ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

# Analytical Report

January 09, 2019

Report to:
Rhett Montgomery
Antler Energy
PO Box 336
Baggs, WY 82321

Bill to:
Clay Evans
Antler Energy
PO Box 104
Baggs, WY 82321

Project ID:
ACZ Project ID: L48898

Rhett Montgomery:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on December 17, 2018. This project has been assigned to ACZ's project number, L48898. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L48898. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after February 08, 2019. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
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# Case Narrative

Antler Energy

January 09, 2019

Project ID:
ACZ Project ID: L48898

## Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 3 miscellaneous samples from Antler Energy on December 17, 2018. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L48898. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

## Holding Times

All analyses were performed within EPA recommended holding times.

## Sample Analysis

These samples were analyzed for inorganic, organic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further explanation not provided by the Extended Qualifier Report:

1. TPH (N1) - Water contamination in the LCSSD and the MS resulted in low recoveries for the affected QC. At a minimum the LCS demonstrated proper recoveries, and all CCV's met acceptance limits.

2. TPH (R1) - RPD exceeded the limits of acceptance between QC due to the water contamination reducing the recoveries of affected QC. In turn the RPD between unaffected and contaminated QC was outside of acceptance.

**Antler Energy**
Project ID:
Sample ID: CLARK MILLISON LAND FARM

ACZ Sample ID: ***L48898-01***
Date Sampled: *12/17/18 00:00*
Date Received: *12/17/18*
Sample Matrix: *Soil*

Metals Analysis

| Parameter | EPA Method | Dilution | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium, soluble (Sat. Paste) | M6010D ICP | 1 | 4.12 | | | meq/L | 0.005 | 0.025 | 01/09/19 2:29 | aeh |
| Chromium, total (3050) | M6010D ICP | 103 | 27 | | * | mg/Kg | 1 | 5 | 01/05/19 4:58 | dcm |
| Chromium, Trivalent | Calculation (Total - Hexavalent) | | 27 | | | mg/Kg | 1 | 5 | 01/09/19 0:00 | calc |
| Magnesium, soluble (Sat. Paste) | M6010D ICP | 1 | 1.33 | | | meq/L | 0.017 | 0.082 | 01/09/19 2:29 | aeh |
| Sodium Adsorption Ratio | Calculation | | 0.74 | | | | | | 01/09/19 0:00 | calc |
| Sodium, soluble (Sat. Paste) | M6010D ICP | 1 | 1.22 | | | meq/L | 0.0087 | 0.0435 | 01/09/19 2:29 | aeh |

Soil Analysis

| Parameter | EPA Method | Dilution | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Conductivity @25C | SM2510B | | | | | | | | | |
| Conductivity | | 1 | 0.617 | | * | mmhos/cm | 0.001 | 0.01 | 12/29/18 0:00 | llr |
| Max Particle Size | | 1 | 2000 | | * | um | | | 12/29/18 0:00 | llr |
| Temperature | | 1 | 20.6 | | * | C | 0.1 | 0.1 | 12/29/18 0:00 | llr |
| pH, Saturated Paste | EPA 600/2-78-054 section 3.2.2 | | | | | | | | | |
| Max Particle Size | | 1 | 2000 | | * | um | | | 12/29/18 0:00 | llr |
| pH | | 1 | 7.5 | | * | units | 0.1 | 0.1 | 12/29/18 0:00 | llr |
| Solids, Percent | D2216-80 | 1 | 91.1 | | * | % | 0.1 | 0.5 | 12/27/18 23:28 | ajm |

Soil Preparation

| Parameter | EPA Method | Dilution | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Air Dry at 34 Degrees C | USDA No. 1, 1972 | | | | | | | | 12/26/18 1:07 | gkh |
| Digestion - Alkaline | M3060A | | | | | | | | 01/03/19 18:56 | jlw |
| Digestion - Hot Plate | M3050B ICP | | | | | | | | 12/30/18 13:19 | llr |
| Saturated Paste Extraction | USDA No. 60 (2) | | | | | | | | 12/28/18 12:34 | gkh |
| Sieve-2000 um (2.0mm) | ASA No.9, 15-4.2.2 | | | | | | | | 12/28/18 11:38 | gkh |

Wet Chemistry

| Parameter | EPA Method | Dilution | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent (3060) | M7196A | 220 | | U | * | mg/Kg | 1 | 4 | 01/08/19 11:27 | emk |

**Antler Energy**
Project ID:
Sample ID: PTASYNSKI 1X PIT

ACZ Sample ID: ***L48898-02***
Date Sampled: *12/17/18 00:00*
Date Received: *12/17/18*
Sample Matrix: *Soil*

Metals Analysis

| Parameter | EPA Method | Dilution | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium, soluble (Sat. Paste) | M6010D ICP | 1 | 2.34 | | | meq/L | 0.005 | 0.025 | 01/09/19 2:33 | aeh |
| Chromium, total (3050) | M6010D ICP | 102 | 21 | | * | mg/Kg | 1 | 5 | 01/05/19 5:02 | dcm |
| Chromium, Trivalent | Calculation (Total - Hexavalent) | | 21 | | | mg/Kg | 1 | 5 | 01/09/19 0:00 | calc |
| Magnesium, soluble (Sat. Paste) | M6010D ICP | 1 | 1.88 | | | meq/L | 0.017 | 0.082 | 01/09/19 2:33 | aeh |
| Sodium Adsorption Ratio | Calculation | | 0.81 | | | | | | 01/09/19 0:00 | calc |
| Sodium, soluble (Sat. Paste) | M6010D ICP | 1 | 1.17 | | | meq/L | 0.0087 | 0.0435 | 01/09/19 2:33 | aeh |

