-Xylene | U | 2.0 | | | | | | | | |
| o-Xylene | U | 1.0 | | | | | | | | |
| Toluene | U | 1.0 | | | | | | | | |
| Xylenes, Total | U | 3.0 | | | | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *20.22* | 0 | *20* | 0 | *101* | *75-120* | 0 | | | |
| *Surr: 4-Bromofluorobenzene* | *19.94* | 0 | *20* | 0 | *99.7* | *80-110* | 0 | | | |
| *Surr: Dibromofluoromethane* | *20.39* | 0 | *20* | 0 | *102* | *85-115* | 0 | | | |
| *Surr: Toluene-d8* | *20.51* | 0 | *20* | 0 | *103* | *85-110* | 0 | | | |

**LCS** Sample ID: **VLCSW1-200504-R287782A** Units: **µg/L** Analysis Date: **5/4/2020 12:01 PM**
Client ID: Run ID: **VMS8_200504A** SeqNo: **6390693** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 19.65 | 1.0 | 20 | 0 | 98.2 | 70-130 | 0 | | | |
| Ethylbenzene | 21.79 | 1.0 | 20 | 0 | 109 | 76-123 | 0 | | | |
| m,p-Xylene | 44.2 | 2.0 | 40 | 0 | 110 | 75-130 | 0 | | | |
| o-Xylene | 19.35 | 1.0 | 20 | 0 | 96.8 | 76-127 | 0 | | | |
| Toluene | 18.96 | 1.0 | 20 | 0 | 94.8 | 76-125 | 0 | | | |
| Xylenes, Total | 63.55 | 3.0 | 60 | 0 | 106 | 76-127 | 0 | | | |
| *Surr: 1,2-Dichloroethane-d4* | *19.41* | 0 | *20* | 0 | *97* | *75-120* | 0 | | | |
| *Surr: 4-Bromofluorobenzene* | *20.77* | 0 | *20* | 0 | *104* | *80-110* | 0 | | | |
| *Surr: Dibromofluoromethane* | *20.39* | 0 | *20* | 0 | *102* | *85-115* | 0 | | | |
| *Surr: Toluene-d8* | *19.45* | 0 | *20* | 0 | *97.2* | *85-110* | 0 | | | |

**MS** Sample ID: **20050099-03A MS** Units: **µg/L** Analysis Date: **5/4/2020 06:38 PM**
Client ID: Run ID: **VMS8_200504A** SeqNo: **6390713** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 22.42 | 1.0 | 20 | 0 | 112 | 70-130 | 0 | | | |
| Ethylbenzene | 25.09 | 1.0 | 20 | 0 | 125 | 76-123 | 0 | | | S |
| m,p-Xylene | 51.29 | 2.0 | 40 | 0 | 128 | 75-130 | 0 | | | |
| o-Xylene | 22.65 | 1.0 | 20 | 0 | 113 | 76-127 | 0 | | | |
| Toluene | 22.07 | 1.0 | 20 | 0 | 110 | 76-125 | 0 | | | |
| Xylenes, Total | 73.94 | 3.0 | 60 | 0 | 123 | 76-127 | 0 | | | |
| *Surr: 1,2-Dichloroethane-d4* | *19.72* | 0 | *20* | 0 | *98.6* | *75-120* | 0 | | | |
| *Surr: 4-Bromofluorobenzene* | *19.69* | 0 | *20* | 0 | *98.4* | *80-110* | 0 | | | |
| *Surr: Dibromofluoromethane* | *20.32* | 0 | *20* | 0 | *102* | *85-115* | 0 | | | |
| *Surr: Toluene-d8* | *20.03* | 0 | *20* | 0 | *100* | *85-110* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC
**Work Order:** 20050070
**Project:** E34 Source Sample

# QC BATCH REPORT

Batch ID: **R287782A** Instrument ID **VMS8** Method: **SW8260C**

**MSD** Sample ID: **20050099-03A MSD** Units: **µg/L** Analysis Date: **5/4/2020 06:54 PM**
Client ID: Run ID: **VMS8_200504A** SeqNo: **6390714** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 21.27 | 1.0 | 20 | 0 | 106 | 70-130 | 22.42 | 5.26 | 30 | |
| Ethylbenzene | 23.6 | 1.0 | 20 | 0 | 118 | 76-123 | 25.09 | 6.12 | 30 | |
| m,p-Xylene | 48.38 | 2.0 | 40 | 0 | 121 | 75-130 | 51.29 | 5.84 | 30 | |
| o-Xylene | 21.03 | 1.0 | 20 | 0 | 105 | 76-127 | 22.65 | 7.42 | 30 | |
| Toluene | 21.11 | 1.0 | 20 | 0 | 106 | 76-125 | 22.07 | 4.45 | 30 | |
| Xylenes, Total | 69.41 | 3.0 | 60 | 0 | 116 | 76-127 | 73.94 | 6.32 | 30 | |
| *Surr: 1,2-Dichloroethane-d4* | *19.43* | 0 | *20* | 0 | *97.2* | *75-120* | 19.72 | *1.48* | *30* | |
| *Surr: 4-Bromofluorobenzene* | *19.77* | 0 | *20* | 0 | *98.8* | *80-110* | 19.69 | *0.405* | *30* | |
| *Surr: Dibromofluoromethane* | *20.14* | 0 | *20* | 0 | *101* | *85-115* | 20.32 | *0.89* | *30* | |
| *Surr: Toluene-d8* | *20.09* | 0 | *20* | 0 | *100* | *85-110* | 20.03 | *0.299* | *30* | |

**The following samples were analyzed in this batch:** 20050070-01A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC
**Work Order:** 20050070
**Project:** E34 Source Sample

# QC BATCH REPORT

Batch ID: **155424** Instrument ID **TDS** Method: **A2540 C-11**

**MBLK** Sample ID: **MBLK-155424-155424** Units: **mg/L** Analysis Date: **5/6/2020 05:00 PM**
Client ID: Run ID: **TDS_200506A** SeqNo: **6395071** Prep Date: **5/4/2020** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | U | 30 | | | | | | | | |

**LCS** Sample ID: **LCS-155424-155424** Units: **mg/L** Analysis Date: **5/6/2020 05:00 PM**
Client ID: Run ID: **TDS_200506A** SeqNo: **6395070** Prep Date: **5/4/2020** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | 460 | 30 | 495 | 0 | 92.9 | 85-109 | 0 | | | |

**DUP** Sample ID: **20050116-01A DUP** Units: **mg/L** Analysis Date: **5/6/2020 05:00 PM**
Client ID: Run ID: **TDS_200506A** SeqNo: **6395068** Prep Date: **5/4/2020** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | 660 | 30 | 0 | 0 | 0 | 0-0 | 668 | 1.2 | 10 | |

**The following samples were analyzed in this batch:** 20050070-01B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC
**Work Order:** 20050070
**Project:** E34 Source Sample

# QC BATCH REPORT

Batch ID: **155475** Instrument ID **LACHAT** Method: **E365.1 R2.0**

| **MBLK** | Sample ID: **MBLK-155475-155475** | | | | Units: **mg/L** | | | Analysis Date: **5/6/2020 12:03 PM** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Run ID: **LACHAT_200506A** | | | | SeqNo: **6394870** | | | Prep Date: **5/5/2020** | | DF: **1** |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| Phosphorus, Total | U | 0.050 | | | | | | | | |

| **LCS** | Sample ID: **LCS-155475-155475** | | | | Units: **mg/L** | | | Analysis Date: **5/6/2020 12:04 PM** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Run ID: **LACHAT_200506A** | | | | SeqNo: **6394871** | | | Prep Date: **5/5/2020** | | DF: **1** |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| Phosphorus, Total | 1.056 | 0.050 | 1 | 0 | 106 | 90-110 | 0 | | | |

| **MS** | Sample ID: **20050093-01C MS** | | | | Units: **mg/L** | | | Analysis Date: **5/6/2020 12:07 PM** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Run ID: **LACHAT_200506A** | | | | SeqNo: **6394874** | | | Prep Date: **5/5/2020** | | DF: **1** |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| Phosphorus, Total | 1.058 | 0.050 | 1 | 0.05009 | 101 | 90-110 | 0 | | | |

| **MS** | Sample ID: **20050076-01C MS** | | | | Units: **mg/L** | | | Analysis Date: **5/6/2020 12:24 PM** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Run ID: **LACHAT_200506A** | | | | SeqNo: **6394889** | | | Prep Date: **5/5/2020** | | DF: **1** |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| Phosphorus, Total | 1.539 | 0.050 | 1 | 0.5212 | 102 | 90-110 | 0 | | | |

| **MSD** | Sample ID: **20050093-01C MSD** | | | | Units: **mg/L** | | | Analysis Date: **5/6/2020 12:09 PM** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Run ID: **LACHAT_200506A** | | | | SeqNo: **6394875** | | | Prep Date: **5/5/2020** | | DF: **1** |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| Phosphorus, Total | 1.066 | 0.050 | 1 | 0.05009 | 102 | 90-110 | 1.058 | 0.753 | 20 | |

| **MSD** | Sample ID: **20050076-01C MSD** | | | | Units: **mg/L** | | | Analysis Date: **5/6/2020 12:27 PM** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Run ID: **LACHAT_200506A** | | | | SeqNo: **6394892** | | | Prep Date: **5/5/2020** | | DF: **1** |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| Phosphorus, Total | 1.505 | 0.050 | 1 | 0.5212 | 98.4 | 90-110 | 1.539 | 2.23 | 20 | |

| **LCS2** | Sample ID: **LCS2-155475-155475** | | | | Units: **mg/L** | | | Analysis Date: **5/6/2020 12:05 PM** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Run ID: **LACHAT_200506A** | | | | SeqNo: **6394872** | | | Prep Date: **5/5/2020** | | DF: **1** |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| Phosphorus, Total | 0.9864 | 0.050 | 1 | 0 | 98.6 | 90-110 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC
**Work Order:** 20050070
**Project:** E34 Source Sample

# QC BATCH REPORT

Batch ID: **155475** Instrument ID **LACHAT** Method: **E365.1 R2.0**

| **The following samples were analyzed in this batch:** | 20050070-01C |
|---|---|

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC
**Work Order:** 20050070
**Project:** E34 Source Sample

# QC BATCH REPORT

Batch ID: **R287704** Instrument ID **WETCHEM** Method: **A4500-NO2 B-11**

| **MBLK** | Sample ID: **MB-R287704-R287704** | | | Units: **mg/L** | | | Analysis Date: **5/1/2020 05:30 PM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Run ID: **WETCHEM_200501I** | | | SeqNo: **6386481** | | | Prep Date: | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| Nitrogen, Nitrite | U | 0.020 | | | | | | | | |

| **LCS** | Sample ID: **LCS-R287704-R287704** | | | Units: **mg/L** | | | Analysis Date: **5/1/2020 05:30 PM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Run ID: **WETCHEM_200501I** | | | SeqNo: **6386482** | | | Prep Date: | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| Nitrogen, Nitrite | 0.2174 | 0.020 | 0.2 | 0 | 109 | 80-120 | 0 | | | |

| **MS** | Sample ID: **20050093-01D MS** | | | Units: **mg/L** | | | Analysis Date: **5/1/2020 05:30 PM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Run ID: **WETCHEM_200501I** | | | SeqNo: **6386486** | | | Prep Date: | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| Nitrogen, Nitrite | 0.1974 | 0.020 | 0.2 | -0.0019 | 99.6 | 80-120 | 0 | | | |

| **MSD** | Sample ID: **20050093-01D MSD** | | | Units: **mg/L** | | | Analysis Date: **5/1/2020 05:30 PM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Run ID: **WETCHEM_200501I** | | | SeqNo: **6386487** | | | Prep Date: | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| Nitrogen, Nitrite | 0.2021 | 0.020 | 0.2 | -0.0019 | 102 | 80-120 | 0.1974 | 2.35 | 10 | |

