

November 2, 2018

Stan Spencer
Colorado Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801
Denver, Colorado 80203

**RE: Canfield #1 Orphan Well
Water Sampling Results
De Beque, Colorado**

Dear Mr. Spencer,

Cottonwood Consulting LLC (Cottonwood) is pleased to provide you with results of the water sampling conducted in the vicinity of the Canfield #1 Orphan well on October 9, 2018 (Figure 1). The methodology and associated results are summarized below.

Background

The Colorado Oil and Gas Conservation Commission (COGCC) has been identifying, prioritizing, and addressing orphaned oil and gas wells through its Orphaned Well Program. Several wells have been identified within the vicinity of De Beque, Colorado in the Piceance Basin. The Canfield #1 Orphan well (API #05-077-10548) is currently discharging to the ground surface and was identified in July 2018 as a candidate for the COGCC Orphaned Well list for plugging and abandonment. The Canfield #1 Orphan well is located in the southeast quarter of the northwest quarter of Section 17, Township 8 South, Range 97 West, in Mesa County, Colorado. No information is known about the completion formation or well depth.

Cottonwood was retained by the COGCC to collect a sample of the water discharging from the well in order to document the water quality conditions prior to plugging and abandonment. Results of the water sampling are found in Table 1 and the attached lab report.

Methodology

Cottonwood was on site on October 9, 2018, to collect the water sample. Cottonwood made field observations and collected field water quality measurements, including pH, temperature, dissolved oxygen, total dissolved solids (TDS), and specific conductance using a YSI® 556 water quality meter. Cottonwood collected the water sample by using a decontaminated beaker to transfer water discharging from the wellhead into laboratory provided bottles. The water sample was placed in a cooler on ice and transported with Chain of Custody to a Pace Analytical representative in Grand Junction, Colorado. The representative shipped the sample to Pace Analytical in Mt. Juliet,

Tennessee for laboratory analysis of hydrocarbons and agricultural parameters. Photographs were taken of the sample site and a photographic log is provided as Attachment 1.

Results

The lab and field TDS concentrations in the water sample were 7,500 and 7,988 milligrams per Liter (mg/L), respectively. Lab and field pH values were 8.31 and 8.38, respectively. Lab and field conductivity concentrations were 13,200 microsiemens per centimeter (uS/cm) and 12,280 uS/cm, respectively. Benzene, ethylbenzene, and total xylenes were detected above the laboratory detection limit. Laboratory analytical results are included as Attachment 2 and summarized in Table 1.

Conclusions

The water sampling results serve as documentation of water quality conditions prior to plugging and abandonment of the Canfield #1 Orphan well. Should you have any questions, please do not hesitate to contact me at 970-764-7356 or ksiesser@cottonwoodconsulting.com. We appreciate the opportunity to provide services to the COGCC.

Sincerely,



Kyle Siesser, P.G.
Cottonwood Consulting, LLC

Attachments: Figure 1- Water Sampling Map
Table 1- Water Sampling Results
Attachment 1 - Photographic Log
Attachment 2 – Laboratory Analytical Results

Figure 1
Water Sampling Map



Notes: Sample collected directly from water discharging from Canfield #1 wellhead.

Legend

 Oil & Gas Well

Location: SENW Sec 17 T8S R97W

Cottonwood
CONSULTING

Mapping by: E. Millar, 11/2/18
Coordinate System:
NAD 1983 UTM Zone 13 N

Figure 1
Canfield #1 Orphan Well
Water Sampling Map
COGCC

Table 1
Water Sampling Results

Table 1
Water Sampling Results
Canfield #1 Orphan Well
Colorado Oil & Gas Conservation Commission

| Parameter | Result | Units |
|--|----------|----------|
| General Chemistry | | |
| Sodium Adsorption Ratio | 61.0 | no units |
| Total Dissolved Solids | 7,500 | mg/L |
| pH | 8.31 | pH Units |
| Conductivity | 13,200 | uS/cm |
| Chloride | 3,960 | mg/L |
| Sulfate | <5.00 | mg/L |
| Metals Analysis | | |
| Calcium | 126 | mg/L |
| Magnesium | 36.1 | mg/L |
| Sodium | 3,020 | mg/L |
| Volatile Organic Compounds Analysis | | |
| Benzene | 0.0422 | mg/L |
| Toluene | <0.00100 | mg/L |
| Ethylbenzene | 0.00923 | mg/L |
| Total Xylenes | 0.129 | mg/L |
| Field Parameters | | |
| pH | 8.38 | pH Units |
| Conductivity | 12,280 | uS/cm |
| Temperature | 17.47 | °C |
| Total Dissolved Solids | 7,988 | mg/L |
| Dissolved Oxygen (%) | 0.9 | % |
| Dissolved Oxygen | 0.08 | mg/L |