Soil Analysis

| Parameter | EPA Method | Dilution | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Conductivity @25C | SM2510B | | | | | | | | | |
| Conductivity | | 1 | 0.573 | | * | mmhos/cm | 0.001 | 0.01 | 12/29/18 0:00 | llr |
| Max Particle Size | | 1 | 2000 | | * | um | | | 12/29/18 0:00 | llr |
| Temperature | | 1 | 20.4 | | * | C | 0.1 | 0.1 | 12/29/18 0:00 | llr |
| pH, Saturated Paste | EPA 600/2-78-054 section 3.2.2 | | | | | | | | | |
| Max Particle Size | | 1 | 2000 | | * | um | | | 12/29/18 0:00 | llr |
| pH | | 1 | 7.5 | | * | units | 0.1 | 0.1 | 12/29/18 0:00 | llr |
| Solids, Percent | D2216-80 | 1 | 84.4 | | * | % | 0.1 | 0.5 | 12/28/18 0:57 | ajm |

Soil Preparation

| Parameter | EPA Method | Dilution | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Air Dry at 34 Degrees C | USDA No. 1, 1972 | | | | | | | | 12/26/18 5:33 | gkh |
| Digestion - Alkaline | M3060A | | | | | | | | 01/04/19 3:43 | jlw |
| Digestion - Hot Plate | M3050B ICP | | | | | | | | 12/30/18 13:33 | llr |
| Saturated Paste Extraction | USDA No. 60 (2) | | | | | | | | 12/28/18 12:37 | gkh |
| Sieve-2000 um (2.0mm) | ASA No.9, 15-4.2.2 | | | | | | | | 12/28/18 11:42 | gkh |

Wet Chemistry

| Parameter | EPA Method | Dilution | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent (3060) | M7196A | 235 | | U | * | mg/Kg | 1 | 5 | 01/08/19 11:47 | emk |

**Antler Energy**
Project ID:
Sample ID: PTASYNSKI 1X LAND FARM

ACZ Sample ID: ***L48898-03***
Date Sampled: *12/17/18 00:00*
Date Received: *12/17/18*
Sample Matrix: *Soil*

Metals Analysis

| Parameter | EPA Method | Dilution | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium, soluble (Sat. Paste) | M6010D ICP | 1 | 0.724 | | | meq/L | 0.005 | 0.025 | 01/09/19 2:37 | aeh |
| Chromium, total (3050) | M6010D ICP | 101 | 21 | | * | mg/Kg | 1 | 5 | 01/05/19 5:06 | dcm |
| Chromium, Trivalent | Calculation (Total - Hexavalent) | | 21 | | | mg/Kg | 1 | 5 | 01/09/19 0:00 | calc |
| Magnesium, soluble (Sat. Paste) | M6010D ICP | 1 | 0.319 | | | meq/L | 0.017 | 0.082 | 01/09/19 2:37 | aeh |
| Sodium Adsorption Ratio | Calculation | | 21 | | | | | | 01/09/19 0:00 | calc |
| Sodium, soluble (Sat. Paste) | M6010D ICP | 1 | 14.9 | | | meq/L | 0.0087 | 0.0435 | 01/09/19 2:37 | aeh |

Soil Analysis

| Parameter | EPA Method | Dilution | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Conductivity @25C | SM2510B | | | | | | | | | |
| Conductivity | | 1 | 1.55 | | * | mmhos/cm | 0.001 | 0.01 | 12/29/18 0:00 | llr |
| Max Particle Size | | 1 | 2000 | | * | um | | | 12/29/18 0:00 | llr |
| Temperature | | 1 | 20.6 | | * | C | 0.1 | 0.1 | 12/29/18 0:00 | llr |
| pH, Saturated Paste | EPA 600/2-78-054 section 3.2.2 | | | | | | | | | |
| Max Particle Size | | 1 | 2000 | | * | um | | | 12/29/18 0:00 | llr |
| pH | | 1 | 8.4 | | * | units | 0.1 | 0.1 | 12/29/18 0:00 | llr |
| Solids, Percent | D2216-80 | 1 | 93.1 | | * | % | 0.1 | 0.5 | 12/28/18 2:25 | ajm |

Soil Preparation

| Parameter | EPA Method | Dilution | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Air Dry at 34 Degrees C | USDA No. 1, 1972 | | | | | | | | 12/26/18 9:59 | gkh |
| Digestion - Alkaline | M3060A | | | | | | | | 01/04/19 6:38 | jlw |
| Digestion - Hot Plate | M3050B ICP | | | | | | | | 12/30/18 13:48 | llr |
| Saturated Paste Extraction | USDA No. 60 (2) | | | | | | | | 12/28/18 12:40 | gkh |
| Sieve-2000 um (2.0mm) | ASA No.9, 15-4.2.2 | | | | | | | | 12/28/18 11:46 | gkh |

Wet Chemistry

| Parameter | EPA Method | Dilution | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent (3060) | M7196A | 215 | | U | * | mg/Kg | 1 | 4 | 01/08/19 12:08 | emk |

## Report Header Explanations

| | |
|---|---|
| *Batch* | A distinct set of samples analyzed at a specific time |
| *Found* | Value of the QC Type of interest |
| *Limit* | Upper limit for RPD, in %. |
| *Lower* | Lower Recovery Limit, in % (except for LCSS, mg/Kg) |
| *MDL* | Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations. |
| *PCN/SCN* | A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis |
| *PQL* | Practical Quantitation Limit. Synonymous with the EPA term "minimum level". |
| *QC* | True Value of the Control Sample or the amount added to the Spike |
| *Rec* | Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg) |
| *RPD* | Relative Percent Difference, calculation used for Duplicate QC Types |
| *Upper* | Upper Recovery Limit, in % (except for LCSS, mg/Kg) |
| *Sample* | Value of the Sample of interest |

## QC Sample Types

| | | | |
|---|---|---|---|
| *AS* | Analytical Spike (Post Digestion) | *LCSWD* | Laboratory Control Sample - Water Duplicate |
| *ASD* | Analytical Spike (Post Digestion) Duplicate | *LFB* | Laboratory Fortified Blank |
| *CCB* | Continuing Calibration Blank | *LFM* | Laboratory Fortified Matrix |
| *CCV* | Continuing Calibration Verification standard | *LFMD* | Laboratory Fortified Matrix Duplicate |
| *DUP* | Sample Duplicate | *LRB* | Laboratory Reagent Blank |
| *ICB* | Initial Calibration Blank | *MS* | Matrix Spike |
| *ICV* | Initial Calibration Verification standard | *MSD* | Matrix Spike Duplicate |
| *ICSAB* | Inter-element Correction Standard - A plus B solutions | *PBS* | Prep Blank - Soil |
| *LCSS* | Laboratory Control Sample - Soil | *PBW* | Prep Blank - Water |
| *LCSSD* | Laboratory Control Sample - Soil Duplicate | *PQV* | Practical Quantitation Verification standard |
| *LCSW* | Laboratory Control Sample - Water | *SDL* | Serial Dilution |