**The following samples were analyzed in this batch:** 20050070-01B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC
**Work Order:** 20050070
**Project:** E34 Source Sample

# QC BATCH REPORT

Batch ID: **R287785B** Instrument ID **LACHAT2** Method: **E353.2 R2.0**

**MBLK** Sample ID: **MBLK2-R287785B** Units: **mg/L** Analysis Date: **5/4/2020 11:13 AM**
Client ID: Run ID: **LACHAT2_200504A** SeqNo: **6388426** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Nitrogen, Nitrate | U | 0.020 | | | | | | | | |

**LCS** Sample ID: **LCS2-R287785B** Units: **mg/L** Analysis Date: **5/4/2020 11:14 AM**
Client ID: Run ID: **LACHAT2_200504A** SeqNo: **6388427** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Nitrogen, Nitrate | 2.641 | 0.020 | 2.5 | 0 | 106 | 90-110 | 0 | | | |

**MS** Sample ID: **20041912-01C MS** Units: **mg/L** Analysis Date: **5/4/2020 11:16 AM**
Client ID: Run ID: **LACHAT2_200504A** SeqNo: **6388429** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Nitrogen, Nitrate | 3.579 | 0.020 | 2.5 | 1.031 | 102 | 90-110 | 0 | | | |

**MSD** Sample ID: **20041912-01C MSD** Units: **mg/L** Analysis Date: **5/4/2020 11:20 AM**
Client ID: Run ID: **LACHAT2_200504A** SeqNo: **6388432** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Nitrogen, Nitrate | 3.574 | 0.020 | 2.5 | 1.031 | 102 | 90-110 | 3.579 | 0.14 | 5 | |

**The following samples were analyzed in this batch:** 20050070-01C

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC
**Work Order:** 20050070
**Project:** E34 Source Sample

# QC BATCH REPORT

Batch ID: **R287797** Instrument ID **Titrator 1** Method: **A2320 B-11**

**MBLK** Sample ID: **MB-R287797-R287797** Units: **mg/L** Analysis Date: **5/4/2020 03:16 PM**
Client ID: Run ID: **TITRATOR 1_200504A** SeqNo: **6388666** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Bicarbonate (as CaCO3) | U | 10 | | | | | | | | |
| Alkalinity, Carbonate (as CaCO3) | U | 10 | | | | | | | | |
| Alkalinity, Total (as CaCO3) | U | 10 | | | | | | | | |

**MBLK** Sample ID: **MB-R287797-R287797** Units: **mg/L** Analysis Date: **5/4/2020 03:16 PM**
Client ID: Run ID: **TITRATOR 1_200504A** SeqNo: **6388679** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Total (As CaCO3) | U | 10 | | | | | | | | |

**LCS** Sample ID: **LCS-R287797-R287797** Units: **mg/L** Analysis Date: **5/4/2020 03:16 PM**
Client ID: Run ID: **TITRATOR 1_200504A** SeqNo: **6388667** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Carbonate (as CaCO3) | 912.2 | 10 | 925 | 0 | 98.6 | 88-110 | 0 | | | |
| Alkalinity, Total (as CaCO3) | 989 | 10 | 1000 | 0 | 98.9 | 89-103 | 0 | | | |

**LCS** Sample ID: **LCS-R287797-R287797** Units: **mg/L** Analysis Date: **5/4/2020 03:16 PM**
Client ID: Run ID: **TITRATOR 1_200504A** SeqNo: **6388680** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Total (As CaCO3) | 989 | 10 | 1000 | 0 | 98.9 | 86-104 | 0 | | | |

**DUP** Sample ID: **20041941-05B DUP** Units: **mg/L** Analysis Date: **5/4/2020 03:16 PM**
Client ID: Run ID: **TITRATOR 1_200504A** SeqNo: **6388670** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Bicarbonate (as CaCO3) | 310.2 | 10 | 0 | 0 | 0 | 0-0 | 298.9 | 3.72 | 10 | |
| Alkalinity, Carbonate (as CaCO3) | U | 10 | 0 | 0 | 0 | 0-0 | 0 | 0 | 10 | |
| Alkalinity, Total (as CaCO3) | 310.2 | 10 | 0 | 0 | 0 | 0-0 | 298.9 | 3.72 | 10 | |

**DUP** Sample ID: **20041899-01C DUP** Units: **mg/L** Analysis Date: **5/4/2020 03:16 PM**
Client ID: Run ID: **TITRATOR 1_200504A** SeqNo: **6388682** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Total (As CaCO3) | 435.7 | 10 | 0 | 0 | 0 | 0-0 | 428.4 | 1.69 | 20 | |

**The following samples were analyzed in this batch:** 20050070-01B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC
**Work Order:** 20050070
**Project:** E34 Source Sample

# QC BATCH REPORT

Batch ID: **R287799** Instrument ID **Titrator 1** Method: **A4500-H B-11**

**LCS** Sample ID: **LCS-R287799-R287799** Units: **s.u.** Analysis Date: **5/4/2020 03:16 PM**
Client ID: Run ID: **TITRATOR 1_200504B** SeqNo: **6388693** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| pH (laboratory) | 4 | 0.10 | 4 | 0 | 100 | 92-108 | 0 | | | |

**LCS** Sample ID: **LCS-R287799-R287799** Units: **s.u.** Analysis Date: **5/4/2020 03:16 PM**
Client ID: Run ID: **TITRATOR 1_200504B** SeqNo: **6388698** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| pH (laboratory) | 4 | 0.10 | 4 | 0 | 100 | 92-108 | 0 | | | |

**DUP** Sample ID: **20041941-05B DUP** Units: **s.u.** Analysis Date: **5/4/2020 03:16 PM**
Client ID: Run ID: **TITRATOR 1_200504B** SeqNo: **6388694** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| pH (laboratory) | 8.05 | 0.10 | 0 | 0 | 0 | 0-0 | 8.08 | 0.372 | 5 | H |
| Temperature | 19.48 | 0.10 | 0 | 0 | 0 | 0-0 | 19.6 | 0.614 | | H |

**The following samples were analyzed in this batch:** 20050070-01B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC
**Work Order:** 20050070
**Project:** E34 Source Sample

# QC BATCH REPORT

Batch ID: **R288010** Instrument ID **WETCHEM** Method: **A2510 B-11**

| **MBLK** | Sample ID: **MB-R288010-R288010** | | | Units: **µmhos/cm** | | | Analysis Date: **5/7/2020 10:30 AM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Run ID: **WETCHEM_200507D** | | | SeqNo: **6397161** | | | Prep Date: | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| Specific Conductance | U | 5.0 | | | | | | | | |

| **DUP** | Sample ID: **20050358-02C DUP** | | | Units: **µmhos/cm** | | | Analysis Date: **5/7/2020 10:30 AM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Run ID: **WETCHEM_200507D** | | | SeqNo: **6397166** | | | Prep Date: | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| Specific Conductance | 1402 | 5.0 | 0 | 0 | 0 | 0-0 | 1409 | 0.498 | 5 | |

| **LCS1** | Sample ID: **LCS 1-R288010** | | | Units: **µmhos/cm** | | | Analysis Date: **5/7/2020 10:30 AM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Run ID: **WETCHEM_200507D** | | | SeqNo: **6397162** | | | Prep Date: | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| Specific Conductance | 15.24 | 5.0 | 14.9 | 0 | 102 | 92-110 | 0 | | | |

| **LCS2** | Sample ID: **LCS 2-R288010** | | | Units: **µmhos/cm** | | | Analysis Date: **5/7/2020 10:30 AM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | Run ID: **WETCHEM_200507D** | | | SeqNo: **6397174** | | | Prep Date: | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| Specific Conductance | 581 | 5.0 | 592 | 0 | 98.1 | 87-112 | 0 | | | |

**The following samples were analyzed in this batch:** 20050070-01B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC
**Work Order:** 20050070
**Project:** E34 Source Sample

# QC BATCH REPORT

Batch ID: **R288034** Instrument ID **IC3** Method: **SW9056A**

**MBLK** Sample ID: **CCB/MBLK-R288034** Units: **mg/L** Analysis Date: **5/6/2020 02:21 PM**
Client ID: Run ID: **IC3_200506A** SeqNo: **6397912** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromide | U | 0.20 | | | | | | | | |
| Chloride | U | 1.0 | | | | | | | | |
| Fluoride | U | 0.10 | | | | | | | | |
| Sulfate | U | 1.0 | | | | | | | | |

**LCS** Sample ID: **LCS-R288034** Units: **mg/L** Analysis Date: **5/6/2020 02:40 PM**
Client ID: Run ID: **IC3_200506A** SeqNo: **6397913** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromide | 1.957 | 0.20 | 2 | 0 | 97.9 | 90-110 | 0 | | | |
| Chloride | 9.425 | 1.0 | 10 | 0 | 94.2 | 88-110 | 0 | | | |
| Fluoride | 2.018 | 0.10 | 2 | 0 | 101 | 82-116 | 0 | | | |
| Sulfate | 9.743 | 1.0 | 10 | 0 | 97.4 | 90-110 | 0 | | | |

**MS** Sample ID: **20041720-23A MS** Units: **mg/L** Analysis Date: **5/6/2020 07:28 PM**
Client ID: Run ID: **IC3_200506A** SeqNo: **6397928** Prep Date: DF: **50**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromide | 106.6 | 10 | 100 | 0 | 107 | 90-110 | 0 | | | |
| Chloride | 508.2 | 50 | 500 | 29.54 | 95.7 | 88-110 | 0 | | | |
| Fluoride | 106.2 | 5.0 | 100 | 0 | 106 | 82-116 | 0 | | | |
| Sulfate | 897 | 50 | 500 | 411.5 | 97.1 | 90-110 | 0 | | | |

**MSD** Sample ID: **20041720-23A MSD** Units: **mg/L** Analysis Date: **5/6/2020 07:47 PM**
Client ID: Run ID: **IC3_200506A** SeqNo: **6397929** Prep Date: DF: **50**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromide | 105.3 | 10 | 100 | 0 | 105 | 90-110 | 106.6 | 1.23 | 20 | |
| Chloride | 508.2 | 50 | 500 | 29.54 | 95.7 | 88-110 | 508.2 | 0.00689 | 20 | |
| Fluoride | 104.7 | 5.0 | 100 | 0 | 105 | 82-116 | 106.2 | 1.38 | 20 | |
| Sulfate | 896.3 | 50 | 500 | 411.5 | 97 | 90-110 | 897 | 0.0742 | 20 | |

**The following samples were analyzed in this batch:** 20050070-01B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# ALS Laboratory Group