Notes:

Sample collected 10/10/18 from water discharging from Canfield #1 wellhead.

mg/L- milligrams per Liter; °C- degrees Centigrade;
uS/cm- microsiemens per centimeter

Attachment 1

Photographic Log

PHOTOGRAPHIC LOG



Photo 1: Water discharging from Canfield #1 Orphan wellhead.

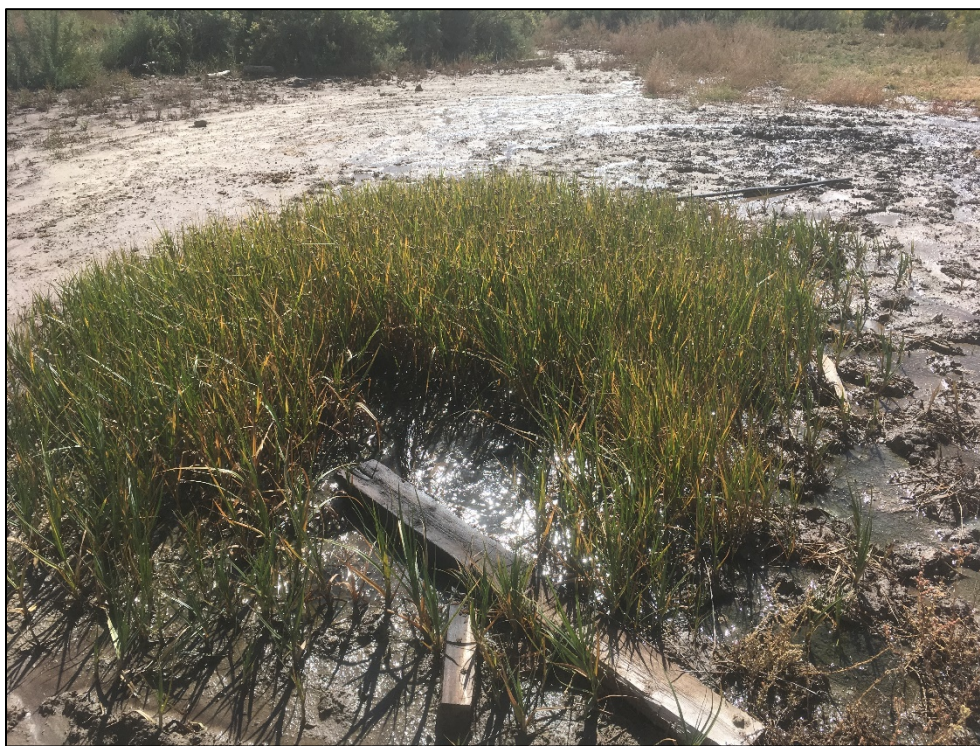


Photo 2: Canfield #1 Orphan well water sample location.

Attachment 2

Laboratory Analytical Results

October 30, 2018

Colorado Oil & Gas Conservation

Sample Delivery Group: L1033582
Samples Received: 10/10/2018
Project Number: 453364
Description: Canfield #1 Orphan Well
Site: 453364
Report To: Stan Spencer
484 Turner Drive Bldg B, Suite 1
Durango, CO 81303

Entire Report Reviewed By:



Olivia Studebaker
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 National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



CANFIELD #1 L1033582-01 GW

Collected by
Jacob HCollected date/time
10/09/18 14:15Received date/time
10/10/18 08:45

