

WG1650104

Gravimetric Analysis by Method 2540 C-2011

QUALITY CONTROL SUMMARY

L1342918-13,05,07

Method Blank (MB)

(MB) R3647862-1 04/27/21 15:55

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

L1342918-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1342918-13 04/27/21 15:55 • (DUP) R3647862-3 04/27/21 15:55

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	1060	1080	1	2.43		5

L1342918-14 Original Sample (OS) • Duplicate (DUP)

(OS) L1342918-14 04/27/21 15:55 • (DUP) R3647862-4 04/27/21 15:55

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	418	408	1	2.42		5

Laboratory Control Sample (LCS)

(LCS) R3647862-2 04/27/21 15:55

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8690	98.8	77.4-123	

WG1662262

Gravimetric Analysis by Method 2540 C-2011

QUALITY CONTROL SUMMARY

L134324 02.03.04

Method Blank (MB)

(MB) R3648277-1 04/28/21 12:56

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

L1342455-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1342455-06 04/28/21 12:56 • (DUP) R3648277-3 04/28/21 12:56

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	1050	1040	1	0.961		5

L1343243-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1343243-04 04/28/21 12:56 • (DUP) R3648277-4 04/28/21 12:56

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	2040	2140	1	4.80		5

Laboratory Control Sample (LCS)

(LCS) R3648277-2 04/28/21 12:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8740	99.3	77.4-123	

Method Blank (MB)

(MB) R3648310-1 04/28/21 15:26

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

L1342592-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1342592-01 04/28/21 15:26 • (DUP) R3648310-3 04/28/21 15:26

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Dissolved Solids	mg/l 240	mg/l 241		% 0.416		% 5

L1343322-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1343322-03 04/28/21 15:26 • (DUP) R3648310-4 04/28/21 15:26

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Dissolved Solids	mg/l 432	mg/l 431		% 0.232		% 5

Laboratory Control Sample (LCS)

(LCS) R3648310-2 04/28/21 15:26

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Dissolved Solids	mg/l 8800	mg/l 8720	% 99.1	% 77.4-123	

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

QUALITY CONTROL SUMMARY

L1343243-01.0003.04.05.06.07

Method Blank (MB)

(MB) R3648527-1 04/29/21 07:44

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Alkalinity	U		8.45	20.0
Alkalinity,Bicarbonate	U		8.45	20.0
Alkalinity,Carbonate	U		8.45	20.0
Alkalinity,Hydroxide	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

Method Blank (MB)

(MB) R3648527-2 04/29/21 08:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Alkalinity	U		8.45	20.0
Alkalinity,Bicarbonate	U		8.45	20.0
Alkalinity,Carbonate	U		8.45	20.0
Alkalinity,Hydroxide	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1343184-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1343184-04 04/29/21 08:14 • (DUP) R3648527-3 04/29/21 08:24

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	491	491	1	0.0267		20
Alkalinity,Bicarbonate	482	490	1	1.54		20
Alkalinity,Carbonate	ND	ND	1	200	P1	20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

QUALITY CONTROL SUMMARY

L1343243-01, 03, 04, 05, 06, 07

L1343243-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1343243-07 04/29/21 10:04 • (DUP) R3648527-5 04/29/21 10:12

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Alkalinity	1060	1060	1	0.217		20
Alkalinity,Bicarbonate	1060	1060	1	0.217		20
Alkalinity,Carbonate	ND	ND	1	0.000		20
Alkalinity,Hydroxide	ND	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3648527-4 04/29/21 09:25

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Alkalinity	100	106	106	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3648117-1 04/28/21 17:06

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.379	1.00
Fluoride	U		0.0640	0.150
Sulfate	U		0.594	5.00

L1342203-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1342203-01 04/28/21 23:39 • (DUP) R3648117-3 04/28/21 23:55

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	2.22	2.18	1	1.98		15
Fluoride		ND	1	5.52		15
Sulfate		11.8	1	5.63		15

L1342473-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1342473-03 04/29/21 01:31 • (DUP) R3648117-6 04/29/21 01:47

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	2900	2840	100	2.17		15
Fluoride	ND	ND	100	0.000		15
Sulfate	ND	ND	100	1.38		15

Laboratory Control Sample (LCS)

(LCS) R3648117-2 04/28/21 17:21

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	38.8	97.1	80.0-120	
Fluoride	8.00	8.06	101	80.0-120	
Sulfate	40.0	38.8	97.1	80.0-120	

WG1660075

Wet Chemistry Method 9056A

QUALITY CONTROL SUMMARY

L1343243-01

L1342203-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

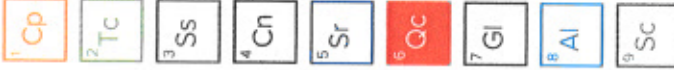
(OS) L1342203-01 04/28/21 23:39 • (MS) R3648117-4 04/29/21 00:11 • (MSD) R3648117-5 04/29/21 00:27

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 %
Chloride	50.0	2.22	51.1	51.6	97.8	98.7	1	80.0-120			0.874	15
Fluoride	5.00		4.95	4.96	96.2	96.5	1	80.0-120			0.262	15
Sulfate	50.0		60.9	61.4	99.5	101	1	80.0-120			0.885	15

L1343243-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1343243-05 04/29/21 06:01 • (MS) R3648117-7 04/29/21 06:17

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50.0	29.8	77.0	94.2	1	80.0-120	
Fluoride	5.00	0.940	5.55	92.3	1	80.0-120	
Sulfate	50.0	798	839	83.2	1	80.0-120	E



Method Blank (MB)

(MB) R3650907-1 05/05/21 20:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium	U		0.0793	1.00
Magnesium	U		0.0853	1.00
Sodium	U		0.504	3.00

Laboratory Control Sample (LCS)

(LCS) R3650907-2 05/05/21 20:18

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Calcium	10.0	10.0	100	80.0-120	
Magnesium	10.0	10.2	102	80.0-120	
Sodium	10.0	9.96	99.6	80.0-120	

L1342967-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1342967-01 05/05/21 20:21 • (MS) R3650907-4 05/05/21 20:26 • (MSD) R3650907-5 05/05/21 20:28

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	3.73	13.5	13.5	97.4	97.8	1	75.0-125			0.243	20
Magnesium	10.0	1.61	11.7	11.7	100	101	1	75.0-125			0.356	20
Sodium	10.0	8.21	17.8	17.9	95.7	96.9	1	75.0-125			0.685	20

QUALITY CONTROL SUMMARY

L1343243-01, 03, 04, 05, 06, 07

Method Blank (MB)

(MB) R3650920-1 05/05/21 20:51

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Antimony, Dissolved	U		0.00430	0.0100
Arsenic, Dissolved	U		0.00440	0.0100
Barium, Dissolved	U		0.000736	0.00500
Boron, Dissolved	U		0.0200	0.200
Cadmium, Dissolved	U		0.000479	0.00200
Calcium, Dissolved	U		0.0793	1.00
Iron, Dissolved	U		0.0180	0.100
Lead, Dissolved	U		0.00299	0.00600
Magnesium, Dissolved	U		0.0853	1.00
Manganese, Dissolved	U		0.000934	0.0100
Molybdenum, Dissolved	U		0.00116	0.00500
Potassium, Dissolved	U		0.261	2.00
Selenium, Dissolved	U		0.00735	0.0100
Sodium, Dissolved	U		0.504	3.00

Laboratory Control Sample (LCS)