225 Commerce Drive, Fort Collins, Colorado 80524
TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

## Chain-of-Custody

Form 202r8

WORKORDER # 20050070

PAGE 1 of 1

DISPOSAL: By Lab or Return to Client

| | | | |
|---|---|---|---|
| PROJECT NAME | E34 SOURCE SAMPLE | SAMPLER | |
| FACILITY NAME | | PROJECT NO. | |
| FACILITY ID (API) | | EDD FORMAT | |
| COMPANY NAME | Caerus | PURCHASE ORDER | |
| SEND REPORT TO | Jake Janicek | BILL TO COMPANY | Caerus |
| ADDRESS | | INVOICE ATTN TO | Jake Janicek |
| CITY / STATE / ZIP | | ADDRESS | |
| PHONE | | CITY / STATE / ZIP | |
| FAX | | PHONE | |
| E-MAIL | | FAX | |
| | | E-MAIL | |

DATE: 4-30-20

TURNAROUND: STD

| Lab ID | Field ID | Matrix | Sample Date | Sample Time | # Bottles | Pres. | QC |
|---|---|---|---|---|---|---|---|
| 1 | 20200430-E34-49b-SOURCE | W | 4-30-20 | 1315 | 15 | YES | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

**For metals or anions, please detail analytes below.** SR1 4.8-c pH2o

**Comments:** Jake Janicek will send list of requested analytes

| QC PACKAGE (check below) | |
|---|---|
| X | LEVEL II (Standard QC) |
| | LEVEL III (Std QC + forms) |
| | LEVEL IV (Std QC + forms + raw data) |
| | |

**Preservative Key:** 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

| | SIGNATURE | PRINTED NAME | DATE | TIME |
|---|---|---|---|---|
| RELINQUISHED BY | | Jake Janicek | 4-30-20 | 1545 |
| RECEIVED BY | | | 4-30-20 | 1545 |
| RELINQUISHED BY | | | 4-30-20 | 1845 |
| RECEIVED BY | | Diane Shea | 5/1/20 | 1000 |
| RELINQUISHED BY | | | | |
| RECEIVED BY | | | | |

## Chad Whelton

**From:** Jake Janicek <JJanicek@caerusoilandgas.com>
**Sent:** Friday, May 1, 2020 8:30 AM
**To:** Chad Whelton
**Cc:** Brett Middleton; Jake Janicek
**Subject:** [EXTERNAL] - FW: COC
**Attachments:** IMG_0883.jpg; ATT00001.txt



Chad,

Yesterday, I couldn't remember which analytes I needed the sample associated with the attached COC analyzed for. I know now. Please analyze the sample for:

1. pH,
2. specific conductance,
3. total dissolved solids (TDS),
4. alkalinity (total bicarbonate and carbonate as CaCO3),
5. major anions (bromide, chloride, fluoride, sulfate, nitrate and nitrite as N, phosphorus),
6. major cations (calcium, iron, magnesium, manganese, potassium, sodium),
7. barium, boron, selenium and strontium
8. total petroleum hydrocarbons (TPH) and
9. BTEX compounds

Please attach this email to the analytical report somehow. Let me know if you have any questions.

Jake

Jake Janicek
EHS Specialist
143 Diamond Ave. Parachute, CO 81635
Office: 970-285-2720 | Mobile: 970-778-2314 | jjanicek@caerusoiland gas.com



-----Original Message-----
From: Jake Janicek <JJanicek@caerusoilandgas.com>
Sent: Friday, May 01, 2020 6:06 AM
To: Jake Janicek <JJanicek@caerusoilandgas.com>

ALS Group, USA

## Sample Receipt Checklist

Client Name: **CAERUS** Date/Time Received: **01-May-20 10:00**

Work Order: **20050070** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 01-May-20 (Date) Reviewed by: Chad Whelton (eSignature) 01-May-20 (Date)

Matrices: Water

Carrier name: FedEx

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☐ | No ☐ | Not Present ☑ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Sample(s) received on ice? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 4.8/4.8 c | SR1 | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | 5/1/2020 1:49:39 PM | | |
| Water - VOA vials have zero headspace? | Yes ☑ | No ☐ | No VOA vials submitted ☐ |
| Water - pH acceptable upon receipt? | Yes ☑ | No ☐ | N/A ☐ |
| pH adjusted? | Yes ☐ | No ☑ | N/A ☐ |
| pH adjusted by: | - | | |

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

encana natural gas

# ENVIRONMENTAL COMPLIANCE GROUP
# - FIELD SAMPLING DATA FORM -

| Document No: |
|---|
| Revised By - Date: C. Hines – 07/09/2010 |
| Reviewed By - Date: |
| Approved By - Date: |

**General Information**

**Document purpose:** this form is intended to document multiple samples collected from different media, at one facility location in support of the Site Clearance Program.

**Naming convention:** is important to support the identification of the location, sampling area and media at the location, and date it was sampled (Location – Cardinal Direction and Media Type – Date). Include cardinal direction if multiple samples are collected from the same sampling media wherever possible (i.e. "N9W – NW Background – 022610" vs. "N9W – SW Background – 022610").

**Sampler:** Blair Rollins | **Location:** E34 | **Date of Sample:** 7/29/10

| Sample ID: | Time of Sample: | Lat (WGS 84): | Long (WGS 84): | Number of containers: | Composite or Grab: |
|---|---|---|---|---|---|
| E34-NW Back-072910 | 1200 | 39.66016 | 108.16129 | 1 | G |
| E34-SW Back-072910 | 1205 | 39.65984 | 108.16142 | 3 | G |
| E34-S. Pit-072910 | 1225 | 39.65948 | 108.16109 | 3 | C |
| E34-N. Pit-072910 | 1330 | 39.65979 | 108.16098 | 3 | C |
| | | | | | |
| | | | | | |

**Procedural Directions:**

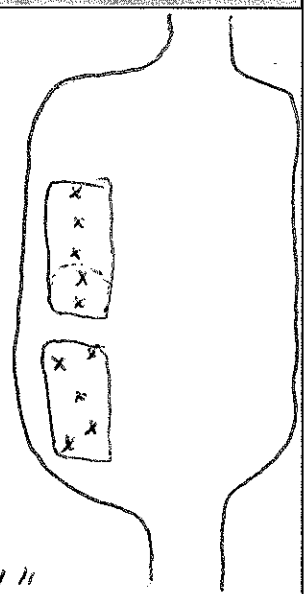
1. Take photos of location and sampled media.
2. Take GPS point(s) of sample locations, including composite points.
3. Prepare site sketch below (Include sample locations, media dimensions, other waste not previously identified, estimated volumes of all waste on location, and color and texture of all waste on location).

**Site Sketch:**

⊗ Backgrounds=taken from native brown to dark brown soil at 6-10" deep.

X S Pit = Random 5 pt. slice sample due to straw covering entire pit bottom material. Samples collected from shaley material w/ bedrock below sample. Sampled 4-8" deep due to bedrock refusal

N Pit = 60% sampled in dark brown soil type and 40% in light brown soil type. Samples collected from 6-10" deep and soil ranged from brown to dark brown w/ black spots. Bedrock present at 6" in few locations.



Photos 4652 to 4674

WP 169 to 179

**Follow Up Procedures**

1. Create "FieldData" folder within the appropriate site folder in the SITE CLEARANCE directory. (If you don't know where this is...**ASK**!)
2. Scan document to PDF and save in sampling field notes folder, using the name convention *Location – Field Notes (Date)* (i.e. "PD30 – Field Notes (06-10-2010)")
3. Create "Photos" folder within "FieldData" folder and insert all photos taken during sampling event. Do not create an additional folder in the "Photos" folder. Use the camera wizard for consistent naming of photos: (i.e. "PD30 – Pit Sampling (07-09-2010)")
4. Provide GPS unit to Chris Hines or Blair Rollins for data download.

E34: Photos 4675 to 4692

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Chris Hines
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

# Report Summary

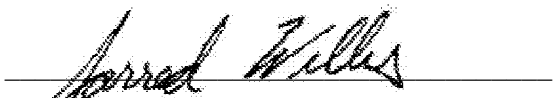
Friday August 06, 2010

Report Number: L471362
Samples Received: 07/30/10
Client Project: E34 Pit Closure

Description: E34 Pit Closure

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:



Jarred Willis , ESC Representative

*Laboratory Certification Numbers*

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.
Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.


Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

ESC
L·A·B S·C·I·E·N·C·E·S
YOUR LAB OF CHOICE

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Chris Hines
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

August 06, 2010

ESC Sample # : L471362-01

Date Received : July 30, 2010
Description : E34 Pit Closure

Site ID :

Sample ID : E34-NW BACK 072910

Project # : E34 Pit Closure

Collected By : Blair Rollins
Collection Date : 07/29/10 12:00

| Parameter | Result | Det. Limit | Units | Method | Date | Dil. |
|---|---|---|---|---|---|---|
| Arsenic | 4.1 | 1.0 | mg/kg | 6010B | 08/01/10 | 1 |

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 08/06/10 17:10 Printed: 08/06/10 17:11

ESC LAB SCIENCES
YOUR LAB OF CHOICE

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Chris Hines
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

August 06, 2010

ESC Sample # : L471362-02

Date Received : July 30, 2010
Description : E34 Pit Closure

Site ID :

Sample ID : E34-SW BACK 072910

Project # : E34 Pit Closure

Collected By : Blair Rollins
Collection Date : 07/29/10 12:05

| Parameter | Result | Det. Limit | Units | Method | Date | Dil. |
|---|---|---|---|---|---|---|
| Chromium,Hexavalent | BDL | 10. | mg/kg | 3060A/7196A | 08/03/10 | 5 |
| Chromium,Trivalent | 56. | 0.50 | mg/kg | Calc. | 08/01/10 | 1 |
| ORP | 270 | | mV | 2580 | 08/03/10 | 1 |
| pH | 7.0 | | su | 9045D | 08/03/10 | 1 |
| Sodium Adsorption Ratio | 0.38 | | | Calc. | 08/04/10 | 1 |
| Specific Conductance | 70. | | umhos/cm | 9050AMod | 08/04/10 | 1 |
| Mercury | 0.027 | 0.020 | mg/kg | 7471 | 08/03/10 | 1 |
| Arsenic | 4.4 | 1.0 | mg/kg | 6010B | 08/01/10 | 1 |
| Barium | 350 | 0.25 | mg/kg | 6010B | 08/01/10 | 1 |
| Cadmium | 0.30 | 0.25 | mg/kg | 6010B | 08/01/10 | 1 |
| Chromium | 56. | 0.50 | mg/kg | 6010B | 08/01/10 | 1 |
| Copper | 11. | 1.0 | mg/kg | 6010B | 08/01/10 | 1 |
| Lead | 0.78 | 0.25 | mg/kg | 6010B | 08/01/10 | 1 |
| Nickel | 25. | 1.0 | mg/kg | 6010B | 08/01/10 | 1 |
| Selenium | 4.8 | 1.0 | mg/kg | 6010B | 08/01/10 | 1 |
| Silver | BDL | 0.50 | mg/kg | 6010B | 08/01/10 | 1 |
| Zinc | 39. | 1.5 | mg/kg | 6010B | 08/01/10 | 1 |
| Benzene | BDL | 0.0025 | mg/kg | 8021/8015 | 07/31/10 | 5 |
| Toluene | BDL | 0.025 | mg/kg | 8021/8015 | 07/31/10 | 5 |
| Ethylbenzene | BDL | 0.0025 | mg/kg | 8021/8015 | 07/31/10 | 5 |
| Total Xylene | BDL | 0.0075 | mg/kg | 8021/8015 | 07/31/10 | 5 |
| TPH (GC/FID) Low Fraction | BDL | 0.50 | mg/kg | GRO | 07/31/10 | 5 |
| Surrogate Recovery-% | | | | | | |
| a,a,a-Trifluorotoluene(FID) | 98.3 | | % Rec. | 8021/8015 | 07/31/10 | 5 |
| a,a,a-Trifluorotoluene(PID) | 103. | | % Rec. | 8021/8015 | 07/31/10 | 5 |
| TPH (GC/FID) High Fraction | 32. | 4.0 | mg/kg | 3546/DRO | 08/02/10 | 1 |
| Surrogate recovery(%) | | | | | | |
| o-Terphenyl | 75.6 | | % Rec. | 3546/DRO | 08/02/10 | 1 |
| Polynuclear Aromatic Hydrocarbons | | | | | | |
| Anthracene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |
| Acenaphthene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |
| Acenaphthylene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |
| Benzo(a)anthracene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |
| Benzo(a)pyrene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L471362-02 (PH) - 7.0@24.1c