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst |
|--|-----------|----------|--------------------------|-----------------------|---------|
| Calculated Results | WG1183371 | 1 | 10/19/18 09:30 | 10/19/18 12:38 | TRB |
| Gravimetric Analysis by Method 2540 C-2011 | WG1180115 | 1 | 10/16/18 18:30 | 10/16/18 19:07 | AJS |
| Wet Chemistry by Method 9040C | WG1179576 | 1 | 10/11/18 16:28 | 10/11/18 16:28 | EEM |
| Wet Chemistry by Method 9050A | WG1187943 | 1 | 10/29/18 12:00 | 10/29/18 12:00 | BAM |
| Wet Chemistry by Method 9056A | WG1180314 | 1 | 10/16/18 03:16 | 10/16/18 03:16 | ELN |
| Wet Chemistry by Method 9056A | WG1180314 | 100 | 10/16/18 03:30 | 10/16/18 03:30 | ELN |
| Metals (ICP) by Method 6010B | WG1183371 | 5 | 10/19/18 09:30 | 10/19/18 12:38 | TRB |
| Volatile Organic Compounds (GC/MS) by Method 8260B | WG1180310 | 1 | 10/13/18 07:01 | 10/13/18 07:01 | JCP |

¹Cp²Tc³Ss⁴Cn⁵Sr⁶Qc⁷Gl⁸Al⁹Sc

ACCOUNT:

Colorado Oil & Gas Conservation

PROJECT:

453364

SDG:

L1033582

DATE/TIME:

10/30/18 08:36

PAGE:

3 of 15



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.

Olivia Studebaker
Project Manager

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Calculated Results

| Analyte | Result | Qualifier | Dilution | Analysis date / time | Batch |
|-------------------------|--------|-----------|----------|----------------------|---------------------------|
| Sodium Adsorption Ratio | 61.0 | | 1 | 10/19/2018 12:38 | WG1183371 |

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Gravimetric Analysis by Method 2540 C-2011

| Analyte | Result | Qualifier | RDL | Dilution | Analysis date / time | Batch |
|------------------|--------|-----------|-----|----------|----------------------|---------------------------|
| Dissolved Solids | 7500 | | 200 | 1 | 10/16/2018 19:07 | WG1180115 |

Wet Chemistry by Method 9040C

| Analyte | Result | Qualifier | Dilution | Analysis date / time | Batch |
|---------|--------|-----------|----------|----------------------|---------------------------|
| pH | 8.31 | T8 | 1 | 10/11/2018 16:28 | WG1179576 |

Sample Narrative:

L1033582-01 WG1179576: 8.31 at 7.8C

Wet Chemistry by Method 9050A

| Analyte | Result | Qualifier | RDL | Dilution | Analysis date / time | Batch |
|----------------------|--------|-----------|------|----------|----------------------|---------------------------|
| Specific Conductance | 13200 | | 10.0 | 1 | 10/29/2018 12:00 | WG1187943 |

Wet Chemistry by Method 9056A

| Analyte | Result | Qualifier | RDL | Dilution | Analysis date / time | Batch |
|----------|--------|-----------|------|----------|----------------------|---------------------------|
| Chloride | 3960 | | 100 | 100 | 10/16/2018 03:30 | WG1180314 |
| Sulfate | ND | | 5.00 | 1 | 10/16/2018 03:16 | WG1180314 |

Metals (ICP) by Method 6010B

| Analyte | Result | Qualifier | RDL | Dilution | Analysis date / time | Batch |
|-----------|--------|-----------|------|----------|----------------------|---------------------------|
| Calcium | 126 | | 5.00 | 5 | 10/19/2018 12:38 | WG1183371 |
| Magnesium | 36.1 | | 5.00 | 5 | 10/19/2018 12:38 | WG1183371 |
| Sodium | 3020 | | 5.00 | 5 | 10/19/2018 12:38 | WG1183371 |