(LCS) R3650920-2 05/05/21 20:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Antimony, Dissolved	1.00	0.945	94.5	80.0-120	
Arsenic, Dissolved	1.00	0.933	93.3	80.0-120	
Barium, Dissolved	1.00	0.973	97.3	80.0-120	
Boron, Dissolved	1.00	0.923	92.3	80.0-120	
Cadmium, Dissolved	1.00	0.936	93.6	80.0-120	
Calcium, Dissolved	10.0	9.72	97.2	80.0-120	
Iron, Dissolved	10.0	9.27	92.7	80.0-120	
Lead, Dissolved	1.00	0.943	94.3	80.0-120	
Magnesium, Dissolved	10.0	9.71	97.1	80.0-120	
Manganese, Dissolved	1.00	0.925	92.5	80.0-120	
Molybdenum, Dissolved	1.00	0.986	98.6	80.0-120	
Potassium, Dissolved	10.0	8.94	89.4	80.0-120	
Selenium, Dissolved	1.00	0.927	92.7	80.0-120	
Sodium, Dissolved	10.0	8.76	87.6	80.0-120	

QUALITY CONTROL SUMMARY

L1343243-01 03.04.05.06.07

L1343243-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1343243-06 05/05/21 20:57 • (MS) R3650920-4 05/05/21 21:03 • (MSD) R3650920-5 05/05/21 21:07

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 %
Antimony, Dissolved	1.00	ND	0.993	0.993	99.3	99.3	1	75.0-125			0.0256	20
Arsenic, Dissolved	1.00	ND	1.04	1.04	104	104	1	75.0-125			0.258	20
Barium, Dissolved	1.00	0.0188	0.943	0.946	92.4	92.7	1	75.0-125			0.338	20
Boron, Dissolved	1.00	0.225	1.16	1.16	93.0	93.1	1	75.0-125			0.0133	20
Cadmium, Dissolved	1.00	ND	1.00	1.00	100	100	1	75.0-125			0.0964	20
Calcium, Dissolved	10.0	471	481	468	95.6	0.000	1	75.0-125		V	2.64	20
Iron, Dissolved	10.0	ND	9.15	9.19	91.5	91.9	1	75.0-125			0.340	20
Lead, Dissolved	1.00	ND	0.959	0.957	95.9	95.7	1	75.0-125			0.203	20
Magnesium, Dissolved	10.0	174	181	180	64.8	56.1	1	75.0-125		V	0.482	20
Manganese, Dissolved	1.00	3.48	4.28	4.27	80.4	79.4	1	75.0-125			0.238	20
Molybdenum, Dissolved	1.00	ND	0.967	0.971	96.7	97.1	1	75.0-125		V	0.419	20
Potassium, Dissolved	10.0	29.0	38.4	38.3	94.2	93.1	1	75.0-125			0.296	20
Selenium, Dissolved	1.00	ND	1.09	1.09	109	109	1	75.0-125			0.520	20
Sodium, Dissolved	10.0	1450	1430	1430	0.000	0.000	1	75.0-125		E.V	0.239	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
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.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V	The sample concentration is too high to evaluate accurate spike recoveries.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-05-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA - ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA - ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



ANALYTICAL REPORT

May 07, 2021

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

American Environmental - CO

Sample Delivery Group: L1343495
Samples Received: 04/23/2021
Project Number:
Description: Keenesburg Mine

Report To: Skyler Elder
8191 Southpark Lane
Suite 107
Littleton, CO 80120

Entire Report Reviewed By:

Chris Ward

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

ACCOUNT:
American Environmental - CO

PROJECT:

SDG:
L1343495

DATE/TIME:
05/07/21 10:16

PAGE:
1 of 21

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¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

SAMPLE SUMMARY

DH-96 L1343495-01 GW

Collected by
SJE

Collected date/time
04/21/21 13:00

Received date/time
04/23/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1663697	1	05/05/21 10:06	05/05/21 10:06	CCE	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1660273	1	04/28/21 09:35	04/28/21 15:26	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1661029	1	04/29/21 17:21	04/29/21 17:21	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1661592	1	05/01/21 10:31	05/01/21 10:31	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1661592	10	05/01/21 10:43	05/01/21 10:43	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1663697	1	05/05/21 06:09	05/05/21 10:06	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1663705	1	05/05/21 15:13	05/06/21 08:24	CCE	Mt. Juliet, TN

DH-122 L1343495-02 GW

Collected by
SJE

Collected date/time
04/21/21 11:15

Received date/time
04/23/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1663697	1	05/05/21 10:15	05/05/21 10:15	CCE	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1660273	1	04/28/21 09:35	04/28/21 15:26	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1661029	1	04/29/21 17:29	04/29/21 17:29	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1661592	20	05/01/21 11:22	05/01/21 11:22	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1663697	1	05/05/21 06:09	05/05/21 10:15	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1663705	1	05/05/21 15:13	05/06/21 08:27	CCE	Mt. Juliet, TN

DUP L1343495-03 GW

Collected by
SJE

Collected date/time
04/19/21 14:35

Received date/time
04/23/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1663697	1	05/05/21 10:18	05/05/21 10:18	CCE	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1659219	1	04/26/21 22:22	04/26/21 22:39	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1661029	1	04/29/21 17:51	04/29/21 17:51	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1661592	1	05/01/21 11:35	05/01/21 11:35	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1661592	20	05/01/21 11:48	05/01/21 11:48	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1663697	1	05/05/21 06:09	05/05/21 10:18	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1663705	1	05/05/21 15:13	05/06/21 08:30	CCE	Mt. Juliet, TN

FPW L1343495-04 GW

Collected by
SJE

Collected date/time
04/20/21 00:00

Received date/time
04/23/21 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1663697	1	05/05/21 10:21	05/05/21 10:21	CCE	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1659404	1	04/27/21 10:00	04/27/21 15:55	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1661029	1	04/29/21 18:00	04/29/21 18:00	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1661592	1	05/01/21 12:01	05/01/21 12:01	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1661592	5	05/01/21 12:13	05/01/21 12:13	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1663697	1	05/05/21 06:09	05/05/21 10:21	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1663705	1	05/05/21 15:13	05/06/21 08:33	CCE	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

DH-96

Collected date/time: 04/21/21 13:00

SAMPLE RESULTS - 01

L1343495

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Barium Adsorption Ratio	5.03		1	05/05/2021 10:06	WG1663697

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	478		2.50	1	05/05/2021 10:06	WG1663697

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	1330		20.0	1	04/28/2021 15:26	WG1660273

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	297		20.0	1	04/29/2021 17:21	WG1661029
Alkalinity,Bicarbonate	297		20.0	1	04/29/2021 17:21	WG1661029
Alkalinity,Carbonate	ND		20.0	1	04/29/2021 17:21	WG1661029
Alkalinity,Hydroxide	ND		20.0	1	04/29/2021 17:21	WG1661029

Sample Narrative:

L1343495-01 WG1661029: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	33.7		1.00	1	05/01/2021 10:31	WG1661592
Sulfate	776		50.0	10	05/01/2021 10:43	WG1661592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0100	1	05/06/2021 08:24	WG1663705
Barium,Dissolved	0.00978		0.00500	1	05/06/2021 08:24	WG1663705
Cadmium,Dissolved	ND		0.00200	1	05/06/2021 08:24	WG1663705
Calcium	110		1.00	1	05/05/2021 10:06	WG1663697
Calcium,Dissolved	110		1.00	1	05/06/2021 08:24	WG1663705
Iron,Dissolved	ND		0.100	1	05/06/2021 08:24	WG1663705
Lead,Dissolved	ND		0.00600	1	05/06/2021 08:24	WG1663705
Magnesium	49.2		1.00	1	05/05/2021 10:06	WG1663697
Magnesium,Dissolved	49.1		1.00	1	05/06/2021 08:24	WG1663705
Manganese,Dissolved	0.491		0.0100	1	05/06/2021 08:24	WG1663705
Molybdenum,Dissolved	0.00704		0.00500	1	05/06/2021 08:24	WG1663705
Selenium,Dissolved	ND		0.0100	1	05/06/2021 08:24	WG1663705
Sodium	253		3.00	1	05/05/2021 10:06	WG1663697
Sodium,Dissolved	260		3.00	1	05/06/2021 08:24	WG1663705