ESC LAB SCIENCES
YOUR LAB OF CHOICE

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Chris Hines
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

August 06, 2010

ESC Sample # : L471362-02

Site ID :

Project # : E34 Pit Closure

Date Received : July 30, 2010
Description : E34 Pit Closure

Sample ID : E34-SW BACK 072910

Collected By : Blair Rollins
Collection Date : 07/29/10 12:05

| Parameter | Result | Det. Limit | Units | Method | Date | Dil. |
|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |
| Benzo(g,h,i)perylene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |
| Benzo(k)fluoranthene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |
| Chrysene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |
| Dibenz(a,h)anthracene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |
| Fluoranthene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |
| Fluorene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |
| Indeno(1,2,3-cd)pyrene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |
| Naphthalene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |
| Phenanthrene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |
| Pyrene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |
| 1-Methylnaphthalene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |
| 2-Methylnaphthalene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |
| 2-Chloronaphthalene | BDL | 0.0060 | mg/kg | 8270C-SIM | 08/04/10 | 1 |
| Surrogate Recovery | | | | | | |
| Nitrobenzene-d5 | 103. | | % Rec. | 8270C-SIM | 08/04/10 | 1 |
| 2-Fluorobiphenyl | 80.9 | | % Rec. | 8270C-SIM | 08/04/10 | 1 |
| p-Terphenyl-d14 | 95.3 | | % Rec. | 8270C-SIM | 08/04/10 | 1 |

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 08/06/10 17:10 Printed: 08/06/10 17:11
L471362-02 (PH) - 7.0@24.1c

ESC LAB SCIENCES
YOUR LAB OF CHOICE

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Chris Hines
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

August 06, 2010

ESC Sample # : L471362-03

Date Received : July 30, 2010
Description : E34 Pit Closure

Site ID :

Sample ID : E34-S. PIT 072910

Project # : E34 Pit Closure

Collected By : Blair Rollins
Collection Date : 07/29/10 12:25

| Parameter | Result | Det. Limit | Units | Method | Date | Dil. |
|---|---|---|---|---|---|---|
| Chromium,Hexavalent | BDL | 2.0 | mg/kg | 3060A/7196A | 08/03/10 | 1 |
| Chromium,Trivalent | 54. | 0.50 | mg/kg | Calc. | 08/01/10 | 1 |
| ORP | 190 | | mV | 2580 | 08/03/10 | 1 |
| pH | 8.2 | | su | 9045D | 08/03/10 | 1 |
| Sodium Adsorption Ratio | 20. | | | Calc. | 08/04/10 | 1 |
| Specific Conductance | 1100 | | umhos/cm | 9050AMod | 08/04/10 | 1 |
| Mercury | BDL | 0.020 | mg/kg | 7471 | 08/03/10 | 1 |
| Arsenic | 2.2 | 1.0 | mg/kg | 6010B | 08/01/10 | 1 |
| Barium | 350 | 0.25 | mg/kg | 6010B | 08/01/10 | 1 |
| Cadmium | BDL | 0.25 | mg/kg | 6010B | 08/01/10 | 1 |
| Chromium | 54. | 0.50 | mg/kg | 6010B | 08/01/10 | 1 |
| Copper | 8.3 | 1.0 | mg/kg | 6010B | 08/01/10 | 1 |
| Lead | 9.6 | 0.25 | mg/kg | 6010B | 08/01/10 | 1 |
| Nickel | 20. | 1.0 | mg/kg | 6010B | 08/01/10 | 1 |
| Selenium | 1.6 | 1.0 | mg/kg | 6010B | 08/01/10 | 1 |
| Silver | BDL | 0.50 | mg/kg | 6010B | 08/01/10 | 1 |
| Zinc | 31. | 1.5 | mg/kg | 6010B | 08/01/10 | 1 |
| Benzene | BDL | 0.0025 | mg/kg | 8021/8015 | 07/31/10 | 5 |
| Toluene | BDL | 0.025 | mg/kg | 8021/8015 | 07/31/10 | 5 |
| Ethylbenzene | 0.0044 | 0.0025 | mg/kg | 8021/8015 | 07/31/10 | 5 |
| Total Xylene | 0.020 | 0.0075 | mg/kg | 8021/8015 | 07/31/10 | 5 |
| TPH (GC/FID) Low Fraction | 12. | 0.50 | mg/kg | GRO | 07/31/10 | 5 |
| Surrogate Recovery-% | | | | | | |
| a,a,a-Trifluorotoluene(FID) | 97.7 | | % Rec. | 8021/8015 | 07/31/10 | 5 |
| a,a,a-Trifluorotoluene(PID) | 103. | | % Rec. | 8021/8015 | 07/31/10 | 5 |
| TPH (GC/FID) High Fraction | 1200 | 80. | mg/kg | 3546/DRO | 08/02/10 | 20 |
| Surrogate recovery(%) | | | | | | |
| o-Terphenyl | 0.00 | | % Rec. | 3546/DRO | 08/02/10 | 20 |
| Polynuclear Aromatic Hydrocarbons | | | | | | |
| Anthracene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |
| Acenaphthene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |
| Acenaphthylene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |
| Benzo(a)anthracene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |
| Benzo(a)pyrene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L471362-03 (CR6) - diluted due to dark sample, used sample blank
L471362-03 (SV8270PAHSIM) - Previous run also had high SURR recovery. Matrix effect. Diluted due to mat
L471362-03 (PH) - 8.2@24.3c

ESC LAB SCIENCES
YOUR LAB OF CHOICE

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Chris Hines
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

August 06, 2010

ESC Sample # : L471362-03

Site ID :

Project # : E34 Pit Closure

Date Received : July 30, 2010
Description : E34 Pit Closure

Sample ID : E34-S. PIT 072910

Collected By : Blair Rollins
Collection Date : 07/29/10 12:25

| Parameter | Result | Det. Limit | Units | Method | Date | Dil. |
|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |
| Benzo(g,h,i)perylene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |
| Benzo(k)fluoranthene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |
| Chrysene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |
| Dibenz(a,h)anthracene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |
| Fluoranthene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |
| Fluorene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |
| Indeno(1,2,3-cd)pyrene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |
| Naphthalene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |
| Phenanthrene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |
| Pyrene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |
| 1-Methylnaphthalene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |
| 2-Methylnaphthalene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |
| 2-Chloronaphthalene | BDL | 0.060 | mg/kg | 8270C-SIM | 08/06/10 | 10 |
| Surrogate Recovery | | | | | | |
| Nitrobenzene-d5 | 418. | | % Rec. | 8270C-SIM | 08/06/10 | 10 |
| 2-Fluorobiphenyl | 105. | | % Rec. | 8270C-SIM | 08/06/10 | 10 |
| p-Terphenyl-d14 | 104. | | % Rec. | 8270C-SIM | 08/06/10 | 10 |

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 08/06/10 17:10 Printed: 08/06/10 17:11
L471362-03 (CR6) - diluted due to dark sample, used sample blank
L471362-03 (SV8270PAHSIM) - Previous run also had high SURR recovery. Matrix effect. Diluted due to mat
L471362-03 (PH) - 8.2@24.3c

ESC LAB SCIENCES
YOUR LAB OF CHOICE

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Chris Hines
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

August 06, 2010

ESC Sample # : L471362-04

Date Received : July 30, 2010
Description : E34 Pit Closure

Site ID :

Sample ID : E34-N. PIT 072910

Project # : E34 Pit Closure

Collected By : Blair Rollins
Collection Date : 07/29/10 13:30

| Parameter | Result | Det. Limit | Units | Method | Date | Dil. |
|---|---|---|---|---|---|---|
| Chromium,Hexavalent | BDL | 2.0 | mg/kg | 3060A/7196A | 08/03/10 | 1 |
| Chromium,Trivalent | 20. | 0.50 | mg/kg | Calc. | 08/01/10 | 1 |
| ORP | 340 | | mV | 2580 | 08/03/10 | 1 |
| pH | 12. | | su | 9045D | 08/03/10 | 1 |
| Sodium Adsorption Ratio | 26. | | | Calc. | 08/04/10 | 1 |
| Specific Conductance | 3600 | | umhos/cm | 9050AMod | 08/04/10 | 1 |
| Mercury | 0.021 | 0.020 | mg/kg | 7471 | 08/03/10 | 1 |
| Arsenic | 8.7 | 5.0 | mg/kg | 6010B | 08/01/10 | 5 |
| Barium | 5400 | 0.25 | mg/kg | 6010B | 08/01/10 | 1 |
| Cadmium | 0.92 | 0.25 | mg/kg | 6010B | 08/01/10 | 1 |
| Chromium | 20. | 0.50 | mg/kg | 6010B | 08/01/10 | 1 |
| Copper | 15. | 1.0 | mg/kg | 6010B | 08/01/10 | 1 |
| Lead | 53. | 1.2 | mg/kg | 6010B | 08/01/10 | 5 |
| Nickel | 13. | 1.0 | mg/kg | 6010B | 08/01/10 | 1 |
| Selenium | BDL | 5.0 | mg/kg | 6010B | 08/01/10 | 5 |
| Silver | BDL | 0.50 | mg/kg | 6010B | 08/01/10 | 1 |
| Zinc | 67. | 7.5 | mg/kg | 6010B | 08/01/10 | 5 |
| Benzene | 0.084 | 0.0025 | mg/kg | 8021/8015 | 07/31/10 | 5 |
| Toluene | 0.19 | 0.025 | mg/kg | 8021/8015 | 07/31/10 | 5 |
| Ethylbenzene | 0.021 | 0.0025 | mg/kg | 8021/8015 | 07/31/10 | 5 |
| Total Xylene | 0.30 | 0.0075 | mg/kg | 8021/8015 | 07/31/10 | 5 |
| TPH (GC/FID) Low Fraction | 7.6 | 0.50 | mg/kg | GRO | 07/31/10 | 5 |
| Surrogate Recovery-% | | | | | | |
| a,a,a-Trifluorotoluene(FID) | 97.5 | | % Rec. | 8021/8015 | 07/31/10 | 5 |
| a,a,a-Trifluorotoluene(PID) | 103. | | % Rec. | 8021/8015 | 07/31/10 | 5 |
| TPH (GC/FID) High Fraction | 3700 | 80. | mg/kg | 3546/DRO | 08/03/10 | 20 |
| Surrogate recovery(%) | | | | | | |
| o-Terphenyl | 0.00 | | % Rec. | 3546/DRO | 08/03/10 | 20 |
| Polynuclear Aromatic Hydrocarbons | | | | | | |
| Anthracene | BDL | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |
| Acenaphthene | 0.18 | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |
| Acenaphthylene | BDL | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |
| Benzo(a)anthracene | BDL | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |
| Benzo(a)pyrene | BDL | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L471362-04 (PH) - 12.0@24.0c

