


**Caerus Oil and Gas**

Sample Delivery Group: L1487530  
Samples Received: 04/28/2022  
Project Number:  
Description: P27-595  
Site: P27-595  
Report To: Brett Middleton  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward  
Project Manager

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

**Pace Analytical National**12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)

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|  |    | <sup>9</sup> Sc |

# SAMPLE SUMMARY

20220426-P27-595 (SW-01) L1487530-01 GW

Collected by: Evan Mason  
 Collected date/time: 04/26/22 11:30  
 Received date/time: 04/28/22 09:00

| Method   | Batch     | Dilution | Preparation date/time | Analysis date/time | Analyst | Location       |
|--|-----------|----------|-----------------------|--------------------|---------|----------------|
| Gravimetric Analysis by Method 2540 C-2011         | WG1857921 | 1        | 05/03/22 11:23        | 05/03/22 14:15     | MMF     | Mt. Juliet, TN |
| Wet Chemistry by Method 9056A                      | WG1858204 | 1        | 05/04/22 00:50        | 05/04/22 00:50     | LBR     | Mt. Juliet, TN |
| Volatile Organic Compounds (GC/MS) by Method 8260B | WG1856735 | 1        | 04/30/22 03:46        | 04/30/22 03:46     | JAH     | Mt. Juliet, TN |

- <sup>1</sup>Cp
- <sup>2</sup>Tc
- <sup>3</sup>Ss
- <sup>4</sup>Cn
- <sup>5</sup>Sr
- <sup>6</sup>Qc
- <sup>7</sup>Gl
- <sup>8</sup>Al
- <sup>9</sup>Sc

# 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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Gravimetric Analysis by Method 2540 C-2011

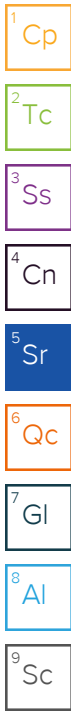
| Analyte          | Result | Qualifier | RDL  | Dilution | Analysis date / time | Batch                     |
|------------------|--------|-----------|------|----------|----------------------|---------------------------|
| Dissolved Solids | 225    |           | 10.0 | 1        | 05/03/2022 14:15     | <a href="#">WG1857921</a> |

Wet Chemistry by Method 9056A

| Analyte  | Result | Qualifier | RDL  | Dilution | Analysis date / time | Batch                     |
|----------|--------|-----------|------|----------|----------------------|---------------------------|
| Chloride | 1.80   |           | 1.00 | 1        | 05/04/2022 00:50     | <a href="#">WG1858204</a> |
| Sulfate  | 16.3   |           | 5.00 | 1        | 05/04/2022 00:50     | <a href="#">WG1858204</a> |

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

| Analyte                   | Result | Qualifier | RDL      | Dilution | Analysis date / time | Batch                     |
|---------------------------|--------|-----------|----------|----------|----------------------|---------------------------|
| Benzene                   | ND     |           | 0.00100  | 1        | 04/30/2022 03:46     | <a href="#">WG1856735</a> |
| Toluene                   | ND     |           | 0.00100  | 1        | 04/30/2022 03:46     | <a href="#">WG1856735</a> |
| Ethylbenzene              | ND     |           | 0.00100  | 1        | 04/30/2022 03:46     | <a href="#">WG1856735</a> |
| Xylenes, Total            | ND     |           | 0.00300  | 1        | 04/30/2022 03:46     | <a href="#">WG1856735</a> |
| Naphthalene               | ND     |           | 0.00500  | 1        | 04/30/2022 03:46     | <a href="#">WG1856735</a> |
| 1,2,4-Trimethylbenzene    | ND     |           | 0.00100  | 1        | 04/30/2022 03:46     | <a href="#">WG1856735</a> |
| 1,3,5-Trimethylbenzene    | ND     |           | 0.00100  | 1        | 04/30/2022 03:46     | <a href="#">WG1856735</a> |
| (S) Toluene-d8            | 94.6   |           | 80.0-120 |          | 04/30/2022 03:46     | <a href="#">WG1856735</a> |
| (S) 4-Bromofluorobenzene  | 99.0   |           | 77.0-126 |          | 04/30/2022 03:46     | <a href="#">WG1856735</a> |
| (S) 1,2-Dichloroethane-d4 | 148    | J1        | 70.0-130 |          | 04/30/2022 03:46     | <a href="#">WG1856735</a> |