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

| Analyte | Result | Qualifier | RDL | Dilution | Analysis date / time | Batch |
|----------------------------|---------|-----------|----------|----------|----------------------|---------------------------|
| Benzene | 0.0422 | | 0.00100 | 1 | 10/13/2018 07:01 | WG1180310 |
| Toluene | ND | | 0.00100 | 1 | 10/13/2018 07:01 | WG1180310 |
| Ethylbenzene | 0.00923 | | 0.00100 | 1 | 10/13/2018 07:01 | WG1180310 |
| Total Xylenes | 0.129 | | 0.00300 | 1 | 10/13/2018 07:01 | WG1180310 |
| (S) Toluene-d8 | 99.5 | | 80.0-120 | | 10/13/2018 07:01 | WG1180310 |
| (S) Dibromofluoromethane | 101 | | 75.0-120 | | 10/13/2018 07:01 | WG1180310 |
| (S) a,a,a-Trifluorotoluene | 101 | | 80.0-120 | | 10/13/2018 07:01 | WG1180310 |
| (S) 4-Bromofluorobenzene | 96.9 | | 77.0-126 | | 10/13/2018 07:01 | WG1180310 |



Method Blank (MB)

(MB) R3351624-1 10/16/18 19:07

| | MB Result | MB Qualifier | MB MDL | MB RDL |
|------------------|-----------|--------------|--------|--------|
| Analyte | mg/l | | mg/l | mg/l |
| Dissolved Solids | U | | 2.82 | 10.0 |

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

L1033582-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1033582-01 10/16/18 19:07 • (DUP) R3351624-4 10/16/18 19:07

| | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|------------------|-----------------|------------|----------|---------|---------------|----------------|
| Analyte | mg/l | mg/l | | % | | % |
| Dissolved Solids | 7500 | 7640 | 1 | 1.85 | | 5 |

⁷ Gl

⁸ Al

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

(LCS) R3351624-2 10/16/18 19:07 • (LCSD) R3351624-3 10/16/18 19:07

| | Spike Amount | LCS Result | LCSD Result | LCS Rec. | LCSD Rec. | Rec. Limits | LCS Qualifier | LCSD Qualifier | RPD | RPD Limits |
|------------------|--------------|------------|-------------|----------|-----------|-------------|---------------|----------------|-------|------------|
| Analyte | mg/l | mg/l | mg/l | % | % | % | | | % | % |
| Dissolved Solids | 8800 | 8530 | 8590 | 96.9 | 97.6 | 85.0-115 | | | 0.701 | 5 |

⁹ Sc

L1033571-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1033571-04 10/11/18 16:28 • (DUP) R3349872-3 10/11/18 16:28

| | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|---------|-----------------|------------|----------|---------|---------------|----------------|
| Analyte | su | su | | % | | % |
| pH | 6.88 | 6.90 | 1 | 0.290 | | 1 |

Sample Narrative:

OS: 6.88 at 7.1C
DUP: 6.9 at 7.5C

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

L1033740-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1033740-01 10/11/18 16:28 • (DUP) R3349872-4 10/11/18 16:28

| | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|---------|-----------------|------------|----------|---------|---------------|----------------|
| Analyte | su | su | | % | | % |
| pH | 8.05 | 8.07 | 1 | 0.248 | | 1 |

Sample Narrative:

OS: 8.05 at 17.3C
DUP: 8.07 at 17.4C

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

(LCS) R3349872-1 10/11/18 16:28 • (LCSD) R3349872-2 10/11/18 16:28

| | Spike Amount | LCS Result | LCSD Result | LCS Rec. | LCSD Rec. | Rec. Limits | LCS Qualifier | LCSD Qualifier | RPD | RPD Limits |
|---------|--------------|------------|-------------|----------|-----------|-------------|---------------|----------------|-------|------------|
| Analyte | su | su | su | % | % | % | | | % | % |
| pH | 10.0 | 9.96 | 9.97 | 99.6 | 99.7 | 99.0-101 | | | 0.100 | 1 |

Sample Narrative:

LCS: 9.96 at 17.8C
LCSD: 9.97 at 17.8C

Method Blank (MB)

(MB) R3354729-1 10/29/18 12:00

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

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

L1038257-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1038257-01 10/29/18 12:00 • (DUP) R3354729-3 10/29/18 12:00

| | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|----------------------|-----------------|------------|----------|---------|---------------|----------------|
| Analyte | umhos/cm | umhos/cm | | % | | % |
| Specific Conductance | 156 | 156 | 1 | 0.000 | | 20 |

L1038379-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1038379-02 10/29/18 12:00 • (DUP) R3354729-4 10/29/18 12:00

| | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|----------------------|-----------------|------------|----------|---------|---------------|----------------|
| Analyte | umhos/cm | umhos/cm | | % | | % |
| Specific Conductance | 213 | 212 | 1 | 0.471 | | 20 |