ESC LAB SCIENCES
YOUR LAB OF CHOICE

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Chris Hines
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

August 06, 2010

ESC Sample # : L471362-04

Date Received : July 30, 2010
Description : E34 Pit Closure

Site ID :

Sample ID : E34-N. PIT 072910

Project # : E34 Pit Closure

Collected By : Blair Rollins
Collection Date : 07/29/10 13:30

| Parameter | Result | Det. Limit | Units | Method | Date | Dil. |
|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | BDL | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |
| Benzo(g,h,i)perylene | BDL | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |
| Benzo(k)fluoranthene | BDL | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |
| Chrysene | BDL | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |
| Dibenz(a,h)anthracene | BDL | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |
| Fluoranthene | BDL | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |
| Fluorene | 0.78 | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |
| Indeno(1,2,3-cd)pyrene | BDL | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |
| Naphthalene | 0.81 | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |
| Phenanthrene | 0.52 | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |
| Pyrene | BDL | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |
| 1-Methylnaphthalene | 1.0 | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |
| 2-Methylnaphthalene | 3.4 | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |
| 2-Chloronaphthalene | BDL | 0.12 | mg/kg | 8270C-SIM | 08/03/10 | 20 |
| Surrogate Recovery | | | | | | |
| Nitrobenzene-d5 | 0.00 | | % Rec. | 8270C-SIM | 08/03/10 | 20 |
| 2-Fluorobiphenyl | 0.00 | | % Rec. | 8270C-SIM | 08/03/10 | 20 |
| p-Terphenyl-d14 | 0.00 | | % Rec. | 8270C-SIM | 08/03/10 | 20 |

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 08/06/10 17:10 Printed: 08/06/10 17:11
L471362-04 (PH) - 12.0@24.0c

Attachment A
List of Analytes with QC Qualifiers

| Sample Number | Work Group | Sample Type | Analyte | Run ID | Qualifier |
|---|---|---|---|---|---|
| L471362-03 | WG492100 | SAMP | Anthracene | R1318649 | O |
| | WG492100 | SAMP | Acenaphthene | R1318649 | O |
| | WG492100 | SAMP | Acenaphthylene | R1318649 | O |
| | WG492100 | SAMP | Benzo(a)anthracene | R1318649 | O |
| | WG492100 | SAMP | Benzo(a)pyrene | R1318649 | O |
| | WG492100 | SAMP | Benzo(b)fluoranthene | R1318649 | O |
| | WG492100 | SAMP | Benzo(g,h,i)perylene | R1318649 | O |
| | WG492100 | SAMP | Benzo(k)fluoranthene | R1318649 | O |
| | WG492100 | SAMP | Chrysene | R1318649 | O |
| | WG492100 | SAMP | Dibenz(a,h)anthracene | R1318649 | O |
| | WG492100 | SAMP | Fluoranthene | R1318649 | O |
| | WG492100 | SAMP | Fluorene | R1318649 | O |
| | WG492100 | SAMP | Indeno(1,2,3-cd)pyrene | R1318649 | O |
| | WG492100 | SAMP | Naphthalene | R1318649 | O |
| | WG492100 | SAMP | Phenanthrene | R1318649 | O |
| | WG492100 | SAMP | Pyrene | R1318649 | O |
| | WG492100 | SAMP | 1-Methylnaphthalene | R1318649 | O |
| | WG492100 | SAMP | 2-Methylnaphthalene | R1318649 | O |
| | WG492100 | SAMP | 2-Chloronaphthalene | R1318649 | O |
| | WG492100 | SAMP | Nitrobenzene-d5 | R1318649 | J1 |
| | WG491253 | SAMP | o-Terphenyl | R1309288 | J7 |
| L471362-04 | WG491238 | SAMP | Selenium | R1307316 | O |
| | WG491255 | SAMP | Nitrobenzene-d5 | R1307009 | J7 |
| | WG491255 | SAMP | 2-Fluorobiphenyl | R1307009 | J7 |
| | WG491255 | SAMP | p-Terphenyl-d14 | R1307009 | J7 |
| | WG491253 | SAMP | o-Terphenyl | R1309288 | J7 |

Attachment B
Explanation of QC Qualifier Codes

| Qualifier | Meaning |
|---|---|
| J1 | Surrogate recovery limits have been exceeded; values are outside upper control limits |
| J7 | Surrogate recovery limits cannot be evaluated; surrogates were diluted out |
| O | (ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution. |

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
08/06/10 at 17:11:15

TSR Signing Reports: 358
R4 - Rush: Three Day

Create p-key for each project, and enter "project description" as Project Number and Project Name. Log all samples to separate L#s. Log all PAHs as SV8270PAHSIM. Log all BTEX samples by 8021.

Sample: L471362-01 Account: ENCANACO Received: 07/30/10 09:00 Due Date: 08/05/10 00:00 RPT Date: 08/06/10 17:10

Sample: L471362-02 Account: ENCANACO Received: 07/30/10 09:00 Due Date: 08/05/10 00:00 RPT Date: 08/06/10 17:10

Sample: L471362-03 Account: ENCANACO Received: 07/30/10 09:00 Due Date: 08/05/10 00:00 RPT Date: 08/06/10 17:10

Sample: L471362-04 Account: ENCANACO Received: 07/30/10 09:00 Due Date: 08/05/10 00:00 RPT Date: 08/06/10 17:10

ESC LAB SCIENCES
YOUR LAB OF CHOICE

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

EnCana Oil & Gas Inc. - CO
Chris Hines
2717 County Road 215, Suite 100

Parachute, CO 81635

Quality Assurance Report
Level II

L471362

August 06, 2010

Laboratory Blank

| Analyte | Result | Units | % Rec | Limit | Batch | Date Analyzed |
|---|---|---|---|---|---|---|
| Benzene | < .0005 | mg/kg | | | WG491279 | 07/31/10 05:03 |
| Ethylbenzene | < .0005 | mg/kg | | | WG491279 | 07/31/10 05:03 |
| Toluene | < .005 | mg/kg | | | WG491279 | 07/31/10 05:03 |
| TPH (GC/FID) Low Fraction | < .1 | mg/kg | | | WG491279 | 07/31/10 05:03 |
| Total Xylene | < .0015 | mg/kg | | | WG491279 | 07/31/10 05:03 |
| a,a,a-Trifluorotoluene(FID) | | % Rec. | 100.2 | 59-128 | WG491279 | 07/31/10 05:03 |
| a,a,a-Trifluorotoluene(PID) | | % Rec. | 104.5 | 54-144 | WG491279 | 07/31/10 05:03 |
| 1-Methylnaphthalene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| 2-Chloronaphthalene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| 2-Methylnaphthalene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| Acenaphthene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| Acenaphthylene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| Anthracene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| Benzo(a)anthracene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| Benzo(a)pyrene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| Benzo(b)fluoranthene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| Benzo(g,h,i)perylene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| Benzo(k)fluoranthene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| Chrysene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| Dibenz(a,h)anthracene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| Fluoranthene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| Fluorene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| Indeno(1,2,3-cd)pyrene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| Naphthalene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| Phenanthrene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| Pyrene | < .006 | mg/kg | | | WG491255 | 08/01/10 11:05 |
| 2-Fluorobiphenyl | | % Rec. | 73.36 | 21-120 | WG491255 | 08/01/10 11:05 |
| Nitrobenzene-d5 | | % Rec. | 62.62 | 33-114 | WG491255 | 08/01/10 11:05 |
| p-Terphenyl-d14 | | % Rec. | 100.1 | 18-142 | WG491255 | 08/01/10 11:05 |
| Arsenic | < 1 | mg/kg | | | WG491238 | 08/01/10 17:26 |
| Barium | < .25 | mg/kg | | | WG491238 | 08/01/10 17:26 |
| Cadmium | < .25 | mg/kg | | | WG491238 | 08/01/10 17:26 |
| Chromium | < .5 | mg/kg | | | WG491238 | 08/01/10 17:26 |
| Copper | < 1 | mg/kg | | | WG491238 | 08/01/10 17:26 |
| Lead | < .25 | mg/kg | | | WG491238 | 08/01/10 17:26 |
| Nickel | < 1 | mg/kg | | | WG491238 | 08/01/10 17:26 |
| Selenium | < 1 | mg/kg | | | WG491238 | 08/01/10 17:26 |
| Silver | < .5 | mg/kg | | | WG491238 | 08/01/10 17:26 |
| Zinc | < 1.5 | mg/kg | | | WG491238 | 08/01/10 17:26 |
| TPH (GC/FID) High Fraction | < 4 | ppm | | | WG491253 | 08/02/10 14:21 |
| o-Terphenyl | | % Rec. | 80.11 | 50-150 | WG491253 | 08/02/10 14:21 |
| Mercury | < .02 | mg/kg | | | WG491179 | 08/03/10 09:09 |
| pH | 6.50 | su | | | WG491330 | 08/03/10 15:52 |
| Chromium,Hexavalent | < 2 | mg/kg | | | WG491136 | 08/03/10 16:21 |
| Specific Conductance | 2.05 | umhos/cm | | | WG491636 | 08/04/10 15:00 |

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

ESC LAB SCIENCES
YOUR LAB OF CHOICE

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

EnCana Oil & Gas Inc. - CO
Chris Hines
2717 County Road 215, Suite 100

Parachute, CO 81635

Quality Assurance Report
Level II

L471362

August 06, 2010

Laboratory Blank

| Analyte | Result | Units | % Rec | Limit | Batch | Date Analyzed |
|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| 2-Chloronaphthalene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| 2-Methylnaphthalene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| Acenaphthene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| Acenaphthylene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| Anthracene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| Benzo(a)anthracene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| Benzo(a)pyrene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| Benzo(b)fluoranthene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| Benzo(g,h,i)perylene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| Benzo(k)fluoranthene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| Chrysene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| Dibenz(a,h)anthracene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| Fluoranthene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| Fluorene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| Indeno(1,2,3-cd)pyrene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| Naphthalene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| Phenanthrene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| Pyrene | < .006 | mg/kg | | | WG492100 | 08/05/10 16:25 |
| 2-Fluorobiphenyl | | % Rec. | 117.2 | 21-120 | WG492100 | 08/05/10 16:25 |
| Nitrobenzene-d5 | | % Rec. | 113.1 | 33-114 | WG492100 | 08/05/10 16:25 |
| p-Terphenyl-d14 | | % Rec. | 107.5 | 18-142 | WG492100 | 08/05/10 16:25 |