## QC Sample Type Explanations

| | |
|---|---|
| Blanks | Verifies that there is no or minimal contamination in the prep method or calibration procedure. |
| Control Samples | Verifies the accuracy of the method, including the prep procedure. |
| Duplicates | Verifies the precision of the instrument and/or method. |
| Spikes/Fortified Matrix | Determines sample matrix interferences, if any. |
| Standard | Verifies the validity of the calibration. |

## ACZ Qualifiers (Qual)

| | |
|---|---|
| B | Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity. |
| H | Analysis exceeded method hold time. pH is a field test with an immediate hold time. |
| L | Target analyte response was below the laboratory defined negative threshold. |
| U | The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit. |

## Method References


| | |
|---|---|
| (1) | EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983. |
| (2) | EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993. |
| (3) | EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994. |
| (4) | EPA SW-846. Test Methods for Evaluating Solid Waste. |
| (5) | Standard Methods for the Examination of Water and Wastewater. |


## Comments

| | |
|---|---|
| (1) | QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations. |
| (2) | Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis. |
| (3) | Animal matrices for Inorganic analyses are reported on an "as received" basis. |
| (4) | An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result. |
| (5) | If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit. |

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

**Antler Energy**

ACZ Project ID: ***L48898***

*NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.*

**Calcium, soluble (Sat. Paste)** M6010D ICP

| ACZ ID | Type | Analyzed | PCN/SCN | QC | Sample | Found | Units | Rec% | Lower | Upper | RPD | Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WG464073** | | | | | | | | | | | | | |
| WG464073ICV | ICV | 01/09/19 1:54 | II181217-1 | 100 | | 96.3 | mg/L | 96 | 90 | 110 | | | |
| WG464073ICB | ICB | 01/09/19 1:57 | | | | U | mg/L | | -0.3 | 0.3 | | | |
| L48897-02DUP | DUP | 01/09/19 2:25 | | | 2.04 | 2.04 | meq/L | | | | 0 | 20 | |

**Chromium, Hexavalent (3060)** M7196A

| ACZ ID | Type | Analyzed | PCN/SCN | QC | Sample | Found | Units | Rec% | Lower | Upper | RPD | Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WG464047** | | | | | | | | | | | | | |
| WG464047ICV | ICV | 01/08/19 10:47 | WC181023-5 | .05 | | .0519 | mg/L | 104 | 90 | 110 | | | |
| WG464047ICB | ICB | 01/08/19 10:53 | | | | U | mg/L | | -0.005 | 0.005 | | | |
| L48897-02DUP | DUP | 01/08/19 11:20 | | | U | U | mg/Kg | | | | 0 | 20 | RA |
| L48898-01MS1 | MS | 01/08/19 11:34 | SI190102- | 44.01782 | U | 33 | mg/Kg | 75 | 75 | 125 | | | |
| L48898-01MS2 | MS | 01/08/19 11:41 | SI160824- | 1387.76022 | U | 1600 | mg/Kg | 115 | 75 | 125 | | | |
| WG463747LCSS | LCSS | 01/08/19 12:14 | PCN53452 | 148 | | 137 | mg/Kg | | 83.8 | 211 | | | |
| WG463747PBS | PBS | 01/08/19 12:21 | | | | U | mg/Kg | | -1 | 1 | | | |

**Chromium, total (3050)** M6010D ICP

| ACZ ID | Type | Analyzed | PCN/SCN | QC | Sample | Found | Units | Rec% | Lower | Upper | RPD | Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WG463941** | | | | | | | | | | | | | |
| WG463941ICV | ICV | 01/05/19 3:31 | II181219-3 | 2 | | 1.976 | mg/L | 99 | 90 | 110 | | | |
| WG463941ICB | ICB | 01/05/19 3:35 | | | | U | mg/L | | -0.03 | 0.03 | | | |
| WG463653PBS | PBS | 01/05/19 3:55 | | | | U | mg/Kg | | -3 | 3 | | | |
| WG463653LCSS1 | LCSS | 01/05/19 3:59 | PCN57843 | 167 | | 174.3 | mg/Kg | | 136 | 197 | | | |
| WG463653LCSSD1 | LCSSD | 01/05/19 4:03 | PCN57843 | 167 | | 167.7 | mg/Kg | | 136 | 197 | 4 | 20 | |
| L48741-24MS | MS | 01/05/19 4:19 | II181219-2 | 50.7525 | 2 | 51.8 | mg/Kg | 98 | 75 | 125 | | | |

**Conductivity @25C** SM2510B

| ACZ ID | Type | Analyzed | PCN/SCN | QC | Sample | Found | Units | Rec% | Lower | Upper | RPD | Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WG463606** | | | | | | | | | | | | | |
| L48897-02DUP | DUP | 12/29/18 13:44 | | | .336 | .316 | mmhos/cm | | | | 6 | 20 | |

**Magnesium, soluble (Sat. Paste)** M6010D ICP

| ACZ ID | Type | Analyzed | PCN/SCN | QC | Sample | Found | Units | Rec% | Lower | Upper | RPD | Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WG464073** | | | | | | | | | | | | | |
| WG464073ICV | ICV | 01/09/19 1:54 | II181217-1 | 100 | | 96.8 | mg/L | 97 | 90 | 110 | | | |
| WG464073ICB | ICB | 01/09/19 1:57 | | | | U | mg/L | | -0.6 | 0.6 | | | |
| L48897-02DUP | DUP | 01/09/19 2:25 | | | 0.818 | .771 | meq/L | | | | 6 | 20 | |