DH-122

Collected date/time: 04/21/21 11:15

SAMPLE RESULTS - 02

L1343495

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Lead Adsorption Ratio	4.83		1	05/05/2021 10:15	WG1663697

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	740		2.50	1	05/05/2021 10:15	WG1663697

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	1790		50.0	1	04/28/2021 15:26	WG1660273

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	309		20.0	1	04/29/2021 17:29	WG1661029
Alkalinity,Bicarbonate	309		20.0	1	04/29/2021 17:29	WG1661029
Alkalinity,Carbonate	ND		20.0	1	04/29/2021 17:29	WG1661029
Alkalinity,Hydroxide	ND		20.0	1	04/29/2021 17:29	WG1661029

Sample Narrative:

L1343495-02 WG1661029: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	131		20.0	20	05/01/2021 11:22	WG1661592
Sulfate	987		100	20	05/01/2021 11:22	WG1661592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0100	1	05/06/2021 08:27	WG1663705
Barium,Dissolved	0.0195		0.00500	1	05/06/2021 08:27	WG1663705
Cadmium,Dissolved	ND		0.00200	1	05/06/2021 08:27	WG1663705
Calcium	192		1.00	1	05/05/2021 10:15	WG1663697
Calcium,Dissolved	191		1.00	1	05/06/2021 08:27	WG1663705
Iron,Dissolved	ND		0.100	1	05/06/2021 08:27	WG1663705
Lead,Dissolved	ND		0.00600	1	05/06/2021 08:27	WG1663705
Magnesium	63.1		1.00	1	05/05/2021 10:15	WG1663697
Magnesium,Dissolved	62.6		1.00	1	05/06/2021 08:27	WG1663705
Manganese,Dissolved	0.435		0.0100	1	05/06/2021 08:27	WG1663705
Molybdenum,Dissolved	0.00835		0.00500	1	05/06/2021 08:27	WG1663705
Selenium,Dissolved	ND		0.0100	1	05/06/2021 08:27	WG1663705
Sodium	302		3.00	1	05/05/2021 10:15	WG1663697
Sodium,Dissolved	310		3.00	1	05/06/2021 08:27	WG1663705

DUP

Collected date/time: 04/19/21 14:35

SAMPLE RESULTS - 03

L1343495

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.50		1	05/05/2021 10:18	WG1663697

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	1050		2.50	1	05/05/2021 10:18	WG1663697

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	1700		40.0	1	04/26/2021 22:39	WG1659219

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	215		20.0	1	04/29/2021 17:51	WG1661029
Alkalinity,Bicarbonate	215		20.0	1	04/29/2021 17:51	WG1661029
Alkalinity,Carbonate	ND		20.0	1	04/29/2021 17:51	WG1661029
Alkalinity,Hydroxide	ND		20.0	1	04/29/2021 17:51	WG1661029

Sample Narrative:

L1343495-03 WG1661029: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	30.8		1.00	1	05/01/2021 11:35	WG1661592
Fluoride	0.898		0.150	1	05/01/2021 11:35	WG1661592
Sulfate	866		100	20	05/01/2021 11:48	WG1661592

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Antimony,Dissolved	ND		0.0100	1	05/06/2021 08:30	WG1663705
Arsenic,Dissolved	ND		0.0100	1	05/06/2021 08:30	WG1663705
Barium,Dissolved	0.0309		0.00500	1	05/06/2021 08:30	WG1663705
Boron,Dissolved	ND		0.200	1	05/06/2021 08:30	WG1663705
Cadmium,Dissolved	ND		0.00200	1	05/06/2021 08:30	WG1663705
Calcium	287		1.00	1	05/05/2021 10:18	WG1663697
Calcium,Dissolved	248		1.00	1	05/06/2021 08:30	WG1663705
Iron,Dissolved	ND		0.100	1	05/06/2021 08:30	WG1663705
Lead,Dissolved	ND		0.00600	1	05/06/2021 08:30	WG1663705
Magnesium	80.8		1.00	1	05/05/2021 10:18	WG1663697
Magnesium,Dissolved	68.6		1.00	1	05/06/2021 08:30	WG1663705
Manganese,Dissolved	ND		0.0100	1	05/06/2021 08:30	WG1663705
Molybdenum,Dissolved	ND		0.00500	1	05/06/2021 08:30	WG1663705
Potassium,Dissolved	3.27		2.00	1	05/06/2021 08:30	WG1663705
Selenium,Dissolved	0.0251		0.0100	1	05/06/2021 08:30	WG1663705
Sodium	112		3.00	1	05/05/2021 10:18	WG1663697
Sodium,Dissolved	120		3.00	1	05/06/2021 08:30	WG1663705

FPW

Collected date/time: 04/20/21 00:00

SAMPLE RESULTS - 04

L1343495

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.21		1	05/05/2021 10:21	WG1663697

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	510		2.50	1	05/05/2021 10:21	WG1663697

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	889		13.3	1	04/27/2021 15:55	WG1659404

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	193		20.0	1	04/29/2021 18:00	WG1661029
Alkalinity,Bicarbonate	193		20.0	1	04/29/2021 18:00	WG1661029
Alkalinity,Carbonate	ND		20.0	1	04/29/2021 18:00	WG1661029
Alkalinity,Hydroxide	ND		20.0	1	04/29/2021 18:00	WG1661029

Sample Narrative:

L1343495-04 WG1661029: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	35.2		1.00	1	05/01/2021 12:01	WG1661592
Sulfate	191		25.0	5	05/01/2021 12:13	WG1661592

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0100	1	05/06/2021 08:33	WG1663705
Barium,Dissolved	0.0674		0.00500	1	05/06/2021 08:33	WG1663705
Cadmium,Dissolved	ND		0.00200	1	05/06/2021 08:33	WG1663705
Calcium	140		1.00	1	05/05/2021 10:21	WG1663697
Calcium,Dissolved	139		1.00	1	05/06/2021 08:33	WG1663705
Iron,Dissolved	ND		0.100	1	05/06/2021 08:33	WG1663705
Lead,Dissolved	ND		0.00600	1	05/06/2021 08:33	WG1663705
Magnesium	38.9		1.00	1	05/05/2021 10:21	WG1663697
Magnesium,Dissolved	38.6		1.00	1	05/06/2021 08:33	WG1663705
Manganese,Dissolved	ND		0.0100	1	05/06/2021 08:33	WG1663705
Molybdenum,Dissolved	ND		0.00500	1	05/06/2021 08:33	WG1663705
Selenium,Dissolved	ND		0.0100	1	05/06/2021 08:33	WG1663705
Sodium	63.0		3.00	1	05/05/2021 10:21	WG1663697
Sodium,Dissolved	66.3		3.00	1	05/06/2021 08:33	WG1663705

WG1650019

Gravimetric Analysis by Method 2540 C-2011

QUALITY CONTROL SUMMARY

L1341978-03

Method Blank (MB)