Duplicate

| Analyte | Units | Result | Duplicate | RPD | Limit | Ref Samp | Batch |
|---|---|---|---|---|---|---|---|
| Arsenic | mg/kg | 9.40 | 9.00 | 3.92 | 20 | L471390-04 | WG491238 |
| Barium | mg/kg | 130. | 120. | 8.00 | 20 | L471390-04 | WG491238 |
| Cadmium | mg/kg | 0.410 | 0.390 | 4.02 | 20 | L471390-04 | WG491238 |
| Chromium | mg/kg | 13.0 | 13.0 | 3.03 | 20 | L471390-04 | WG491238 |
| Copper | mg/kg | 17.0 | 16.5 | 4.15 | 20 | L471390-04 | WG491238 |
| Lead | mg/kg | 24.0 | 20.0 | 19.8 | 20 | L471390-04 | WG491238 |
| Nickel | mg/kg | 18.0 | 18.3 | 1.65 | 20 | L471390-04 | WG491238 |
| Selenium | mg/kg | 3.60 | 4.40 | 18.6 | 20 | L471390-04 | WG491238 |
| Silver | mg/kg | 0 | 0 | 0 | 20 | L471390-04 | WG491238 |
| Zinc | mg/kg | 56.0 | 58.0 | 2.62 | 20 | L471390-04 | WG491238 |
| Mercury | mg/kg | 0.0320 | 0.0330 | 2.45 | 20 | L471200-04 | WG491179 |
| pH | su | 7.10 | 7.10 | 0 | 1 | L471213-01 | WG491330 |
| pH | su | 0 | 0 | 0 | 1 | L471427-01 | WG491330 |
| Chromium,Hexavalent | mg/kg | 0 | 0 | 0 | 20 | L471047-01 | WG491136 |
| Chromium,Hexavalent | mg/kg | 0 | 0 | 0 | 20 | L471362-04 | WG491136 |
| ORP | mV | 220. | 220. | 0 | 20 | L471045-01 | WG491167 |
| ORP | mV | 200. | 200. | 1.49 | 20 | L471333-01 | WG491167 |
| Specific Conductance | umhos/cm | 3700 | 3640 | 2.17 | 20 | L471362-04 | WG491636 |

Laboratory Control Sample

| Analyte | Units | Known Val | Result | % Rec | Limit | Batch |
|---|---|---|---|---|---|---|
| Benzene | mg/kg | .05 | 0.0527 | 105. | 76-113 | WG491279 |

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

ESC LAB SCIENCES
YOUR LAB OF CHOICE

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

EnCana Oil & Gas Inc. - CO
Chris Hines
2717 County Road 215, Suite 100

Parachute, CO 81635

Quality Assurance Report
Level II

L471362

August 06, 2010

Laboratory Control Sample

| Analyte | Units | Known Val | Result | % Rec | Limit | Batch |
|---|---|---|---|---|---|---|
| Ethylbenzene | mg/kg | .05 | 0.0534 | 107. | 78-115 | WG491279 |
| Toluene | mg/kg | .05 | 0.0534 | 107. | 76-114 | WG491279 |
| Total Xylene | mg/kg | .15 | 0.166 | 111. | 81-118 | WG491279 |
| a,a,a-Trifluorotoluene(FID) | | | | 99.70 | 59-128 | WG491279 |
| a,a,a-Trifluorotoluene(PID) | | | | 103.0 | 54-144 | WG491279 |
| TPH (GC/FID) Low Fraction | mg/kg | 5.5 | 6.00 | 109. | 67-135 | WG491279 |
| a,a,a-Trifluorotoluene(FID) | | | | 94.17 | 59-128 | WG491279 |
| a,a,a-Trifluorotoluene(PID) | | | | 107.7 | 54-144 | WG491279 |
| 1-Methylnaphthalene | mg/kg | .033 | 0.0254 | 77.1 | 41-110 | WG491255 |
| 2-Chloronaphthalene | mg/kg | .033 | 0.0264 | 80.1 | 43-109 | WG491255 |
| 2-Methylnaphthalene | mg/kg | .033 | 0.0259 | 78.4 | 38-104 | WG491255 |
| Acenaphthene | mg/kg | .033 | 0.0246 | 74.5 | 48-103 | WG491255 |
| Acenaphthylene | mg/kg | .033 | 0.0237 | 71.7 | 43-106 | WG491255 |
| Anthracene | mg/kg | .033 | 0.0247 | 74.9 | 51-110 | WG491255 |
| Benzo(a)anthracene | mg/kg | .033 | 0.0253 | 76.7 | 38-126 | WG491255 |
| Benzo(a)pyrene | mg/kg | .033 | 0.0223 | 67.5 | 47-118 | WG491255 |
| Benzo(b)fluoranthene | mg/kg | .033 | 0.0223 | 67.4 | 47-118 | WG491255 |
| Benzo(g,h,i)perylene | mg/kg | .033 | 0.0225 | 68.1 | 40-125 | WG491255 |
| Benzo(k)fluoranthene | mg/kg | .033 | 0.0273 | 82.6 | 45-121 | WG491255 |
| Chrysene | mg/kg | .033 | 0.0248 | 75.2 | 35-135 | WG491255 |
| Dibenz(a,h)anthracene | mg/kg | .033 | 0.0222 | 67.4 | 41-124 | WG491255 |
| Fluoranthene | mg/kg | .033 | 0.0222 | 67.2 | 50-114 | WG491255 |
| Fluorene | mg/kg | .033 | 0.0247 | 74.8 | 49-109 | WG491255 |
| Indeno(1,2,3-cd)pyrene | mg/kg | .033 | 0.0222 | 67.1 | 40-126 | WG491255 |
| Naphthalene | mg/kg | .033 | 0.0253 | 76.8 | 36-100 | WG491255 |
| Phenanthrene | mg/kg | .033 | 0.0242 | 73.4 | 46-108 | WG491255 |
| Pyrene | mg/kg | .033 | 0.0263 | 79.6 | 30-136 | WG491255 |
| 2-Fluorobiphenyl | | | | 94.93 | 21-120 | WG491255 |
| Nitrobenzene-d5 | | | | 83.61 | 33-114 | WG491255 |
| p-Terphenyl-d14 | | | | 105.2 | 18-142 | WG491255 |
| Arsenic | mg/kg | 192 | 167. | 87.0 | 78.6-120.8 | WG491238 |
| Barium | mg/kg | 420 | 392. | 93.3 | 78.8-121.4 | WG491238 |
| Cadmium | mg/kg | 70.1 | 62.7 | 89.4 | 78.5-121.5 | WG491238 |
| Chromium | mg/kg | 168 | 157. | 93.5 | 80.4-120.2 | WG491238 |
| Copper | mg/kg | 122 | 114. | 93.4 | 81.6-119.7 | WG491238 |
| Lead | mg/kg | 113 | 93.4 | 82.7 | 77.3-122.1 | WG491238 |
| Nickel | mg/kg | 74.1 | 75.4 | 102. | 78.8-121.2 | WG491238 |
| Selenium | mg/kg | 176 | 159. | 90.3 | 75.6-125.0 | WG491238 |
| Silver | mg/kg | 115 | 105. | 91.3 | 66-133.9 | WG491238 |
| Zinc | mg/kg | 437 | 394. | 90.2 | 78.5-121.7 | WG491238 |
| TPH (GC/FID) High Fraction | ppm | 60 | 49.7 | 82.8 | 50-150 | WG491253 |
| o-Terphenyl | | | | 101.9 | 50-150 | WG491253 |
| Mercury | mg/kg | 8.77 | 10.4 | 119. | 71.6-127.7 | WG491179 |
| pH | su | 9.68 | 9.60 | 99.2 | 98.9-102.0 | WG491330 |
| Chromium,Hexavalent | mg/kg | 100 | 95.5 | 95.5 | 50-143 | WG491136 |

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

YOUR LAB OF CHOICE

EnCana Oil & Gas Inc. - CO
Chris Hines
2717 County Road 215, Suite 100
Parachute, CO 81635

Quality Assurance Report
Level II

L471362

August 06, 2010

Laboratory Control Sample

| Analyte | Units | Known Val | Result | % Rec | Limit | Batch |
|---|---|---|---|---|---|---|
| ORP | mV | 229 | 220. | 96.1 | 95.6-104.37 | WG491167 |
| Specific Conductance | umhos/cm | 406 | 425. | 105. | 85-115 | WG491636 |
| 1-Methylnaphthalene | mg/kg | .033 | 0.0294 | 89.2 | 41-110 | WG492100 |
| 2-Chloronaphthalene | mg/kg | .033 | 0.0281 | 85.1 | 43-109 | WG492100 |
| 2-Methylnaphthalene | mg/kg | .033 | 0.0294 | 89.2 | 38-104 | WG492100 |
| Acenaphthene | mg/kg | .033 | 0.0319 | 96.7 | 48-103 | WG492100 |
| Acenaphthylene | mg/kg | .033 | 0.0329 | 99.7 | 43-106 | WG492100 |
| Anthracene | mg/kg | .033 | 0.0307 | 93.2 | 51-110 | WG492100 |
| Benzo(a)anthracene | mg/kg | .033 | 0.0341 | 103. | 38-126 | WG492100 |
| Benzo(a)pyrene | mg/kg | .033 | 0.0323 | 97.9 | 47-118 | WG492100 |
| Benzo(b)fluoranthene | mg/kg | .033 | 0.0300 | 91.0 | 47-118 | WG492100 |
| Benzo(g,h,i)perylene | mg/kg | .033 | 0.0362 | 110. | 40-125 | WG492100 |
| Benzo(k)fluoranthene | mg/kg | .033 | 0.0347 | 105. | 45-121 | WG492100 |
| Chrysene | mg/kg | .033 | 0.0334 | 101. | 35-135 | WG492100 |
| Dibenz(a,h)anthracene | mg/kg | .033 | 0.0349 | 106. | 41-124 | WG492100 |
| Fluoranthene | mg/kg | .033 | 0.0371 | 112. | 50-114 | WG492100 |
| Fluorene | mg/kg | .033 | 0.0315 | 95.4 | 49-109 | WG492100 |
| Indeno(1,2,3-cd)pyrene | mg/kg | .033 | 0.0352 | 107. | 40-126 | WG492100 |
| Naphthalene | mg/kg | .033 | 0.0292 | 88.4 | 36-100 | WG492100 |
| Phenanthrene | mg/kg | .033 | 0.0311 | 94.4 | 46-108 | WG492100 |
| Pyrene | mg/kg | .033 | 0.0298 | 90.3 | 30-136 | WG492100 |
| 2-Fluorobiphenyl | | | | 122.4* | 21-120 | WG492100 |
| Nitrobenzene-d5 | | | | 104.3 | 33-114 | WG492100 |
| p-Terphenyl-d14 | | | | 112.2 | 18-142 | WG492100 |