Laboratory Control Sample (LCS)

(LCS) R3354729-2 10/29/18 12:00

| | Spike Amount | LCS Result | LCS Rec. | Rec. Limits | LCS Qualifier |
|----------------------|--------------|------------|----------|-------------|---------------|
| Analyte | umhos/cm | umhos/cm | % | % | |
| Specific Conductance | 1160 | 1160 | 100 | 85.0-115 | |



Method Blank (MB)

(MB) R3350931-1 10/15/18 20:49

| | MB Result | MB Qualifier | MB MDL | MB RDL |
|----------|-----------|--------------|--------|--------|
| Analyte | mg/l | | mg/l | mg/l |
| Chloride | U | | 0.0519 | 1.00 |
| Sulfate | U | | 0.0774 | 5.00 |

L1033540-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1033540-09 10/16/18 02:18 • (DUP) R3350931-4 10/16/18 02:33

| | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|----------|-----------------|------------|----------|---------|---------------|----------------|
| Analyte | mg/l | mg/l | | % | | % |
| Chloride | ND | 0.0564 | 1 | 0.000 | | 15 |
| Sulfate | ND | 0.000 | 1 | 0.000 | | 15 |

L1033624-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1033624-02 10/16/18 06:38 • (DUP) R3350931-7 10/16/18 06:52

| | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|----------|-----------------|------------|----------|---------|---------------|----------------|
| Analyte | mg/l | mg/l | | % | | % |
| Chloride | 2.27 | 2.24 | 1 | 1.52 | | 15 |
| Sulfate | 27.2 | 27.2 | 1 | 0.168 | | 15 |

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

(LCS) R3350931-2 10/15/18 21:03 • (LCSD) R3350931-3 10/15/18 21:17

| | Spike Amount | LCS Result | LCSD Result | LCS Rec. | LCSD Rec. | Rec. Limits | LCS Qualifier | LCSD Qualifier | RPD | RPD Limits |
|----------|--------------|------------|-------------|----------|-----------|-------------|---------------|----------------|-------|------------|
| Analyte | mg/l | mg/l | mg/l | % | % | % | | | % | % |
| Chloride | 40.0 | 39.7 | 39.5 | 99.3 | 98.9 | 80.0-120 | | | 0.432 | 15 |
| Sulfate | 40.0 | 39.0 | 39.2 | 97.6 | 98.1 | 80.0-120 | | | 0.551 | 15 |

L1033540-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1033540-09 10/16/18 02:18 • (MS) R3350931-5 10/16/18 02:47 • (MSD) R3350931-6 10/16/18 03:02

| | Spike Amount | Original Result | MS Result | MSD Result | MS Rec. | MSD Rec. | Dilution | Rec. Limits | MS Qualifier | MSD Qualifier | RPD | RPD Limits |
|----------|--------------|-----------------|-----------|------------|---------|----------|----------|-------------|--------------|---------------|-------|------------|
| Analyte | mg/l | mg/l | mg/l | mg/l | % | % | | % | | | % | % |
| Chloride | 50.0 | ND | 49.2 | 50.4 | 98.2 | 101 | 1 | 80.0-120 | | | 2.34 | 15 |
| Sulfate | 50.0 | ND | 49.1 | 49.5 | 98.2 | 98.9 | 1 | 80.0-120 | | | 0.734 | 15 |

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



L1033624-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1033624-02 10/16/18 06:38 • (MS) R3350931-8 10/16/18 07:06

| Analyte | Spike Amount mg/l | Original Result mg/l | MS Result mg/l | MS Rec. % | Dilution | Rec. Limits % | <u>MS Qualifier</u> |
|----------|----------------------|-------------------------|-------------------|--------------|----------|------------------|---------------------|
| Chloride | 50.0 | 2.27 | 51.7 | 98.8 | 1 | 80.0-120 | |
| Sulfate | 50.0 | 27.2 | 74.8 | 95.1 | 1 | 80.0-120 | |

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



Method Blank (MB)