(MB) R3647177-1 04/26/21 22:39

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

L1341978-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1341978-03 04/26/21 22:39 • (DUP) R3647177-3 04/26/21 22:39

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	1540	1600	1	3.31		5

Laboratory Control Sample (LCS)

(LCS) R3647177-2 04/26/21 22:39

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8730	99.2	77.4-123	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

QUALITY CONTROL SUMMARY

LTS 35-04

Method Blank (MB)

(MB) R3647862-1 04/27/21 15:55

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

Laboratory Control Sample (LCS)

(LCS) R3647862-2 04/27/21 15:55

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8690	98.8	77.4-123	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3648310-1 04/28/21 15:26

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

Laboratory Control Sample (LCS)

(LCS) R3648310-2 04/28/21 15:26

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8720	99.1	77.4-123	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3648504-1 04/29/21 16:12

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Alkalinity	U		8.45	20.0
Alkalinity,Bicarbonate	U		8.45	20.0
Alkalinity,Carbonate	U		8.45	20.0
Alkalinity,Hydroxide	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1343446-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1343446-03 04/29/21 16:42 • (DUP) R3648504-2 04/29/21 16:50

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	435	433	1	0.356		20
Alkalinity,Bicarbonate	435	433	1	0.356		20
Alkalinity,Carbonate	ND	ND	1	0.000		20
Alkalinity,Hydroxide	ND	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1343518-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1343518-01 04/29/21 18:09 • (DUP) R3648504-4 04/29/21 18:17

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	256	259	1	1.17		20
Alkalinity,Bicarbonate	256	259	1	1.17		20
Alkalinity,Carbonate	ND	ND	1	0.000		20
Alkalinity,Hydroxide	ND	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3648504-3 04/29/21 17:37

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100	105	105	90.0-110	

Sample Narrative:
LCS: Endpoint pH 4.5

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

WG166-792

Wet Chemistry Method 9056A

QUALITY CONTROL SUMMARY

L1343486-02.03.04

Method Blank (MB)

(MB) R3649189-1 05/01/21 07:06

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.379	1.00
Fluoride	U		0.0640	0.150
Sulfate	U		0.594	5.00

L1343486-14 Original Sample (OS) • Duplicate (DUP)

(OS) L1343486-14 05/01/21 09:39 • (DUP) R3649189-3 05/01/21 09:52

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	ND	ND	1	4.96		15
Fluoride	ND	ND	1	2.56		15
Sulfate	ND	ND	1	0.304		15

L1343801-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1343801-06 05/01/21 14:09 • (DUP) R3649189-6 05/01/21 14:22

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	295	299	1	1.08	E	15
Fluoride	ND	ND	1	0.000		15
Sulfate	45.7	46.3	1	1.36		15

Laboratory Control Sample (LCS)

(LCS) R3649189-2 05/01/21 07:19

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	39.3	98.2	80.0-120	
Fluoride	8.00	7.75	96.9	80.0-120	
Sulfate	40.0	39.7	99.2	80.0-120	

WG166-192

Wet Chemistry Method 9056A

QUALITY CONTROL SUMMARY

L1343486-14, 02.03.04

L1343486-14 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1343486-14 05/01/21 09:39 • (MS) R3649189-4 05/01/21 10:05 • (MSD) R3649189-5 05/01/21 10:18

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50.0	ND	52.6	52.6	104	1	80.0-120			0.0181	15
Fluoride	5.00	ND	5.33	5.17	105	1	80.0-120			2.97	15
Sulfate	50.0	ND	55.4	55.3	105	1	80.0-120			0.116	15

L1343801-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1343801-06 05/01/21 14:09 • (MS) R3649189-7 05/01/21 14:35

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50.0	295	334	77.9	1	80.0-120	
Fluoride	5.00	ND	4.84	96.8	1	80.0-120	EV
Sulfate	50.0	45.7	96.5	102	1	80.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

WG1660097

Metals (ICP) Method 6010B

QUALITY CONTROL SUMMARY

L1343485-05.02.03.04

Method Blank (MB)

(MB) R3650914-1 05/05/21 09:07

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium	U		0.0793	1.00
Magnesium	U		0.0853	1.00
Sodium	U		0.504	3.00

Laboratory Control Sample (LCS)

(LCS) R3650914-2 05/05/21 09:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Calcium	10.0	9.62	96.2	80.0-120	
Magnesium	10.0	9.72	97.2	80.0-120	
Sodium	10.0	9.36	93.6	80.0-120	

L1343485-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1343485-05 05/05/21 09:12 • (MS) R3650914-4 05/05/21 09:18 • (MSD) R3650914-5 05/05/21 09:20

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	86.9	95.2	94.9	82.7	79.6	1	75.0-125			0.322	20
Magnesium	10.0	48.2	56.9	56.6	86.7	84.4	1	75.0-125			0.411	20
Sodium	10.0	3.13	12.7	12.6	95.3	95.2	1	75.0-125			0.0853	20

QUALITY CONTROL SUMMARY

L134345, 02.03.04

Method Blank (MB)

(MB) R3651158-1 05/06/21 07:48

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Antimony, Dissolved	U		0.00430	0.0100
Arsenic, Dissolved	U		0.00440	0.0100
Barium, Dissolved	U		0.000736	0.00500
Boron, Dissolved	U		0.0200	0.200
Cadmium, Dissolved	U		0.000479	0.00200
Calcium, Dissolved	U		0.0793	1.00
Iron, Dissolved	U		0.0180	0.100
Lead, Dissolved	U		0.00299	0.00600
Magnesium, Dissolved	U		0.0853	1.00
Manganese, Dissolved	U		0.000934	0.0100
Molybdenum, Dissolved	U		0.00116	0.00500
Potassium, Dissolved	U		0.261	2.00
Selenium, Dissolved	U		0.00735	0.0100
Sodium, Dissolved	U		0.504	3.00

Laboratory Control Sample (LCS)

(LCS) R3651158-2 05/06/21 07:51

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Antimony, Dissolved	1.00	0.937	93.7	80.0-120	
Arsenic, Dissolved	1.00	0.932	93.2	80.0-120	
Barium, Dissolved	1.00	0.963	96.3	80.0-120	
Boron, Dissolved	1.00	0.947	94.7	80.0-120	
Cadmium, Dissolved	1.00	0.927	92.7	80.0-120	
Calcium, Dissolved	10.0	9.56	95.6	80.0-120	
Iron, Dissolved	10.0	9.45	94.5	80.0-120	
Lead, Dissolved	1.00	0.954	95.4	80.0-120	
Magnesium, Dissolved	10.0	9.62	96.2	80.0-120	
Manganese, Dissolved	1.00	0.934	93.4	80.0-120	
Molybdenum, Dissolved	1.00	0.975	97.5	80.0-120	
Potassium, Dissolved	10.0	9.25	92.5	80.0-120	
Selenium, Dissolved	1.00	0.944	94.4	80.0-120	
Sodium, Dissolved	10.0	9.65	96.5	80.0-120	

WG1662705

Metals (ICP), Method 6010B

QUALITY CONTROL SUMMARY

L134346-03.02.03.04

L1343446-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1343446-03 05/06/21 07:54 • (MS) R3651158-4 05/06/21 07:59 • (MSD) R3651158-5 05/06/21 08:02