**pH, Saturated Paste** EPA 600/2-78-054 section 3.2.2

| ACZ ID | Type | Analyzed | PCN/SCN | QC | Sample | Found | Units | Rec% | Lower | Upper | RPD | Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WG463606** | | | | | | | | | | | | | |
| WG463606ICV | ICV | 12/29/18 12:32 | PCN56119 | 4 | | 4 | units | 100 | 3.9 | 4.1 | | | |
| L48897-02DUP | DUP | 12/29/18 13:44 | | | 7.8 | 7.85 | units | | | | 1 | 20 | |

**Antler Energy**

ACZ Project ID: ***L48898***

*NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.*

**Sodium, soluble (Sat. Paste)** M6010D ICP

| ACZ ID | Type | Analyzed | PCN/SCN | QC | Sample | Found | Units | Rec% | Lower | Upper | RPD | Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WG464073** | | | | | | | | | | | | | |
| WG464073ICV | ICV | 01/09/19 1:54 | II181217-1 | 100 | | 98.5 | mg/L | 99 | 90 | 110 | | | |
| WG464073ICB | ICB | 01/09/19 1:57 | | | | U | mg/L | | -0.6 | 0.6 | | | |
| L48897-02DUP | DUP | 01/09/19 2:25 | | | 1.01 | .95 | meq/L | | | | 6 | 20 | |

**Solids, Percent** D2216-80

| ACZ ID | Type | Analyzed | PCN/SCN | QC | Sample | Found | Units | Rec% | Lower | Upper | RPD | Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WG463168** | | | | | | | | | | | | | |
| L48741-24DUP | DUP | 12/27/18 14:37 | | | 99.2 | 99.21 | % | | | | 0 | 20 | |
| WG463168PBS | PBS | 12/28/18 8:19 | | | | U | % | | -0.1 | 0.1 | | | |

# Inorganic Extended Qualifier Report

**Antler Energy**

ACZ Project ID: ***L48898***

| ACZ ID | WORKNUM | PARAMETER | METHOD | QUAL | DESCRIPTION |
|---|---|---|---|---|---|
| **L48898-01** | WG464047 | Chromium, Hexavalent (3060) | M7196A | DA | Sample required dilution due to reactivity. |
| | | | M7196A | M2 | Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable. |
| | | | M7196A | QD | Reported value is the background-corrected concentration, as described by the method. |
| | | | M7196A | RA | Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL). |
| | WG463941 | Chromium, total (3050) | M6010D ICP | ZG | The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL. |
| **L48898-02** | WG464047 | Chromium, Hexavalent (3060) | M7196A | DA | Sample required dilution due to reactivity. |
| | | | M7196A | M2 | Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable. |
| | | | M7196A | RA | Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL). |
| | WG463941 | Chromium, total (3050) | M6010D ICP | ZG | The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL. |
| **L48898-03** | WG464047 | Chromium, Hexavalent (3060) | M7196A | DA | Sample required dilution due to reactivity. |
| | | | M7196A | M2 | Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable. |
| | | | M7196A | RA | Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL). |
| | WG463941 | Chromium, total (3050) | M6010D ICP | ZG | The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL. |

**Antler Energy**
Project ID:
Sample ID: CLARK MILLISON LAND FARM

ACZ Sample ID: ***L48898-01***
Date Sampled: *12/17/18 0:00*
Date Received: *12/17/18*
Sample Matrix: *Soil*

## BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**
Extract Method: **5035A**

**Workgroup: WG463185**
Analyst: itm
Extract Date: 12/20/18 21:35
Analysis Date: 12/20/18 21:35

| Compound | CAS | Result | QUAL | Dilution | XQ | Units | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| Benzene | 71-43-2 | | U | 5 | * | ug/Kg | 5 | 5 |
| Ethylbenzene | 100-41-4 | | U | 5 | * | ug/Kg | 5 | 5 |
| m p Xylene | 1330-20-7 | | U | 5 | * | ug/Kg | 10 | 10 |
| o Xylene | 95-47- 6 | | U | 5 | * | ug/Kg | 5 | 5 |
| Toluene | 108-88-3 | | U | 5 | * | ug/Kg | 5 | 5 |
| TVH C6 to C10 | TVH | | U | 5 | * | mg/Kg | 0.3 | 0.3 |
| **Surrogate Recoveries** | **CAS** | **% Recovery** | | **Dilution** | **XQ** | **Units** | **LCL** | **UCL** |
| Bromofluorobenzene | 460-00-4 | 92.2 | | 5 | | % | 70 | 130 |
| Bromofluorobenzene (TVH) | 460-00 4 | 91.7 | | 5 | | % | 70 | 130 |

**Antler Energy**
Project ID:
Sample ID: CLARK MILLISON LAND FARM

ACZ Sample ID: ***L48898-01***
Date Sampled: *12/17/18 0:00*
Date Received: *12/17/18*
Sample Matrix: *Soil*

## Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3540**

**Workgroup: WG463200**
Analyst: kfm
Extract Date: 12/19/18 20:06
Analysis Date: 12/21/18 17:24

| Compound | CAS | Result | QUAL | Dilution | XQ | Units | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| TPH C10 to C28 | | 990 | | 0.661 | * | mg/Kg | 66.1 | 331 |
| **Surrogate Recoveries** | **CAS** | **% Recovery** | | **Dilution** | **XQ** | **Units** | **LCL** | **UCL** |
| OTP | 84-15-1 | 89.74 | | 0.661 | | % | 60 | 115 |

**Antler Energy**
Project ID:
Sample ID: PTASYNSKI 1X PIT

ACZ Sample ID: ***L48898-02***
Date Sampled: *12/17/18 0:00*
Date Received: *12/17/18*
Sample Matrix: *Soil*

## BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**
Extract Method: **5035A**

**Workgroup: WG463185**
Analyst: itm
Extract Date: 12/20/18 22:05
Analysis Date: 12/20/18 22:05

| Compound | CAS | Result | QUAL | Dilution | XQ | Units | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| Benzene | 71-43-2 | | U | 5 | * | ug/Kg | 5 | 5 |
| Ethylbenzene | 100-41-4 | | U | 5 | * | ug/Kg | 5 | 5 |
| m p Xylene | 1330-20-7 | | U | 5 | * | ug/Kg | 10 | 10 |
| o Xylene | 95-47- 6 | | U | 5 | * | ug/Kg | 5 | 5 |
| Toluene | 108-88-3 | | U | 5 | * | ug/Kg | 5 | 5 |
| TVH C6 to C10 | TVH | | U | 5 | * | mg/Kg | 0.3 | 0.3 |
| **Surrogate Recoveries** | **CAS** | **% Recovery** | | **Dilution** | **XQ** | **Units** | **LCL** | **UCL** |
| Bromofluorobenzene | 460-00-4 | 91.2 | | 5 | | % | 70 | 130 |
| Bromofluorobenzene (TVH) | 460-00 4 | 88.8 | | 5 | | % | 70 | 130 |

**Antler Energy**
Project ID:
Sample ID: PTASYNSKI 1X PIT

ACZ Sample ID: ***L48898-02***
Date Sampled: *12/17/18 0:00*
Date Received: *12/17/18*
Sample Matrix: *Soil*

## Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3540**

**Workgroup: WG463200**
Analyst: kfm
Extract Date: 12/19/18 20:44
Analysis Date: 12/21/18 18:11

| Compound | CAS | Result | QUAL | Dilution | XQ | Units | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| TPH C10 to C28 | | 53 | | 0.0662 | * | mg/Kg | 6.62 | 33.1 |
| **Surrogate Recoveries** | **CAS** | **% Recovery** | | **Dilution** | **XQ** | **Units** | **LCL** | **UCL** |
| OTP | 84-15-1 | 94.64 | | 0.0662 | | % | 60 | 115 |

**Antler Energy**
Project ID:
Sample ID: PTASYNSKI 1X LAND FARM

ACZ Sample ID: ***L48898-03***
Date Sampled: *12/17/18 0:00*
Date Received: *12/17/18*
Sample Matrix: *Soil*

## BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**
Extract Method: **5035A**

**Workgroup: WG463185**
Analyst: itm
Extract Date: 12/20/18 22:34
Analysis Date: 12/20/18 22:34

| Compound | CAS | Result | QUAL | Dilution | XQ | Units | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| Benzene | 71-43-2 | | U | 5 | * | ug/Kg | 5 | 5 |
| Ethylbenzene | 100-41-4 | | U | 5 | * | ug/Kg | 5 | 5 |
| m p Xylene | 1330-20-7 | | U | 5 | * | ug/Kg | 10 | 10 |
| o Xylene | 95-47- 6 | | U | 5 | * | ug/Kg | 5 | 5 |
| Toluene | 108-88-3 | | U | 5 | * | ug/Kg | 5 | 5 |
| TVH C6 to C10 | TVH | | U | 5 | * | mg/Kg | 0.3 | 0.3 |
| **Surrogate Recoveries** | **CAS** | **% Recovery** | | **Dilution** | **XQ** | **Units** | **LCL** | **UCL** |
| Bromofluorobenzene | 460-00-4 | 92.2 | | 5 | | % | 70 | 130 |
| Bromofluorobenzene (TVH) | 460-00 4 | 91.5 | | 5 | | % | 70 | 130 |

**Antler Energy**
Project ID:
Sample ID: PTASYNSKI 1X LAND FARM

ACZ Sample ID: ***L48898-03***
Date Sampled: *12/17/18 0:00*
Date Received: *12/17/18*
Sample Matrix: *Soil*

## Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3540**

**Workgroup: WG463200**
Analyst: kfm
Extract Date: 12/19/18 21:22
Analysis Date: 12/21/18 18:35

| Compound | CAS | Result | QUAL | Dilution | XQ | Units | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| TPH C10 to C28 | | 620 | | 0.654 | * | mg/Kg | 65.4 | 327 |
| **Surrogate Recoveries** | **CAS** | **% Recovery** | | **Dilution** | **XQ** | **Units** | **LCL** | **UCL** |
| OTP | 84-15-1 | 109.4 | | 0.654 | | % | 60 | 115 |

## Report Header Explanations

| | |
|---|---|
| *Batch* | A distinct set of samples analyzed at a specific time |
| *Found* | Value of the QC Type of interest |
| *Limit* | Upper limit for RPD, in %. |
| *Lower* | Lower Recovery Limit, in % (except for LCSS, mg/Kg) |
| *LCL* | Lower Control Limit |
| *MDL* | Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #4) Allows for instrument and annual fluctuations. |
| *PCN/SCN* | A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis |
| *PQL* | Practical Quantitation Limit. Synonymous with the EPA term "minimum level". |
| *QC* | True Value of the Control Sample or the amount added to the Spike |
| *Rec* | Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg) |
| *RPD* | Relative Percent Difference, calculation used for Duplicate QC Types |
| *Upper* | Upper Recovery Limit, in % (except for LCSS, mg/Kg) |
| *UCL* | Upper Control Limit |
| *Sample* | Value of the Sample of interest |

## QC Sample Types

| | | | |
|---|---|---|---|
| *SURR* | Surrogate | *LFM* | Laboratory Fortified Matrix |
| *INTS* | Internal Standard | *LFMD* | Laboratory Fortified Matrix Duplicate |
| *DUP* | Sample Duplicate | *LRB* | Laboratory Reagent Blank |
| *LCSS* | Laboratory Control Sample - Soil | *MS/MSD* | Matrix Spike/Matrix Spike Duplicate |
| *LCSW* | Laboratory Control Sample - Water | *PBS* | Prep Blank - Soil |
| *LFB* | Laboratory Fortified Blank | *PBW* | Prep Blank - Water |

## QC Sample Type Explanations

| | |
|---|---|
| Blanks | Verifies that there is no or minimal contamination in the prep method or calibration procedure. |
| Control Samples | Verifies the accuracy of the method, including the prep procedure. |
| Duplicates | Verifies the precision of the instrument and/or method. |
| Spikes/Fortified Matrix | Determines sample matrix interferences, if any. |

## ACZ Qualifiers (Qual)

| | |
|---|---|
| B | Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity. |
| O | Analyte concentration is estimated due to result exceeding calibration range. |
| H | Analysis exceeded method hold time. pH is a field test with an immediate hold time. |
| J | Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity. |
| L | Target analyte response was below the laboratory defined negative threshold. |
| U | The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit. |