(MB) R3352193-1 10/19/18 11:31

| Analyte | MB Result mg/l | MB Qualifier | MB MDL mg/l | MB RDL mg/l |
|-----------|-------------------|--------------|----------------|----------------|
| Calcium | U | | 0.0463 | 1.00 |
| Magnesium | U | | 0.0111 | 1.00 |
| Sodium | 0.132 | ⬇ | 0.0985 | 1.00 |

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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

(LCS) R3352193-2 10/19/18 11:34 • (LCSD) R3352193-3 10/19/18 11:37

| Analyte | Spike Amount mg/l | LCS Result mg/l | LCSD Result mg/l | LCS Rec. % | LCSD Rec. % | Rec. Limits % | LCS Qualifier | LCSD Qualifier | RPD % | RPD Limits % |
|-----------|----------------------|--------------------|---------------------|---------------|----------------|------------------|---------------|----------------|----------|-----------------|
| Calcium | 10.0 | 10.4 | 10.6 | 104 | 106 | 80.0-120 | | | 1.80 | 20 |
| Magnesium | 10.0 | 10.4 | 10.6 | 104 | 106 | 80.0-120 | | | 2.25 | 20 |
| Sodium | 10.0 | 10.5 | 10.7 | 105 | 107 | 80.0-120 | | | 2.02 | 20 |

L1035624-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1035624-01 10/19/18 11:39 • (MS) R3352193-5 10/19/18 11:45 • (MSD) R3352193-6 10/19/18 11:47

| Analyte | Spike Amount mg/l | Original Result mg/l | MS Result mg/l | MSD Result mg/l | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|-----------|----------------------|-------------------------|-------------------|--------------------|--------------|---------------|----------|------------------|--------------|---------------|----------|-----------------|
| Calcium | 10.0 | 78.8 | 87.6 | 87.9 | 88.1 | 90.4 | 1 | 75.0-125 | | | 0.269 | 20 |
| Magnesium | 10.0 | 33.3 | 42.8 | 42.9 | 94.8 | 96.1 | 1 | 75.0-125 | | | 0.283 | 20 |
| Sodium | 10.0 | 96.3 | 105 | 105 | 82.7 | 83.5 | 1 | 75.0-125 | | | 0.0752 | 20 |



Method Blank (MB)

(MB) R3350859-3 10/13/18 04:06

| Analyte | MB Result mg/l | MB Qualifier | MB MDL mg/l | MB RDL mg/l |
|----------------------------|-------------------|--------------|----------------|----------------|
| Benzene | U | | 0.000331 | 0.00100 |
| Ethylbenzene | U | | 0.000384 | 0.00100 |
| Toluene | U | | 0.000412 | 0.00100 |
| Xylenes, Total | U | | 0.00106 | 0.00300 |
| (S) Toluene-d8 | 97.2 | | | 80.0-120 |
| (S) Dibromofluoromethane | 104 | | | 75.0-120 |
| (S) a,a,a-Trifluorotoluene | 101 | | | 80.0-120 |
| (S) 4-Bromofluorobenzene | 97.9 | | | 77.0-126 |

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

(LCS) R3350859-1 10/13/18 03:01 • (LCSD) R3350859-2 10/13/18 03:22

| Analyte | Spike Amount mg/l | LCS Result mg/l | LCSD Result mg/l | LCS Rec. % | LCSD Rec. % | Rec. Limits % | LCS Qualifier | LCSD Qualifier | RPD % | RPD Limits % |
|----------------------------|----------------------|--------------------|---------------------|---------------|----------------|------------------|---------------|----------------|----------|-----------------|
| Benzene | 0.0250 | 0.0238 | 0.0232 | 95.4 | 93.0 | 70.0-123 | | | 2.55 | 20 |
| Ethylbenzene | 0.0250 | 0.0233 | 0.0232 | 93.1 | 93.0 | 79.0-123 | | | 0.0872 | 20 |
| Toluene | 0.0250 | 0.0230 | 0.0226 | 92.1 | 90.3 | 79.0-120 | | | 1.92 | 20 |
| Xylenes, Total | 0.0750 | 0.0691 | 0.0688 | 92.1 | 91.7 | 79.0-123 | | | 0.435 | 20 |
| (S) Toluene-d8 | | | | 97.6 | 98.8 | 80.0-120 | | | | |
| (S) Dibromofluoromethane | | | | 102 | 102 | 75.0-120 | | | | |
| (S) a,a,a-Trifluorotoluene | | | | 99.5 | 99.5 | 80.0-120 | | | | |
| (S) 4-Bromofluorobenzene | | | | 101 | 102 | 77.0-126 | | | | |

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



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.