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 %
Antimony, Dissolved	1.00	ND	0.963	0.977	96.3	97.7	1	75.0-125			1.45	20
Arsenic, Dissolved	1.00	ND	0.969	0.990	96.9	99.0	1	75.0-125			2.18	20
Barium, Dissolved	1.00	0.417	1.35	1.37	93.0	95.4	1	75.0-125			1.77	20
Boron, Dissolved	1.00	0.654	1.57	1.61	92.0	96.1	1	75.0-125			2.54	20
Cadmium, Dissolved	1.00	ND	0.945	0.967	94.5	96.7	1	75.0-125			2.28	20
Calcium, Dissolved	10.0	105	112	113	70.1	80.7	1	75.0-125	✓		0.942	20
Iron, Dissolved	10.0	ND	9.37	9.58	93.2	95.3	1	75.0-125			2.21	20
Lead, Dissolved	1.00	ND	0.958	0.987	95.8	98.7	1	75.0-125			3.03	20
Magnesium, Dissolved	10.0	28.2	36.4	36.8	82.5	86.6	1	75.0-125			1.12	20
Manganese, Dissolved	1.00	0.123	1.03	1.05	90.7	92.6	1	75.0-125			1.89	20
Molybdenum, Dissolved	1.00	ND	0.994	1.00	99.4	100	1	75.0-125			0.948	20
Potassium, Dissolved	10.0	11.2	19.9	20.2	86.7	90.4	1	75.0-125			1.83	20
Selenium, Dissolved	1.00	ND	0.990	1.02	99.0	102	1	75.0-125			2.94	20
Sodium, Dissolved	10.0	234	237	239	25.6	51.0	1	75.0-125	✓	✓	1.07	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
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.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable
 * Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Company Name: American Environmental - CO Address: 8191 Southpark Lane, Suite 107, Littleton, CO 80120 Phone: 303-948-7733		Billing Information: Accounts Payable: 8191 Southpark Lane, Suite 107, Littleton, CO 80120 Email To: skelder@ace-denver.com Lab Project #: AMEENVLCO-KEENESBURG		Chain of Custody: Pres: ☒ Chk: ☐ Signature: <i>Skylar Elder</i> Project Description: Keenesburg Mine Phone: 303-948-7733		Analysis / Container / Preservative: V8260 40ml Amb-HCl-Bik TDS 250ml HDPE-NoPres SAR 250ml HDPE-HNO3 HARD 250ml HDPE-HNO3 Diss Metals 250ml HDPE-NoPres Cl ₂ F ₂ SO4 125ml HDPE-NoPres ALKB1, ALKCA 250ml HDPE-NoPres		Company Name: Pace Analytical Address: 12065 Lakewood Road, Suite 100, Littleton, CO 80120 Phone: 303-948-7733 Email: info@pace-analytical.com	
City/State: Keenesburg, CO Client Project #: AMEENVLCO-KEENESBURG Site/Facility ID #: SJE		Quote #: Date Results Needed: Rush? (Lab MUST Be Notified) Same Day ☐ Five Day ☐ Next Day ☐ 5 Day (Rad Only) ☐ Two Day ☐ 10 Day (Rad Only) ☐ Three Day ☐		Sample ID: DH-96 DH-122 FFW Dup		Comp/Grab: GW Matrix: GW Depth: 1:00 Date: 4/21 Time: 11:15 No. of Cntrs: 6		Accum: AMEENVLCO Template: T160430 Prelogin: P839534 PM: 824 - Chris Ward PG: Shipped Via: FedEx Ground	
Matrix: SS - Soil GW - Groundwater WW - Wastewater DW - Drinking Water OT - Other		Remarks: Diss Metals-As, Ba, Ca, Cd, Fe, Kd, Mg, Mn, Na, Pb, Sb, Se PC-1, PC-2PC-6, AMW-1, AMW-2, SMW-2, Fluoride, SBDICP, BDICP, KDICP AMW-1, AMW-2, SMW-2, FPW, DH-96, DH-122: ALKOH, ALK		Sample Receipt Checklist: COC Seal Present/Intact: ☒ COC Signed/Accurate: ☒ Bottles Arrive Intact: ☒ Correct bottles used: ☒ Sufficient volume sent: ☒ VOA Zero Headspace: ☒ Preservation - Correct/Checked: ☒ RAD Screen <0.5 mR/hr: ☒		Temp: 40°C Flow: 2.10 Other: 24		Tracking #: 7862 7060 4178 Received by: (Signature) <i>Paula</i> Time: 5:30 Date: 4/21	
Relinquished by: (Signature) <i>Skylar Elder</i> Date: 4/21 Time: 5:30		Relinquished by: (Signature) <i>Paula</i> Date: 4/21 Time: 5:30		Relinquished by: (Signature) <i>Paula</i> Date: 4/21 Time: 5:30		Hold: ☒ Conditions: NCF			

ATTACHMENT 3.2

SEPTEMBER 2021 REPORT



ANALYTICAL REPORT

October 28, 2021

Revised Report

American Environmental - CO

Sample Delivery Group: L1416228
Samples Received: 10/04/2021
Project Number:
Description: Keenesburg Mine

Report To: Skyler Elder
8191 Southpark Lane
Suite 107
Littleton, CO 80120

Entire Report Reviewed By:

Chris Ward

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.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Pace Analytical National

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

ACCOUNT:
American Environmental - CO

PROJECT:

SDG:
L1416228

DATE/TIME:
10/28/21 13:58

PAGE:
1 of 32

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

SAMPLE SUMMARY

AMW-1 L1416228-01 GW

Collected by

Collected date/time

Received date/time

09/28/21 14:40

10/04/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1761194	1	10/25/21 17:58	10/25/21 17:58	CCE	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1756375	1	10/13/21 12:32	10/13/21 14:11	BRG	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1756797	1	10/14/21 17:03	10/14/21 17:03	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1761471	1	10/22/21 08:48	10/22/21 08:48	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1761471	10	10/22/21 09:05	10/22/21 09:05	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1761194	1	10/24/21 12:20	10/25/21 17:58	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1762830	1	10/25/21 10:56	10/25/21 19:07	CCE	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

AMW-2 L1416228-02 GW

Collected by

Collected date/time

Received date/time

09/29/21 13:15

10/04/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1761194	1	10/26/21 12:01	10/26/21 12:01	CCE	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1756375	1	10/13/21 12:32	10/13/21 14:11	BRG	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1756797	1	10/14/21 17:07	10/14/21 17:07	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1761471	1	10/22/21 09:21	10/22/21 09:21	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1761471	100	10/22/21 09:38	10/22/21 09:38	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1761194	5	10/24/21 12:20	10/26/21 12:01	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1762830	1	10/25/21 10:56	10/25/21 19:10	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1762830	5	10/25/21 10:56	10/26/21 11:47	CCE	Mt. Juliet, TN

SMW-2 L1416228-03 GW

Collected by

Collected date/time

Received date/time

09/28/21 13:45

10/04/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1762843	1	10/27/21 12:22	10/27/21 12:22	KMG	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1756375	1	10/13/21 12:32	10/13/21 14:11	BRG	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1756797	1	10/14/21 17:11	10/14/21 17:11	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1761471	1	10/22/21 09:54	10/22/21 09:54	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1761471	100	10/22/21 10:11	10/22/21 10:11	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1762830	1	10/25/21 10:56	10/25/21 19:13	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1762830	5	10/25/21 10:56	10/26/21 11:49	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1762843	5	10/25/21 15:52	10/27/21 12:22	KMG	Mt. Juliet, TN