## Method References


| | |
|---|---|
| (1) | EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983. |
| (2) | EPA 600/4-90/020. Methods for the Determination of Organic Compounds in Drinking Water (I), July 1990. |
| (3) | EPA 600/R-92/129. Methods for the Determination of Organic Compounds in Drinking Water (II), July 1990. |
| (4) | EPA SW-846. Test Methods for Evaluating Solid Waste. |
| (5) | Standard Methods for the Examination of Water and Wastewater. |


## Comments

| | |
|---|---|
| (1) | QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations. |
| (2) | Excluding Oil & Grease, solid & biological matrices for organic analyses are reported on a wet weight basis. |
| (3) | An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result. |
| (4) | If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit. |

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

**Antler Energy**

ACZ Project ID: ***L48898***

*NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.*

**BTEX/Gasoline Range Organics (C6-C10)** M8021B/8015D GC/PID/FID

**WG463185**

**AS** **Sample ID: L48898-03AS** **PCN/SCN: B181105-2-ICV** **Analyzed: 12/21/18 0:02**

| Compound | QC | Sample | Found | Units | Rec% | Lower | Upper | RPD | Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| BENZENE | 125.5 | U | 110 | ug/Kg | 88.0 | 70 | 130 | | | |
| ETHYLBENZENE | 125 | U | 103.4 | ug/Kg | 83.0 | 70 | 130 | | | |
| M P XYLENE | 251.8 | U | 201 | ug/Kg | 80.0 | 70 | 130 | | | |
| O XYLENE | 251.3 | U | 208.7 | ug/Kg | 83.0 | 70 | 130 | | | |
| TOLUENE | 376.5 | U | 304.6 | ug/Kg | 81.0 | 70 | 130 | | | |
| TVH C6 TO C10 | 2.5 | U | 1.76 | mg/Kg | 70.0 | 70 | 130 | | | |
| BROMOFLUOROBENZENE (surr) | | | | % | 91.6 | 70 | 130 | | | |
| BROMOFLUOROBENZENE (TVH) (surr) | | | | % | 89.8 | 70 | 130 | | | |

**ASD** **Sample ID: L48898-03ASD** **PCN/SCN: B181105-2-ICV** **Analyzed: 12/21/18 0:32**

| Compound | QC | Sample | Found | Units | Rec% | Lower | Upper | RPD | Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| BENZENE | 125.5 | U | 110.1 | ug/Kg | 88.0 | 70 | 130 | 0 | 20 | |
| ETHYLBENZENE | 125 | U | 104 | ug/Kg | 83.0 | 70 | 130 | 1 | 20 | |
| M P XYLENE | 251.8 | U | 204 | ug/Kg | 81.0 | 70 | 130 | 1 | 20 | |
| O XYLENE | 251.3 | U | 212.8 | ug/Kg | 85.0 | 70 | 130 | 2 | 20 | |
| TOLUENE | 376.5 | U | 302.9 | ug/Kg | 80.0 | 70 | 130 | 1 | 20 | |
| TVH C6 TO C10 | 2.5 | U | 1.83 | mg/Kg | 73.0 | 70 | 130 | 4 | 20 | |
| BROMOFLUOROBENZENE (surr) | | | | % | 92.9 | 70 | 130 | | | |
| BROMOFLUOROBENZENE (TVH) (surr) | | | | % | 91.8 | 70 | 130 | | | |

**LCSS** **Sample ID: WG463185LCSS** **PCN/SCN: B181105-2-ICV** **Analyzed: 12/20/18 18:39**

| Compound | QC | Sample | Found | Units | Rec% | Lower | Upper | RPD | Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| BENZENE | 25.1 | | 22.1 | ug/Kg | 88.0 | 70 | 130 | | | |
| ETHYLBENZENE | 25 | | 21.6 | ug/Kg | 86.0 | 70 | 130 | | | |
| M P XYLENE | 50.4 | | 42.2 | ug/Kg | 84.0 | 70 | 130 | | | |
| O XYLENE | 50.3 | | 43.5 | ug/Kg | 87.0 | 70 | 130 | | | |
| TOLUENE | 75.3 | | 64 | ug/Kg | 85.0 | 70 | 130 | | | |
| TVH C6 TO C10 | .5 | | .402 | mg/Kg | 80.0 | 70 | 130 | | | |
| BROMOFLUOROBENZENE (surr) | | | | % | 98.5 | 70 | 130 | | | |
| BROMOFLUOROBENZENE (TVH) (surr) | | | | % | 96.3 | 70 | 130 | | | |

**LCSSD** **Sample ID: WG463185LCSSD** **PCN/SCN: B181105-2-ICV** **Analyzed: 12/20/18 19:08**

| Compound | QC | Sample | Found | Units | Rec% | Lower | Upper | RPD | Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| BENZENE | 25.1 | | 21.9 | ug/Kg | 87.0 | 70 | 130 | 1 | 20 | |
| ETHYLBENZENE | 25 | | 21.4 | ug/Kg | 86.0 | 70 | 130 | 1 | 20 | |
| M P XYLENE | 50.4 | | 41.6 | ug/Kg | 83.0 | 70 | 130 | 1 | 20 | |
| O XYLENE | 50.3 | | 43.3 | ug/Kg | 86.0 | 70 | 130 | 0 | 20 | |
| TOLUENE | 75.3 | | 63.5 | ug/Kg | 84.0 | 70 | 130 | 1 | 20 | |
| TVH C6 TO C10 | .5 | | .397 | mg/Kg | 79.0 | 70 | 130 | 1 | 20 | |
| BROMOFLUOROBENZENE (surr) | | | | % | 98.0 | 70 | 130 | | | |
| BROMOFLUOROBENZENE (TVH) (surr) | | | | % | 96.9 | 70 | 130 | | | |