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. |
| Case Narrative (Cn) | A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report. |
| Quality Control Summary (Qc) | This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material. |
| Sample Chain of Custody (Sc) | This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis. |
| Sample Results (Sr) | This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported. |
| Sample Summary (Ss) | This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis. |

Qualifier Description

| | |
|----|---|
| J | The identification of the analyte is acceptable; the reported value is an estimate. |
| T8 | Sample(s) received past/too close to holding time expiration. |

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* 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 National.

State Accreditations

| | | | |
|-------------------------|-------------|-----------------------------|-------------------|
| Alabama | 40660 | Nebraska | NE-OS-15-05 |
| Alaska | 17-026 | Nevada | TN-03-2002-34 |
| Arizona | AZ0612 | New Hampshire | 2975 |
| Arkansas | 88-0469 | New Jersey–NELAP | TN002 |
| California | 2932 | New Mexico ¹ | n/a |
| 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} | 90010 | South Carolina | 84004 |
| Kentucky ² | 16 | South Dakota | n/a |
| Louisiana | AI30792 | Tennessee ^{1 4} | 2006 |
| Louisiana ¹ | LA180010 | Texas | T 104704245-17-14 |
| Maine | TN0002 | Texas ⁵ | LAB0152 |
| Maryland | 324 | Utah | TN00003 |
| Massachusetts | M-TN003 | Vermont | VT2006 |
| Michigan | 9958 | Virginia | 460132 |
| Minnesota | 047-999-395 | Washington | C847 |
| Mississippi | TN00003 | West Virginia | 233 |
| Missouri | 340 | Wisconsin | 9980939910 |
| Montana | CERT0086 | Wyoming | A2LA |

Third Party Federal Accreditations

| | | | |
|-------------------------------|---------|---------------------|---------------|
| 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

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Colorado Oil & Gas Conservation

701 Wapiti Court, Ste 204
Rifle, CO 81650

Billing Information:

Attn: Accounts Payable
1120 Lincoln St., Suite 801
Denver, CO 80203

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



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



L# 10 33582
A080

Acctnum: **COILGASRCO**

Template: **T111889**

Prelogin: **P673143**

TSR: **288 - Daphne Richards**

PB:

Shipped Via:

Remarks Sample # (lab only)

Report to:
Stan Spencer

Email To: stan.spencer@state.co.us;
ksiesser@cottonwoodconsulting.com

Project
Description: Carfield #1 Orphan Well

City/State
Collected: De Beque

Phone: **970-764-7356**
Fax: **970-625-5682**

Client Project #

Lab Project #
COILGASRCO-TABLE910

Collected by (print):

Jacob Hacker

Site/Facility ID #

P.O. #

Collected by (signature):

Paul Hunter

Rush? (Lab MUST Be Notified)

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

Quote #

Date Results Needed

Immediately
Packed on Ice N ☐ Y ☒

No.
of
Cntrs

Sample ID

Comp/Grab

Matrix *

Depth

Date

Time

Carfield #1 Orphan Well

Grab

GW

—

10/9/18

1415

4

X

X

X

X

GW

4

X

X

X

GW

4

X

X

X

* Matrix:

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

Remarks:

Samples returned via:

☐ UPS ☒ FedEx ☐ Courier

Relinquished by: (Signature)

Paul Hunter

Relinquished by: (Signature)

[Signature]

Relinquished by: (Signature)

[Signature]

Date:

10/9/18

Time:

1527

Tracking #

4430 3423 8549

Received by: (Signature)

[Signature]

Received by: (Signature)

[Signature]

Received for lab by: (Signature)

Carol Kemp

pH

Temp

Flow

Other

Trip Blank Received: Yes ☒ No ☐
HCL/MeOH
TBR

Temp: 21.2 °C Bottles Received: 4

Date: 10/10/18 Time: 8:45

Sample Receipt Checklist

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

If preservation required by Login: Date/Time

Hold:

Condition:
NCF / OK