PC-1 L1416228-04 GW

Collected by

Collected date/time

Received date/time

09/30/21 09:15

10/04/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1761194	1	10/25/21 18:05	10/25/21 18:05	CCE	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1756375	1	10/13/21 12:32	10/13/21 14:11	BRG	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1756797	1	10/14/21 17:15	10/14/21 17:15	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1761471	1	10/22/21 10:27	10/22/21 10:27	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1761471	100	10/22/21 10:43	10/22/21 10:43	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1761194	1	10/24/21 12:20	10/25/21 18:05	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1762830	1	10/25/21 10:56	10/25/21 19:17	CCE	Mt. Juliet, TN

SAMPLE SUMMARY

PC-2 L1416228-05 GW

Collected by

Collected date/time

Received date/time

09/30/21 10:15

10/04/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1761194	1	10/26/21 11:16	10/26/21 11:16	CCE	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1756375	1	10/13/21 12:32	10/13/21 14:11	BRG	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1756797	1	10/14/21 17:20	10/14/21 17:20	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1761471	1	10/22/21 11:33	10/22/21 11:33	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1761471	100	10/22/21 11:49	10/22/21 11:49	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1761194	5	10/24/21 12:20	10/26/21 11:16	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1762830	1	10/25/21 10:56	10/25/21 19:26	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1762830	5	10/25/21 10:56	10/26/21 11:52	CCE	Mt. Juliet, TN

PC-5 L1416228-06 GW

Collected by

Collected date/time

Received date/time

09/30/21 13:15

10/04/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1761194	1	10/25/21 18:12	10/25/21 18:12	CCE	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1756375	1	10/13/21 12:32	10/13/21 14:11	BRG	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1756797	1	10/14/21 17:24	10/14/21 17:24	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1761471	1	10/22/21 12:05	10/22/21 12:05	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1761471	100	10/22/21 12:22	10/22/21 12:22	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1761194	1	10/24/21 12:20	10/25/21 18:12	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1762830	1	10/25/21 10:56	10/25/21 19:30	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1762830	5	10/25/21 10:56	10/26/21 11:55	CCE	Mt. Juliet, TN

PC-6 L1416228-07 GW

Collected by

Collected date/time

Received date/time

09/30/21 12:30

10/04/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1761194	1	10/25/21 18:15	10/25/21 18:15	CCE	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1756375	1	10/13/21 12:32	10/13/21 14:11	BRG	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1756797	1	10/14/21 17:28	10/14/21 17:28	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1761476	1	10/21/21 23:22	10/21/21 23:22	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1761476	100	10/21/21 23:57	10/21/21 23:57	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1761194	1	10/24/21 12:20	10/25/21 18:15	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1762830	1	10/25/21 10:56	10/25/21 19:33	CCE	Mt. Juliet, TN

DH-96 L1416228-08 GW

Collected by

Collected date/time

Received date/time

09/28/21 11:40

10/04/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1761194	1	10/25/21 18:18	10/25/21 18:18	CCE	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1756375	1	10/13/21 12:32	10/13/21 14:11	BRG	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1756797	1	10/14/21 17:40	10/14/21 17:40	AMH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1761476	1	10/22/21 00:09	10/22/21 00:09	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1761476	10	10/22/21 00:21	10/22/21 00:21	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1761194	1	10/24/21 12:20	10/25/21 18:18	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1762830	1	10/25/21 10:56	10/25/21 19:36	CCE	Mt. Juliet, TN

SAMPLE SUMMARY

DH-122 L1416228-09 GW							Collected by	Collected date/time	Received date/time
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location		09/29/21 12:15	10/04/21 09:30
Calculated Results	WG1761194	1	10/25/21 18:27	10/25/21 18:27	CCE	Mt. Juliet, TN			
Gravimetric Analysis by Method 2540 C-2011	WG1756375	1	10/13/21 12:32	10/13/21 14:11	BRG	Mt. Juliet, TN			
Wet Chemistry by Method 2320 B-2011	WG1756797	1	10/14/21 17:44	10/14/21 17:44	AMH	Mt. Juliet, TN			
Wet Chemistry by Method 9056A	WG1761476	1	10/22/21 00:32	10/22/21 00:32	ELN	Mt. Juliet, TN			
Wet Chemistry by Method 9056A	WG1761476	20	10/22/21 00:44	10/22/21 00:44	ELN	Mt. Juliet, TN			
Metals (ICP) by Method 6010B	WG1761194	1	10/24/21 12:20	10/25/21 18:27	CCE	Mt. Juliet, TN			
Metals (ICP) by Method 6010B	WG1762830	1	10/25/21 10:56	10/25/21 19:39	CCE	Mt. Juliet, TN			
DP-1 L1416228-10 GW							Collected by	Collected date/time	Received date/time
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location		09/28/21 00:00	10/04/21 09:30
Calculated Results	WG1761194	1	10/25/21 18:30	10/25/21 18:30	CCE	Mt. Juliet, TN			
Gravimetric Analysis by Method 2540 C-2011	WG1756375	1	10/13/21 12:32	10/13/21 14:11	BRG	Mt. Juliet, TN			
Wet Chemistry by Method 2320 B-2011	WG1756797	1	10/14/21 17:49	10/14/21 17:49	AMH	Mt. Juliet, TN			
Wet Chemistry by Method 9056A	WG1761476	1	10/22/21 00:56	10/22/21 00:56	ELN	Mt. Juliet, TN			
Wet Chemistry by Method 9056A	WG1761476	10	10/22/21 01:08	10/22/21 01:08	ELN	Mt. Juliet, TN			
Metals (ICP) by Method 6010B	WG1761194	1	10/24/21 12:20	10/25/21 18:30	CCE	Mt. Juliet, TN			
Metals (ICP) by Method 6010B	WG1762830	1	10/25/21 10:56	10/25/21 19:43	CCE	Mt. Juliet, TN			
FPW L1416228-11 GW							Collected by	Collected date/time	Received date/time
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location		09/28/21 13:10	10/04/21 09:30
Calculated Results	WG1761194	1	10/25/21 18:34	10/25/21 18:34	CCE	Mt. Juliet, TN			
Gravimetric Analysis by Method 2540 C-2011	WG1756375	1	10/13/21 12:32	10/13/21 14:11	BRG	Mt. Juliet, TN			
Wet Chemistry by Method 2320 B-2011	WG1756797	1	10/14/21 17:54	10/14/21 17:54	AMH	Mt. Juliet, TN			
Wet Chemistry by Method 9056A	WG1761476	1	10/22/21 01:19	10/22/21 01:19	ELN	Mt. Juliet, TN			
Wet Chemistry by Method 9056A	WG1761476	5	10/22/21 01:31	10/22/21 01:31	ELN	Mt. Juliet, TN			
Metals (ICP) by Method 6010B	WG1761194	1	10/24/21 12:20	10/25/21 18:34	CCE	Mt. Juliet, TN			
Metals (ICP) by Method 6010B	WG1762830	1	10/25/21 10:56	10/25/21 19:46	CCE	Mt. Juliet, TN			

CASE NARRATIVE

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



Chris Ward
Project Manager

Report Revision History

Level II Report - Version 1: 10/28/21 11:35

Project Narrative

Samples received out of temp and too close to hold time for some analyses due to FedEx delay.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

AMW-1

Collected date/time: 09/28/21 14:40

SAMPLE RESULTS - 01

L1416228

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.58		1	10/25/2021 17:58	WG1761194

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	1240		2.50	1	10/25/2021 17:58	WG1761194

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	1650	T8	20.0	1	10/13/2021 14:11	WG1756375

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	226	T8	20.0	1	10/14/2021 17:03	WG1756797
Alkalinity,Carbonate	ND	T8	20.0	1	10/14/2021 17:03	WG1756797