Laboratory Control Sample Duplicate

| Analyte | Units | Result | Ref | %Rec | Limit | RPD | Limit | Batch |
|---|---|---|---|---|---|---|---|---|
| Benzene | mg/kg | 0.0518 | 0.0527 | 104. | 76-113 | 1.63 | 20 | WG491279 |
| Ethylbenzene | mg/kg | 0.0527 | 0.0534 | 105. | 78-115 | 1.42 | 20 | WG491279 |
| Toluene | mg/kg | 0.0522 | 0.0534 | 104. | 76-114 | 2.25 | 20 | WG491279 |
| Total Xylene | mg/kg | 0.164 | 0.166 | 109. | 81-118 | 1.41 | 20 | WG491279 |
| a,a,a-Trifluorotoluene(FID) | | | | 98.76 | 59-128 | | | WG491279 |
| a,a,a-Trifluorotoluene(PID) | | | | 102.0 | 54-144 | | | WG491279 |
| TPH (GC/FID) Low Fraction | mg/kg | 6.29 | 6.00 | 114. | 67-135 | 4.68 | 20 | WG491279 |
| a,a,a-Trifluorotoluene(FID) | | | | 96.42 | 59-128 | | | WG491279 |
| a,a,a-Trifluorotoluene(PID) | | | | 108.4 | 54-144 | | | WG491279 |
| 1-Methylnaphthalene | mg/kg | 0.0260 | 0.0254 | 79.0 | 41-110 | 2.29 | 24 | WG491255 |
| 2-Chloronaphthalene | mg/kg | 0.0267 | 0.0264 | 81.0 | 43-109 | 0.895 | 21 | WG491255 |
| 2-Methylnaphthalene | mg/kg | 0.0253 | 0.0259 | 77.0 | 38-104 | 2.12 | 24 | WG491255 |
| Acenaphthene | mg/kg | 0.0249 | 0.0246 | 76.0 | 48-103 | 1.41 | 20 | WG491255 |
| Acenaphthylene | mg/kg | 0.0240 | 0.0237 | 73.0 | 43-106 | 1.34 | 20 | WG491255 |
| Anthracene | mg/kg | 0.0249 | 0.0247 | 75.0 | 51-110 | 0.737 | 22 | WG491255 |
| Benzo(a)anthracene | mg/kg | 0.0247 | 0.0253 | 75.0 | 38-126 | 2.31 | 20 | WG491255 |
| Benzo(a)pyrene | mg/kg | 0.0234 | 0.0223 | 71.0 | 47-118 | 4.97 | 20 | WG491255 |
| Benzo(b)fluoranthene | mg/kg | 0.0239 | 0.0223 | 72.0 | 47-118 | 7.13 | 29 | WG491255 |
| Benzo(g,h,i)perylene | mg/kg | 0.0223 | 0.0225 | 68.0 | 40-125 | 0.652 | 20 | WG491255 |
| Benzo(k)fluoranthene | mg/kg | 0.0297 | 0.0273 | 90.0 | 45-121 | 8.41 | 31 | WG491255 |
| Chrysene | mg/kg | 0.0267 | 0.0248 | 81.0 | 35-135 | 7.45 | 20 | WG491255 |
| Dibenz(a,h)anthracene | mg/kg | 0.0220 | 0.0222 | 67.0 | 41-124 | 0.938 | 20 | WG491255 |
| Fluoranthene | mg/kg | 0.0269 | 0.0222 | 81.0 | 50-114 | 19.3 | 20 | WG491255 |
| Fluorene | mg/kg | 0.0248 | 0.0247 | 75.0 | 49-109 | 0.493 | 19 | WG491255 |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.0219 | 0.0222 | 66.0 | 40-126 | 0.976 | 20 | WG491255 |

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

ESC LAB SCIENCES
YOUR LAB OF CHOICE

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

EnCana Oil & Gas Inc. - CO
Chris Hines
2717 County Road 215, Suite 100
Parachute, CO 81635

Quality Assurance Report
Level II

August 06, 2010

L471362

| Analyte | Units | Laboratory Control Sample Result | Ref | %Rec | Limit | RPD | Limit | Batch |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | mg/kg | 0.0255 | 0.0253 | 77.0 | 36-100 | 0.748 | 24 | WG491255 |
| Phenanthrene | mg/kg | 0.0241 | 0.0242 | 73.0 | 46-108 | 0.469 | 21 | WG491255 |
| Pyrene | mg/kg | 0.0254 | 0.0263 | 77.0 | 30-136 | 3.24 | 20 | WG491255 |
| 2-Fluorobiphenyl | | | | 102.8 | 21-120 | | | WG491255 |
| Nitrobenzene-d5 | | | | 87.80 | 33-114 | | | WG491255 |
| p-Terphenyl-d14 | | | | 114.6 | 18-142 | | | WG491255 |
| TPH (GC/FID) High Fraction | ppm | 48.1 | 49.7 | 80.0 | 50-150 | 3.19 | 25 | WG491253 |
| o-Terphenyl | | | | 97.19 | 50-150 | | | WG491253 |
| pH | su | 9.60 | 9.60 | 99.0 | 98.9-102.0 | 0 | 20 | WG491330 |
| Chromium,Hexavalent | mg/kg | 95.0 | 95.5 | 95.0 | 50-143 | 0.525 | 20 | WG491136 |
| ORP | mV | 220. | 220. | 96.0 | 95.6-104.37 | 0 | 20 | WG491167 |
| Specific Conductance | umhos/ | 425. | 425. | 105. | 85-115 | 0 | 20 | WG491636 |
| 1-Methylnaphthalene | mg/kg | 0.0327 | 0.0294 | 99.0 | 41-110 | 10.6 | 24 | WG492100 |
| 2-Chloronaphthalene | mg/kg | 0.0306 | 0.0281 | 93.0 | 43-109 | 8.65 | 21 | WG492100 |
| 2-Methylnaphthalene | mg/kg | 0.0327 | 0.0294 | 99.0 | 38-104 | 10.4 | 24 | WG492100 |
| Acenaphthene | mg/kg | 0.0339 | 0.0319 | 103. | 48-103 | 6.12 | 20 | WG492100 |
| Acenaphthylene | mg/kg | 0.0345 | 0.0329 | 104. | 43-106 | 4.71 | 20 | WG492100 |
| Anthracene | mg/kg | 0.0325 | 0.0307 | 98.0 | 51-110 | 5.50 | 22 | WG492100 |
| Benzo(a)anthracene | mg/kg | 0.0365 | 0.0341 | 110. | 38-126 | 6.76 | 20 | WG492100 |
| Benzo(a)pyrene | mg/kg | 0.0338 | 0.0323 | 102. | 47-118 | 4.51 | 20 | WG492100 |
| Benzo(b)fluoranthene | mg/kg | 0.0342 | 0.0300 | 104. | 47-118 | 13.1 | 29 | WG492100 |
| Benzo(g,h,i)perylene | mg/kg | 0.0368 | 0.0362 | 111. | 40-125 | 1.52 | 20 | WG492100 |
| Benzo(k)fluoranthene | mg/kg | 0.0338 | 0.0347 | 102. | 45-121 | 2.54 | 31 | WG492100 |
| Chrysene | mg/kg | 0.0350 | 0.0334 | 106. | 35-135 | 4.62 | 20 | WG492100 |
| Dibenz(a,h)anthracene | mg/kg | 0.0357 | 0.0349 | 108. | 41-124 | 2.41 | 20 | WG492100 |
| Fluoranthene | mg/kg | 0.0351 | 0.0371 | 106. | 50-114 | 5.57 | 20 | WG492100 |
| Fluorene | mg/kg | 0.0341 | 0.0315 | 103. | 49-109 | 7.93 | 19 | WG492100 |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.0358 | 0.0352 | 108. | 40-126 | 1.79 | 20 | WG492100 |
| Naphthalene | mg/kg | 0.0316 | 0.0292 | 96.0 | 36-100 | 8.15 | 24 | WG492100 |
| Phenanthrene | mg/kg | 0.0332 | 0.0311 | 100. | 46-108 | 6.27 | 21 | WG492100 |
| Pyrene | mg/kg | 0.0344 | 0.0298 | 104. | 30-136 | 14.5 | 20 | WG492100 |
| 2-Fluorobiphenyl | | | | 106.8 | 21-120 | | | WG492100 |
| Nitrobenzene-d5 | | | | 123.6* | 33-114 | | | WG492100 |
| p-Terphenyl-d14 | | | | 120.9 | 18-142 | | | WG492100 |

| Analyte | Units | Matrix Spike MS Res | Ref Res | TV | % Rec | Limit | Ref Samp | Batch |
|---|---|---|---|---|---|---|---|---|
| Benzene | mg/kg | 0.239 | 0 | .05 | 95.6 | 32-137 | L471362-02 | WG491279 |
| Ethylbenzene | mg/kg | 0.224 | 0 | .05 | 89.7 | 10-150 | L471362-02 | WG491279 |
| Toluene | mg/kg | 0.233 | 0 | .05 | 93.4 | 20-142 | L471362-02 | WG491279 |
| Total Xylene | mg/kg | 0.701 | 0 | .15 | 93.4 | 16-141 | L471362-02 | WG491279 |
| a,a,a-Trifluorotoluene(FID) | | | | | 97.83 | 59-128 | | WG491279 |
| a,a,a-Trifluorotoluene(PID) | | | | | 101.6 | 54-144 | | WG491279 |
| TPH (GC/FID) Low Fraction | mg/kg | 25.2 | 0 | 5.5 | 91.6 | 55-109 | L471362-02 | WG491279 |
| a,a,a-Trifluorotoluene(FID) | | | | | 93.28 | 59-128 | | WG491279 |
| a,a,a-Trifluorotoluene(PID) | | | | | 106.1 | 54-144 | | WG491279 |