Method Blank (MB)

(MB) R3788156-1 05/03/22 14:15

| Analyte          | MB Result | MB Qualifier | MB MDL | MB RDL |
|------------------|-----------|--------------|--------|--------|
| Dissolved Solids | U         |              | 10.0   | 10.0   |

1 Cp

2 Tc

3 Ss

L1487530-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1487530-01 05/03/22 14:15 • (DUP) R3788156-3 05/03/22 14:15

| Analyte          | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|------------------|-----------------|------------|----------|---------|---------------|----------------|
| Dissolved Solids | 225             | 221        | 1        | 1.79    |               | 5              |

4 Cn

5 Sr

6 Qc

L1487531-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1487531-02 05/03/22 14:15 • (DUP) R3788156-4 05/03/22 14:15

| Analyte          | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|------------------|-----------------|------------|----------|---------|---------------|----------------|
| Dissolved Solids | ND              | ND         | 1        | 0.000   |               | 5              |

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R3788156-2 05/03/22 14:15

| Analyte          | Spike Amount | LCS Result | LCS Rec. | Rec. Limits | LCS Qualifier |
|------------------|--------------|------------|----------|-------------|---------------|
| Dissolved Solids | 2460         | 2390       | 97.2     | 81.7-118    |               |

Method Blank (MB)

(MB) R3787886-1 05/03/22 12:37

| Analyte  | MB Result | MB Qualifier | MB MDL | MB RDL |
|----------|-----------|--------------|--------|--------|
| Chloride | U         |              | 0.379  | 1.00   |
| Sulfate  | U         |              | 0.594  | 5.00   |

L1487484-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1487484-01 05/03/22 19:54 • (DUP) R3787886-3 05/03/22 20:11

| Analyte  | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|----------|-----------------|------------|----------|---------|---------------|----------------|
| Chloride | 16.4            | 16.5       | 1        | 0.262   |               | 15             |
| Sulfate  | 14.1            | 14.2       | 1        | 0.642   |               | 15             |

L1487530-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1487530-01 05/04/22 00:50 • (DUP) R3787886-6 05/04/22 01:39

| Analyte  | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|----------|-----------------|------------|----------|---------|---------------|----------------|
| Chloride | 1.80            | 1.79       | 1        | 0.156   |               | 15             |
| Sulfate  | 16.3            | 16.6       | 1        | 1.56    |               | 15             |

Laboratory Control Sample (LCS)

(LCS) R3787886-2 05/03/22 12:54

| Analyte  | Spike Amount | LCS Result | LCS Rec. | Rec. Limits | LCS Qualifier |
|----------|--------------|------------|----------|-------------|---------------|
| Chloride | 40.0         | 39.0       | 97.5     | 80.0-120    |               |
| Sulfate  | 40.0         | 39.6       | 99.1     | 80.0-120    |               |

L1487484-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1487484-01 05/03/22 19:54 • (MS) R3787886-4 05/03/22 20:27 • (MSD) R3787886-5 05/03/22 20:43

| Analyte  | Spike Amount | Original Result | MS Result | MSD Result | MS Rec. | MSD Rec. | Dilution | Rec. Limits | MS Qualifier | MSD Qualifier | RPD  | RPD Limits |
|----------|--------------|-----------------|-----------|------------|---------|----------|----------|-------------|--------------|---------------|------|------------|
| Chloride | 50.0         | 16.4            | 65.9      | 67.2       | 99.1    | 102      | 1        | 80.0-120    |              |               | 1.95 | 15         |
| Sulfate  | 50.0         | 14.1            | 64.4      | 65.1       | 101     | 102      | 1        | 80.0-120    |              |               | 1.15 | 15         |