Sample Narrative:

L1416228-01 WG1756797: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	31.5		1.00	1	10/22/2021 08:48	WG1761471
Fluoride	0.898		0.150	1	10/22/2021 08:48	WG1761471
Sulfate	880		50.0	10	10/22/2021 09:05	WG1761471

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Antimony,Dissolved	ND		0.0100	1	10/25/2021 19:07	WG1762830
Arsenic,Dissolved	ND		0.0100	1	10/25/2021 19:07	WG1762830
Barium,Dissolved	0.0311		0.00500	1	10/25/2021 19:07	WG1762830
Boron,Dissolved	ND		0.200	1	10/25/2021 19:07	WG1762830
Cadmium,Dissolved	ND		0.00200	1	10/25/2021 19:07	WG1762830
Calcium	346		1.00	1	10/25/2021 17:58	WG1761194
Calcium,Dissolved	268		1.00	1	10/25/2021 19:07	WG1762830
Iron,Dissolved	ND		0.100	1	10/25/2021 19:07	WG1762830
Lead,Dissolved	ND		0.00600	1	10/25/2021 19:07	WG1762830
Magnesium	90.5		1.00	1	10/25/2021 17:58	WG1761194
Magnesium,Dissolved	74.7		1.00	1	10/25/2021 19:07	WG1762830
Manganese,Dissolved	ND		0.0100	1	10/25/2021 19:07	WG1762830
Molybdenum,Dissolved	ND		0.00500	1	10/25/2021 19:07	WG1762830
Potassium,Dissolved	3.60		2.00	1	10/25/2021 19:07	WG1762830
Selenium,Dissolved	0.0273		0.0100	1	10/25/2021 19:07	WG1762830
Sodium	127		3.00	1	10/25/2021 17:58	WG1761194
Sodium,Dissolved	131		3.00	1	10/25/2021 19:07	WG1762830

AMW-2

Collected date/time: 09/29/21 13:15

SAMPLE RESULTS - 02

L1416228

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	14.8		1	10/26/2021 12:01	WG1761194

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	1890		12.5	1	10/26/2021 12:01	WG1761194

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	6780	T8	100	1	10/13/2021 14:11	WG1756375

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	782	T8	20.0	1	10/14/2021 17:07	WG1756797
Alkalinity,Carbonate	ND	T8	20.0	1	10/14/2021 17:07	WG1756797

Sample Narrative:

L1416228-02 WG1756797: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	353		100	100	10/22/2021 09:38	WG1761471
Fluoride	0.195		0.150	1	10/22/2021 09:21	WG1761471
Sulfate	3690		500	100	10/22/2021 09:38	WG1761471

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Antimony,Dissolved	ND		0.0100	1	10/25/2021 19:10	WG1762830
Arsenic,Dissolved	ND		0.0100	1	10/25/2021 19:10	WG1762830
Barium,Dissolved	0.0186		0.00500	1	10/25/2021 19:10	WG1762830
Boron,Dissolved	0.236		0.200	1	10/25/2021 19:10	WG1762830
Cadmium,Dissolved	ND		0.00200	1	10/25/2021 19:10	WG1762830
Calcium	468		5.00	5	10/26/2021 12:01	WG1761194
Calcium,Dissolved	496		1.00	1	10/25/2021 19:10	WG1762830
Iron,Dissolved	ND		0.100	1	10/25/2021 19:10	WG1762830
Lead,Dissolved	ND		0.00600	1	10/25/2021 19:10	WG1762830
Magnesium	174		5.00	5	10/26/2021 12:01	WG1761194
Magnesium,Dissolved	186		1.00	1	10/25/2021 19:10	WG1762830
Manganese,Dissolved	3.25		0.0100	1	10/25/2021 19:10	WG1762830
Molybdenum,Dissolved	ND		0.00500	1	10/25/2021 19:10	WG1762830
Potassium,Dissolved	30.8		2.00	1	10/25/2021 19:10	WG1762830
Selenium,Dissolved	ND		0.0100	1	10/25/2021 19:10	WG1762830
Sodium	1480		15.0	5	10/26/2021 12:01	WG1761194
Sodium,Dissolved	1440		15.0	5	10/26/2021 11:47	WG1762830

SMW-2

Collected date/time: 09/28/21 13:45

SAMPLE RESULTS - 03

L1416228

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	15.8		1	10/27/2021 12:22	WG1762843

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	1930		12.5	1	10/27/2021 12:22	WG1762843

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	6830	T8	100	1	10/13/2021 14:11	WG1756375

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity, Bicarbonate	1050	T8	20.0	1	10/14/2021 17:11	WG1756797
Alkalinity, Carbonate	ND	T8	20.0	1	10/14/2021 17:11	WG1756797

Sample Narrative:

L1416228-03 WG1756797: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	717		100	100	10/22/2021 10:11	WG1761471
Fluoride	0.309		0.150	1	10/22/2021 09:54	WG1761471
Sulfate	2980		500	100	10/22/2021 10:11	WG1761471

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Antimony, Dissolved	ND		0.0100	1	10/25/2021 19:13	WG1762830
Arsenic, Dissolved	ND		0.0100	1	10/25/2021 19:13	WG1762830
Barium, Dissolved	0.0113		0.00500	1	10/25/2021 19:13	WG1762830
Boron, Dissolved	0.336		0.200	1	10/25/2021 19:13	WG1762830
Cadmium, Dissolved	ND		0.00200	1	10/25/2021 19:13	WG1762830
Calcium	488		5.00	5	10/27/2021 12:22	WG1762843
Calcium, Dissolved	507		1.00	1	10/25/2021 19:13	WG1762830
Iron, Dissolved	ND		0.100	1	10/25/2021 19:13	WG1762830
Lead, Dissolved	ND		0.00600	1	10/25/2021 19:13	WG1762830
Magnesium	172		5.00	5	10/27/2021 12:22	WG1762843
Magnesium, Dissolved	183		1.00	1	10/25/2021 19:13	WG1762830
Manganese, Dissolved	0.504		0.0100	1	10/25/2021 19:13	WG1762830
Molybdenum, Dissolved	ND		0.00500	1	10/25/2021 19:13	WG1762830
Potassium, Dissolved	18.3		2.00	1	10/25/2021 19:13	WG1762830
Selenium, Dissolved	0.0149		0.0100	1	10/25/2021 19:13	WG1762830
Sodium	1590		15.0	5	10/27/2021 12:22	WG1762843
Sodium, Dissolved	1570		15.0	5	10/26/2021 11:49	WG1762830

PC-1

Collected date/time: 09/30/21 09:15

SAMPLE RESULTS - 04

L1416228

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.35		1	10/25/2021 18:05	WG1761194

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	1710		2.50	1	10/25/2021 18:05	WG1761194

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	3490	T8	50.0	1	10/13/2021 14:11	WG1756375

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	296		20.0	1	10/14/2021 17:15	WG1756797
Alkalinity,Carbonate	ND		20.0	1	10/14/2021 17:15	WG1756797

Sample Narrative:

L1416228-04 WG1756797: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia	17.5		1.00	1	10/22/2021 10:27	WG1761471
Fluoride	1.61		0.150	1	10/22/2021 10:27	WG1761471
Sulfate	1910		500	100	10/22/2021 10:43	WG1761471