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

ESC LAB SCIENCES
YOUR LAB OF CHOICE

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

EnCana Oil & Gas Inc. - CO
Chris Hines
2717 County Road 215, Suite 100

Parachute, CO 81635

Quality Assurance Report
Level II

L471362

August 06, 2010

| Analyte | Units | Matrix Spike MS Res | Ref Res | TV | % Rec | Limit | Ref Samp | Batch |
|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | mg/kg | 0.0337 | 0 | .033 | 102. | 19-131 | L471241-05 | WG491255 |
| 2-Chloronaphthalene | mg/kg | 0.0342 | 0 | .033 | 104. | 38-117 | L471241-05 | WG491255 |
| 2-Methylnaphthalene | mg/kg | 0.0345 | 0 | .033 | 104. | 18-125 | L471241-05 | WG491255 |
| Acenaphthene | mg/kg | 0.0323 | 0 | .033 | 98.0 | 31-120 | L471241-05 | WG491255 |
| Acenaphthylene | mg/kg | 0.0314 | 0 | .033 | 95.2 | 34-116 | L471241-05 | WG491255 |
| Anthracene | mg/kg | 0.0316 | 0 | .033 | 95.7 | 32-131 | L471241-05 | WG491255 |
| Benzo(a)anthracene | mg/kg | 0.0318 | 0 | .033 | 96.4 | 32-131 | L471241-05 | WG491255 |
| Benzo(a)pyrene | mg/kg | 0.0311 | 0 | .033 | 94.2 | 28-130 | L471241-05 | WG491255 |
| Benzo(b)fluoranthene | mg/kg | 0.0293 | 0 | .033 | 88.7 | 37-130 | L471241-05 | WG491255 |
| Benzo(g,h,i)perylene | mg/kg | 0.0366 | 0 | .033 | 111. | 10-134 | L471241-05 | WG491255 |
| Benzo(k)fluoranthene | mg/kg | 0.0325 | 0 | .033 | 98.5 | 31-129 | L471241-05 | WG491255 |
| Chrysene | mg/kg | 0.0319 | 0 | .033 | 96.8 | 25-137 | L471241-05 | WG491255 |
| Dibenz(a,h)anthracene | mg/kg | 0.0341 | 0 | .033 | 103. | 20-134 | L471241-05 | WG491255 |
| Fluoranthene | mg/kg | 0.0286 | 0 | .033 | 86.6 | 27-138 | L471241-05 | WG491255 |
| Fluorene | mg/kg | 0.0313 | 0 | .033 | 94.9 | 26-136 | L471241-05 | WG491255 |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.0349 | 0 | .033 | 106. | 16-135 | L471241-05 | WG491255 |
| Naphthalene | mg/kg | 0.0330 | 0 | .033 | 100. | 22-121 | L471241-05 | WG491255 |
| Phenanthrene | mg/kg | 0.0341 | 0 | .033 | 103. | 27-133 | L471241-05 | WG491255 |
| Pyrene | mg/kg | 0.0376 | 0 | .033 | 114. | 22-133 | L471241-05 | WG491255 |
| 2-Fluorobiphenyl | | | | | 119.7 | 21-120 | | WG491255 |
| Nitrobenzene-d5 | | | | | 114.8* | 33-114 | | WG491255 |
| p-Terphenyl-d14 | | | | | 149.7* | 18-142 | | WG491255 |
| Arsenic | mg/kg | 51.2 | 9.00 | 50 | 84.4 | 75-125 | L471390-04 | WG491238 |
| Barium | mg/kg | 182. | 120. | 50 | 124. | 75-125 | L471390-04 | WG491238 |
| Cadmium | mg/kg | 41.0 | 0.390 | 50 | 81.2 | 75-125 | L471390-04 | WG491238 |
| Chromium | mg/kg | 56.7 | 13.0 | 50 | 87.4 | 75-125 | L471390-04 | WG491238 |
| Copper | mg/kg | 61.8 | 16.5 | 50 | 90.6 | 75-125 | L471390-04 | WG491238 |
| Lead | mg/kg | 69.1 | 20.0 | 50 | 98.2 | 75-125 | L471390-04 | WG491238 |
| Nickel | mg/kg | 61.0 | 18.3 | 50 | 85.4 | 75-125 | L471390-04 | WG491238 |
| Selenium | mg/kg | 44.6 | 4.40 | 50 | 80.4 | 75-125 | L471390-04 | WG491238 |
| Silver | mg/kg | 43.2 | 0 | 50 | 86.4 | 75-125 | L471390-04 | WG491238 |
| Zinc | mg/kg | 100. | 58.0 | 50 | 84.0 | 75-125 | L471390-04 | WG491238 |
| TPH (GC/FID) High Fraction | ppm | 95.6 | 77.0 | 60 | 31.0* | 50-150 | L470771-03 | WG491253 |
| o-Terphenyl | | | | | 84.43 | 50-150 | | WG491253 |
| Mercury | mg/kg | 0.251 | 0.0330 | .25 | 87.2 | 70-130 | L471200-04 | WG491179 |
| Chromium,Hexavalent | mg/kg | 19.5 | 0 | 20 | 97.5 | 50-150 | L471045-01 | WG491136 |

| Analyte | Units | Matrix Spike Duplicate MSD | Ref | %Rec | Limit | RPD | Limit | Ref Samp | Batch |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | mg/kg | 0.234 | 0.239 | 93.5 | 32-137 | 2.19 | 39 | L471362-02 | WG491279 |
| Ethylbenzene | mg/kg | 0.222 | 0.224 | 89.0 | 10-150 | 0.740 | 44 | L471362-02 | WG491279 |
| Toluene | mg/kg | 0.230 | 0.233 | 91.8 | 20-142 | 1.67 | 42 | L471362-02 | WG491279 |
| Total Xylene | mg/kg | 0.691 | 0.701 | 92.1 | 16-141 | 1.39 | 46 | L471362-02 | WG491279 |
| a,a,a-Trifluorotoluene(FID) | | | | 97.49 | 59-128 | | | | WG491279 |
| a,a,a-Trifluorotoluene(PID) | | | | 101.1 | 54-144 | | | | WG491279 |
| TPH (GC/FID) Low Fraction | mg/kg | 23.8 | 25.2 | 86.5 | 55-109 | 5.70 | 20 | L471362-02 | WG491279 |
| a,a,a-Trifluorotoluene(FID) | | | | 93.25 | 59-128 | | | | WG491279 |
| a,a,a-Trifluorotoluene(PID) | | | | 106.0 | 54-144 | | | | WG491279 |

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

ESC LAB SCIENCES
YOUR LAB OF CHOICE

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

EnCana Oil & Gas Inc. - CO
Chris Hines
2717 County Road 215, Suite 100

Parachute, CO 81635

Quality Assurance Report
Level II

L471362

August 06, 2010

| Analyte | Units | Matrix Spike MSD | Duplicate Ref | %Rec | Limit | RPD | Limit | Ref Samp | Batch |
|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | mg/kg | 0.0221 | 0.0337 | 66.9 | 19-131 | 41.9* | 30 | L471241-05 | WG491255 |
| 2-Chloronaphthalene | mg/kg | 0.0211 | 0.0342 | 63.8 | 38-117 | 47.6* | 26 | L471241-05 | WG491255 |
| 2-Methylnaphthalene | mg/kg | 0.0224 | 0.0345 | 67.8 | 18-125 | 42.5* | 29 | L471241-05 | WG491255 |
| Acenaphthene | mg/kg | 0.0214 | 0.0323 | 64.8 | 31-120 | 40.8* | 30 | L471241-05 | WG491255 |
| Acenaphthylene | mg/kg | 0.0207 | 0.0314 | 62.6 | 34-116 | 41.3* | 29 | L471241-05 | WG491255 |
| Anthracene | mg/kg | 0.0219 | 0.0316 | 66.5 | 32-131 | 36.1* | 26 | L471241-05 | WG491255 |
| Benzo(a)anthracene | mg/kg | 0.0212 | 0.0318 | 64.3 | 32-131 | 39.9* | 31 | L471241-05 | WG491255 |
| Benzo(a)pyrene | mg/kg | 0.0214 | 0.0311 | 64.7 | 28-130 | 37.1* | 28 | L471241-05 | WG491255 |
| Benzo(b)fluoranthene | mg/kg | 0.0213 | 0.0293 | 64.4 | 37-130 | 31.7 | 41 | L471241-05 | WG491255 |
| Benzo(g,h,i)perylene | mg/kg | 0.0244 | 0.0366 | 73.8 | 10-134 | 40.2* | 26 | L471241-05 | WG491255 |
| Benzo(k)fluoranthene | mg/kg | 0.0210 | 0.0325 | 63.7 | 31-129 | 42.9* | 42 | L471241-05 | WG491255 |
| Chrysene | mg/kg | 0.0221 | 0.0319 | 67.1 | 25-137 | 36.3* | 22 | L471241-05 | WG491255 |
| Dibenz(a,h)anthracene | mg/kg | 0.0227 | 0.0341 | 68.7 | 20-134 | 40.2* | 25 | L471241-05 | WG491255 |
| Fluoranthene | mg/kg | 0.0229 | 0.0286 | 69.2 | 27-138 | 22.2 | 35 | L471241-05 | WG491255 |
| Fluorene | mg/kg | 0.0221 | 0.0313 | 66.9 | 26-136 | 34.6* | 30 | L471241-05 | WG491255 |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.0229 | 0.0349 | 69.3 | 16-135 | 41.6* | 26 | L471241-05 | WG491255 |
| Naphthalene | mg/kg | 0.0220 | 0.0330 | 66.6 | 22-121 | 40.1* | 30 | L471241-05 | WG491255 |
| Phenanthrene | mg/kg | 0.0245 | 0.0341 | 74.3 | 27-133 | 32.7 | 36 | L471241-05 | WG491255 |
| Pyrene | mg/kg | 0.0229 | 0.0376 | 69.4 | 22-133 | 48.4* | 33 | L471241-05 | WG491255 |
| 2-Fluorobiphenyl | | | | 79.53 | 21-120 | | | | WG491255 |
| Nitrobenzene-d5 | | | | 72.86 | 33-114 | | | | WG491255 |
| p-Terphenyl-d14 | | | | 90.34 | 18-142 | | | | WG491255 |
| Arsenic | mg/kg | 55.2 | 51.2 | 92.4 | 75-125 | 7.52 | 20 | L471390-04 | WG491238 |
| Barium | mg/kg | 192. | 182. | 144.* | 75-125 | 5.35 | 20 | L471390-04 | WG491238 |
| Cadmium | mg/kg | 44.5 | 41.0 | 88.2 | 75-125 | 8.19 | 20 | L471390-04 | WG491238 |
| Chromium | mg/kg | 61.2 | 56.7 | 96.4 | 75-125 | 7.63 | 20 | L471390-04 | WG491238 |
| Copper | mg/kg | 66.5 | 61.8 | 100. | 75-125 | 7.33 | 20 | L471390-04 | WG491238 |
| Lead | mg/kg | 69.0 | 69.1 | 98.0 | 75-125 | 0.145 | 20 | L471390-04 | WG491238 |
| Nickel | mg/kg | 65.9 | 61.0 | 95.2 | 75-125 | 7.72 | 20 | L471390-04 | WG491238 |
| Selenium | mg/kg | 47.3 | 44.6 | 85.8 | 75-125 | 5.88 | 20 | L471390-04 | WG491238 |
| Silver | mg/kg | 46.6 | 43.2 | 93.2 | 75-125 | 7.57 | 20 | L471390-04 | WG491238 |
| Zinc | mg/kg | 105. | 100. | 94.0 | 75-125 | 4.88 | 20 | L471390-04 | WG491238 |
| TPH (GC/FID) High Fraction | ppm | 84.9 | 95.6 | 13.1* | 50-150 | 11.9 | 25 | L470771-03 | WG491253 |
| o-Terphenyl | | | | 81.67 | 50-150 | | | | WG491253 |
| Mercury | mg/kg | 0.249 | 0.251 | 86.4 | 70-130 | 0.800 | 20 | L471200-04 | WG491179 |
| Chromium,Hexavalent | mg/kg | 18.3 | 19.5 | 91.5 | 50-150 | 6.35 | 20 | L471045-01 | WG491136 |

Batch number /Run number / Sample number cross reference

WG491279: R1306750: L471362-02 03 04
WG491255: R1307009: L471362-02 04
WG491238: R1307316: L471362-01 02 03 04
WG491253: R1309288: L471362-02 03 04
WG491179: R1310329: L471362-02 03 04
WG491167: R1310928: L471362-02 03 04
WG491330: R1311008: L471362-02 03 04
WG491136: R1311089: L471362-02 03 04
WG491466: R1312148: L471362-02 03 04
WG491636: R1313928: L471362-02 03 04
WG492100: R1318649: L471362-03

* * Calculations are performed prior to rounding of reported values .
* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

ESC LAB SCIENCES
YOUR LAB OF CHOICE

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

EnCana Oil & Gas Inc. - CO
Chris Hines
2717 County Road 215, Suite 100

Parachute, CO 81635

Quality Assurance Report
Level II

L471362

August 06, 2010

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.