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1487530-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1487530-01 05/04/22 00:50 • (MS) R3787886-7 05/04/22 01:55

| Analyte  | Spike Amount<br>mg/l | Original Result<br>mg/l | MS Result<br>mg/l | MS Rec.<br>% | Dilution | Rec. Limits<br>% | <u>MS Qualifier</u> |
|----------|----------------------|-------------------------|-------------------|--------------|----------|------------------|---------------------|
| Chloride | 50.0                 | 1.80                    | 58.4              | 113          | 1        | 80.0-120         |                     |
| Sulfate  | 50.0                 | 16.3                    | 73.6              | 115          | 1        | 80.0-120         |                     |

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3787256-2 04/29/22 21:24

| Analyte                   | MB Result<br>mg/l | MB Qualifier | MB MDL<br>mg/l | MB RDL<br>mg/l |
|---------------------------|-------------------|--------------|----------------|----------------|
| Benzene                   | U                 |              | 0.0000941      | 0.00100        |
| Toluene                   | U                 |              | 0.000278       | 0.00100        |
| Ethylbenzene              | U                 |              | 0.000137       | 0.00100        |
| Xylenes, Total            | U                 |              | 0.000174       | 0.00300        |
| Naphthalene               | U                 |              | 0.00100        | 0.00500        |
| 1,2,4-Trimethylbenzene    | U                 |              | 0.000322       | 0.00100        |
| 1,3,5-Trimethylbenzene    | U                 |              | 0.000104       | 0.00100        |
| (S) Toluene-d8            | 97.7              |              |                | 80.0-120       |
| (S) 4-Bromofluorobenzene  | 96.9              |              |                | 77.0-126       |
| (S) 1,2-Dichloroethane-d4 | 128               |              |                | 70.0-130       |

Laboratory Control Sample (LCS)

(LCS) R3787256-1 04/29/22 21:04

| Analyte                   | Spike Amount<br>mg/l | LCS Result<br>mg/l | LCS Rec.<br>% | Rec. Limits<br>% | LCS Qualifier |
|---------------------------|----------------------|--------------------|---------------|------------------|---------------|
| Benzene                   | 0.00500              | 0.00471            | 94.2          | 70.0-123         |               |
| Toluene                   | 0.00500              | 0.00426            | 85.2          | 79.0-120         |               |
| Ethylbenzene              | 0.00500              | 0.00426            | 85.2          | 79.0-123         |               |
| Xylenes, Total            | 0.0150               | 0.0132             | 88.0          | 79.0-123         |               |
| Naphthalene               | 0.00500              | 0.00362            | 72.4          | 54.0-135         |               |
| 1,2,4-Trimethylbenzene    | 0.00500              | 0.00518            | 104           | 76.0-121         |               |
| 1,3,5-Trimethylbenzene    | 0.00500              | 0.00508            | 102           | 76.0-122         |               |
| (S) Toluene-d8            |                      |                    | 93.9          | 80.0-120         |               |
| (S) 4-Bromofluorobenzene  |                      |                    | 102           | 77.0-126         |               |
| (S) 1,2-Dichloroethane-d4 |                      |                    | 125           | 70.0-130         |               |

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

# 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.  |

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

### Qualifier Description

J1 Surrogate recovery limits have been exceeded; values are outside upper control limits.

# 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 <sup>1</sup>     | TN00003          |
| Colorado                      | TN00003     | New York                    | 11742            |
| Connecticut                   | PH-0197     | North Carolina              | Env375           |
| Florida                       | E87487      | North Carolina <sup>1</sup> | DW21704          |
| Georgia                       | NELAP       | North Carolina <sup>3</sup> | 41               |
| Georgia <sup>1</sup>          | 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 <sup>1,6</sup>       | KY90010     | South Carolina              | 84004002         |
| Kentucky <sup>2</sup>         | 16          | South Dakota                | n/a              |
| Louisiana                     | AI30792     | Tennessee <sup>1,4</sup>    | 2006             |
| Louisiana                     | LA018       | Texas                       | T104704245-20-18 |
| Maine                         | TN00003     | Texas <sup>5</sup>          | 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 <sup>5</sup> | 1461.02     | DOD                         | 1461.01          |
| Canada                        | 1461.01     | USDA                        | P330-15-00234    |
| EPA–Crypto                    | TN00003     |                             |                  |

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> 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.