**Antler Energy**

ACZ Project ID: ***L48898***

*NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.*

**PBS** **Sample ID: WG463185PBS** **Analyzed: 12/20/18 20:07**

| Compound | QC | Sample | Found | Units | Rec% | Lower | Upper | RPD | Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| BENZENE | | | U | ug/Kg | | -1 | 1 | | | |
| ETHYLBENZENE | | | U | ug/Kg | | -1 | 1 | | | |
| M P XYLENE | | | U | ug/Kg | | -2 | 2 | | | |
| O XYLENE | | | U | ug/Kg | | -1 | 1 | | | |
| TOLUENE | | | U | ug/Kg | | -1 | 1 | | | |
| TVH C6 TO C10 | | | U | mg/Kg | | -.05 | .05 | | | |
| BROMOFLUOROBENZENE (surr) | | | | % | 97.5 | 70 | 130 | | | |
| BROMOFLUOROBENZENE (TVH) (surr) | | | | % | 97.2 | 70 | 130 | | | |

**Antler Energy** ACZ Project ID: ***L48898***

*NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.*

## Diesel Range Organics (C10-C28)

M8015D GC/FID

### WG463200

**MS** **Sample ID: L48897-01MS** **PCN/SCN: OPTPH181204-2** **Analyzed: 12/21/18 16:14**

| Compound | QC | Sample | Found | Units | Rec% | Lower | Upper | RPD | Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| TPH C10 TO C28 | 2500 | 135 | 25.344 | mg/Kg | -66.0 | 70 | 130 | | | N1 |
| OTP (surr) | | | | % | 8.3 | 60 | 115 | | | N1 |

**MSD** **Sample ID: L48897-01MSD** **PCN/SCN: OPTPH181204-2** **Analyzed: 12/21/18 16:37**

| Compound | QC | Sample | Found | Units | Rec% | Lower | Upper | RPD | Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| TPH C10 TO C28 | 2500 | 135 | 219.174 | mg/Kg | 51.0 | 70 | 130 | 159 | 20 | M2 R1 |
| OTP (surr) | | | | % | 82.4 | 60 | 115 | | | |

**LCSS** **Sample ID: WG462934LCSS** **PCN/SCN: OPTPH181204-2** **Analyzed: 12/21/18 14:17**

| Compound | QC | Sample | Found | Units | Rec% | Lower | Upper | RPD | Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| TPH C10 TO C28 | 2500 | | 80.676 | mg/Kg | 97.0 | 70 | 130 | | | |
| OTP (surr) | | | | % | 111.4 | 60 | 115 | | | |

**LCSSD** **Sample ID: WG462934LCSSD** **PCN/SCN: OPTPH181204-2** **Analyzed: 12/21/18 14:40**

| Compound | QC | Sample | Found | Units | Rec% | Lower | Upper | RPD | Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| TPH C10 TO C28 | 2500 | | 40.342 | mg/Kg | 48.0 | 70 | 130 | 67 | 20 | N1 R1 |
| OTP (surr) | | | | % | 66.6 | 60 | 115 | | | |

**PBS** **Sample ID: WG462934PBS** **Analyzed: 12/21/18 13:54**

| Compound | QC | Sample | Found | Units | Rec% | Lower | Upper | RPD | Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| TPH C10 TO C28 | | | U | mg/Kg | | -16.7 | 16.7 | | | |
| OTP (surr) | | | | % | 101.2 | 60 | 115 | | | |

ACZ Project ID: ***L48898***

| ACZ ID | WORKNUM | PARAMETER | METHOD | QUAL | DESCRIPTION |
|---|---|---|---|---|---|
| **L48898-01** | WG463185 | Benzene | M8021B/8015D GC/PID/FID | D1 | Sample required dilution due to matrix. |
| | | | M8021B/8015D GC/PID/FID | ZM | Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035. |
| | | Ethylbenzene | M8021B/8015D GC/PID/FID | D1 | Sample required dilution due to matrix. |
| | | | M8021B/8015D GC/PID/FID | ZM | Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035. |
| | | m p Xylene | M8021B/8015D GC/PID/FID | D1 | Sample required dilution due to matrix. |
| | | | M8021B/8015D GC/PID/FID | ZM | Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035. |
| | | o Xylene | M8021B/8015D GC/PID/FID | D1 | Sample required dilution due to matrix. |
| | | | M8021B/8015D GC/PID/FID | ZM | Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035. |
| | | Toluene | M8021B/8015D GC/PID/FID | D1 | Sample required dilution due to matrix. |
| | | | M8021B/8015D GC/PID/FID | ZM | Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035. |
| | | TVH C6 to C10 | M8021B/8015D GC/PID/FID | D1 | Sample required dilution due to matrix. |
| | | | M8021B/8015D GC/PID/FID | ZM | Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035. |
| | WG463200 | TPH C10 to C28 | M8015D GC/FID | M2 | Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable. |
| | | | M8015D GC/FID | N1 | See Case Narrative. |
| | | | M8015D GC/FID | R1 | RPD exceeded the method or laboratory acceptance limit. See Case Narrative. |
| **L48898-02** | WG463185 | Benzene | M8021B/8015D GC/PID/FID | D1 | Sample required dilution due to matrix. |
| | | | M8021B/8015D GC/PID/FID | ZM | Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035. |
| | | Ethylbenzene | M8021B/8015D GC/PID/FID | D1 | Sample required dilution due to matrix. |
| | | | M8021B/8015D GC/PID/FID | ZM | Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035. |
| | | m p Xylene | M8021B/8015D GC/PID/FID | D1 | Sample required dilution due to matrix. |
| | | | M8021B/8015D GC/PID/FID | ZM | Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035. |
| | | o Xylene | M8021B/8015D GC/PID/FID | D1 | Sample required dilution due to matrix. |
| | | | M8021B/8015D GC/PID/FID | ZM | Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035. |
| | | Toluene | M8021B/8015D GC/PID/FID | D1 | Sample required dilution due to matrix. |
| | | | M8021B/8015D GC/PID/FID | ZM | Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035. |
| | | TVH C6 to C10 | M8021B/8015D GC/PID/FID | D1 | Sample required dilution due to matrix. |
| | | | M8021B/8015D GC/PID/FID | ZM | Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035. |
| | WG463200 | TPH C10 to C28 | M8015D GC/FID | M2 | Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable. |
| | | | M8015D GC/FID | N1 | See Case Narrative. |
| | | | M8015D GC/FID | R1 | RPD exceeded the method or laboratory acceptance limit. See Case Narrative. |
| **L48898-03** | WG463185 | Benzene | M8021B/8015D GC/PID/FID | D1 | Sample required dilution due to matrix. |
| | | | M8021B/8015D GC/PID/FID | ZM | Data is estimated because result is below 200 ug/Kg; ACZ |

| ACZ ID | WORKNUM | PARAMETER | METHOD | QUAL | DESCRIPTION |
|---|---|---|---|---|---|
| | | | | | does not have a closed-system purge and trap as described in method 5035. |
| | | Ethylbenzene | M8021B/8015D GC/PID/FID | D1 | Sample required dilution due to matrix. |
| | | | M8021B/8015D GC/PID/FID | ZM | Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035. |
| | | m p Xylene | M8021B/8015D GC/PID/FID | D1 | Sample required dilution due to matrix. |
| | | | M8021B/8015D GC/PID/FID | ZM | Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035. |
| | | o Xylene | M8021B/8015D GC/PID/FID | D1 | Sample required dilution due to matrix. |
| | | | M8021B/8015D GC/PID/FID | ZM | Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035. |
| | | Toluene | M8021B/8015D GC/PID/FID | D1 | Sample required dilution due to matrix. |
| | | | M8021B/8015D GC/PID/FID | ZM | Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035. |
| | | TVH C6 to C10 | M8021B/8015D GC/PID/FID | D1 | Sample required dilution due to matrix. |
| | | | M8021B/8015D GC/PID/FID | ZM | Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035. |
| | WG463200 | TPH C10 to C28 | M8015D GC/FID | M2 | Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable. |
| | | | M8015D GC/FID | N1 | See Case Narrative. |
| | | | M8015D GC/FID | R1 | RPD exceeded the method or laboratory acceptance limit. See Case Narrative. |

Soil Analysis

**The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.**

| | |
|---|---|
| Conductivity @25C | SM2510B |
| pH, Saturated Paste | EPA 600/2-78-054 section 3.2.2 |
| Solids, Percent | D2216-80 |

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

# Sample Receipt

Antler Energy

ACZ Project ID: L48898
Date Received: 12/17/2018 13:51
Received By:
Date Printed: 12/18/2018

## Receipt Verification

| | YES | NO | NA |
|---|---|---|---|
| 1) Is a foreign soil permit included for applicable samples? | | | X |
| 2) Is the Chain of Custody form or other directive shipping papers present? | X | | |
| 3) Does this project require special handling procedures such as CLP protocol? | | X | |
| 4) Are any samples NRC licensable material? | | | X |
| 5) If samples are received past hold time, proceed with requested short hold time analyses? | X | | |
| 6) Is the Chain of Custody form complete and accurate? | X | | |
| 7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples? | X | | |

A change was made in the sample identification line 1 analyses requested section prior to ACZ custody.

## Samples/Containers

| | YES | NO | NA |
|---|---|---|---|
| 8) Are all containers intact and with no leaks? | X | | |
| 9) Are all labels on containers and are they intact and legible? | X | | |
| 10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time? | X | | |
| 11) For preserved bottle types, was the pH checked and within limits? [1] | | | X |
| 12) Is there sufficient sample volume to perform all requested work? | X | | |
| 13) Is the custody seal intact on all containers? | | | X |
| 14) Are samples that require zero headspace acceptable? | | | X |
| 15) Are all sample containers appropriate for analytical requirements? | X | | |
| 16) Is there an Hg-1631 trip blank present? | | | X |
| 17) Is there a VOA trip blank present? | | X | |
| 18) Were all samples received within hold time? | X | | |

NA indicates Not Applicable

## Chain of Custody Related Remarks

## Client Contact Remarks

## Shipping Containers

| Cooler Id | Temp(°C) | Temp Criteria(°C) | Rad(µR/Hr) | Custody Seal Intact? |
|---|---|---|---|---|
| 3849 | 0.1 | <=6.0 | 19 | Yes |

Was ice present in the shipment container(s)?

Yes - Wet ice was present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
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# Sample Receipt

Antler Energy

| | |
|---|---|
| ACZ Project ID: | L48898 |
| Date Received: | 12/17/2018 13:51 |
| Received By: | |
| Date Printed: | 12/18/2018 |

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

# ACZ Laboratories, Inc.

L48898

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

## CHAIN of CUSTODY

**Report to:**

| | |
|---|---|
| Name: Rhett Montgomery | Address: |
| Company: Antler Energy | |
| E-mail: rhett@antler-energy.com | Telephone: |

**Copy of Report to:**

| | |
|---|---|
| Name: Rhett Montgomery | E-mail: |
| Company: Antler Energy | Telephone: |

**Invoice to:**

| | |
|---|---|
| Name: Clay Evans | Address: |
| Company: Antler energy | |
| E-mail: clay@antler-energy.com | Telephone: |

**If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?** YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

**Are samples for SDWA Compliance Monitoring?** Yes [ ] No [X]

**If yes, please include state forms. Results will be reported to PQL for Colorado.**

**Sampler's Name:** Rhett **Sampler's Site Information** State Colorado Zip code _____ Time Zone MST

***Sampler's Signature:** Rhett D. M

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

**PROJECT INFORMATION**

Quote #: BO41109

PO#:

Reporting state for compliance testing: COGCC

Check box if samples include NRC licensed material? [ ]

ANALYSES REQUESTED *(attach list or use quote number)*

| SAMPLE IDENTIFICATION | DATE:TIME | Matrix | # of Containers | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Clark Mattison Land Farm | 12-17-18 | SO | 4 | 910-1- | NO- | PAH- | metals | | | | |
| Plasynski/x Pit | 12-17-18 | SO | 4 | 910-1- | NO | PAH- | metals | | | | |
| Plasynski/x Land Farm | 12-17-18 | SO | 4 | 910-1- | No | -PAH- | metals | | | | |

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

**REMARKS**

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

| RELINQUISHED BY: | DATE:TIME | RECEIVED BY: | DATE:TIME |
|---|---|---|---|
| Rhett Montgomery | 12-17-18 1:46 PM | SJC | 12-17-18 13:46 |
| | | | |
| | | | |

L48898 Chain of Custod