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Antimony,Dissolved	ND		0.0100	1	10/25/2021 19:17	WG1762830
Arsenic,Dissolved	ND		0.0100	1	10/25/2021 19:17	WG1762830
Barium,Dissolved	0.0163		0.00500	1	10/25/2021 19:17	WG1762830
Boron,Dissolved	0.521		0.200	1	10/25/2021 19:17	WG1762830
Cadmium,Dissolved	ND		0.00200	1	10/25/2021 19:17	WG1762830
Calcium	520		1.00	1	10/25/2021 18:05	WG1761194
Calcium,Dissolved	510		1.00	1	10/25/2021 19:17	WG1762830
Iron,Dissolved	ND		0.100	1	10/25/2021 19:17	WG1762830
Lead,Dissolved	ND		0.00600	1	10/25/2021 19:17	WG1762830
Magnesium	99.5		1.00	1	10/25/2021 18:05	WG1761194
Magnesium,Dissolved	96.7		1.00	1	10/25/2021 19:17	WG1762830
Manganese,Dissolved	ND		0.0100	1	10/25/2021 19:17	WG1762830
Molybdenum,Dissolved	ND		0.00500	1	10/25/2021 19:17	WG1762830
Potassium,Dissolved	11.9		2.00	1	10/25/2021 19:17	WG1762830
Selenium,Dissolved	0.0818		0.0100	1	10/25/2021 19:17	WG1762830
Sodium	413		3.00	1	10/25/2021 18:05	WG1761194
Sodium,Dissolved	408		3.00	1	10/25/2021 19:17	WG1762830

PC-2

Collected date/time: 09/30/21 10:15

SAMPLE RESULTS - 05

L1416228

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	21.7		1	10/26/2021 11:16	WG1761194

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	2500		12.5	1	10/26/2021 11:16	WG1761194

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	10800	T8	200	1	10/13/2021 14:11	WG1756375

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	888		20.0	1	10/14/2021 17:20	WG1756797
Alkalinity,Carbonate	ND		20.0	1	10/14/2021 17:20	WG1756797

Sample Narrative:

L1416228-05 WG1756797: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	892		100	100	10/22/2021 11:49	WG1761471
Fluoride	0.297		0.150	1	10/22/2021 11:33	WG1761471
Sulfate	5960		500	100	10/22/2021 11:49	WG1761471

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Antimony,Dissolved	ND		0.0100	1	10/25/2021 19:26	WG1762830
Arsenic,Dissolved	ND		0.0100	1	10/25/2021 19:26	WG1762830
Barium,Dissolved	0.0148		0.00500	1	10/25/2021 19:26	WG1762830
Boron,Dissolved	0.278		0.200	1	10/25/2021 19:26	WG1762830
Cadmium,Dissolved	ND		0.00200	1	10/25/2021 19:26	WG1762830
Calcium	442		5.00	5	10/26/2021 11:16	WG1761194
Calcium,Dissolved	467		1.00	1	10/25/2021 19:26	WG1762830
Iron,Dissolved	ND		0.100	1	10/25/2021 19:26	WG1762830
Lead,Dissolved	ND		0.00600	1	10/25/2021 19:26	WG1762830
Magnesium	338		5.00	5	10/26/2021 11:16	WG1761194
Magnesium,Dissolved	365		1.00	1	10/25/2021 19:26	WG1762830
Manganese,Dissolved	2.09		0.0100	1	10/25/2021 19:26	WG1762830
Molybdenum,Dissolved	ND		0.00500	1	10/25/2021 19:26	WG1762830
Potassium,Dissolved	23.6		2.00	1	10/25/2021 19:26	WG1762830
Selenium,Dissolved	0.0186		0.0100	1	10/25/2021 19:26	WG1762830
Sodium	2500		15.0	5	10/26/2021 11:16	WG1761194
Sodium,Dissolved	2650		15.0	5	10/26/2021 11:52	WG1762830

PC-5

Collected date/time: 09/30/21 13:15

SAMPLE RESULTS - 06

L1416228

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.60		1	10/25/2021 18:12	WG1761194

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	2190		2.50	1	10/25/2021 18:12	WG1761194

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	3710	T8	50.0	1	10/13/2021 14:11	WG1756375

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity, Bicarbonate	582		20.0	1	10/14/2021 17:24	WG1756797
Alkalinity, Carbonate	ND		20.0	1	10/14/2021 17:24	WG1756797

Sample Narrative:

L1416228-06 WG1756797: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	170		100	100	10/22/2021 12:22	WG1761471
Fluoride	ND		0.150	1	10/22/2021 12:05	WG1761471
Sulfate	1750		500	100	10/22/2021 12:22	WG1761471

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Antimony, Dissolved	ND		0.0100	1	10/25/2021 19:30	WG1762830
Arsenic, Dissolved	ND		0.0100	1	10/25/2021 19:30	WG1762830
Barium, Dissolved	0.0375		0.00500	1	10/25/2021 19:30	WG1762830
Boron, Dissolved	ND		0.200	1	10/25/2021 19:30	WG1762830
Cadmium, Dissolved	ND		0.00200	1	10/25/2021 19:30	WG1762830
Calcium	606		1.00	1	10/25/2021 18:12	WG1761194
Calcium, Dissolved	621		1.00	1	10/25/2021 19:30	WG1762830
Iron, Dissolved	ND		0.100	1	10/25/2021 19:30	WG1762830
Lead, Dissolved	ND		0.00600	1	10/25/2021 19:30	WG1762830
Magnesium	164		1.00	1	10/25/2021 18:12	WG1761194
Magnesium, Dissolved	166		1.00	1	10/25/2021 19:30	WG1762830
Manganese, Dissolved	19.0		0.0500	5	10/26/2021 11:55	WG1762830
Molybdenum, Dissolved	ND		0.00500	1	10/25/2021 19:30	WG1762830
Potassium, Dissolved	20.2		2.00	1	10/25/2021 19:30	WG1762830
Selenium, Dissolved	0.0130		0.0100	1	10/25/2021 19:30	WG1762830
Sodium	279		3.00	1	10/25/2021 18:12	WG1761194
Sodium, Dissolved	285		3.00	1	10/25/2021 19:30	WG1762830

PC-6

Collected date/time: 09/30/21 12:30

SAMPLE RESULTS - 07

L1416228

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	7.06		1	10/25/2021 18:15	WG1761194

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	818		2.50	1	10/25/2021 18:15	WG1761194

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	2480	T8	50.0	1	10/13/2021 14:11	WG1756375

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	321		20.0	1	10/14/2021 17:28	WG1756797
Alkalinity,Carbonate	ND		20.0	1	10/14/2021 17:28	WG1756797

Sample Narrative:

L1416228-07 WG1756797: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	56.2		1.00	1	10/21/2021 23:22	WG1761476
Fluoride	2.75		0.150	1	10/21/2021 23:22	WG1761476
Sulfate	1300		500	100	10/21/2021 23:57	WG1761476

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Antimony,Dissolved	ND		0.0100	1	10/25/2021 19:33	WG1762830
Arsenic,Dissolved	ND		0.0100	1	10/25/2021 19:33	WG1762830
Barium,Dissolved	0.0141		0.00500	1	10/25/2021 19:33	WG1762830
Boron,Dissolved	0.550		0.200	1	10/25/2021 19:33	WG1762830
Cadmium,Dissolved	ND		0.00200	1	10/25/2021 19:33	WG1762830
Calcium	189		1.00	1	10/25/2021 18:15	WG1761194
Calcium,Dissolved	183		1.00	1	10/25/2021 19:33	WG1762830
Iron,Dissolved	ND		0.100	1	10/25/2021 19:33	WG1762830
Lead,Dissolved	ND		0.00600	1	10/25/2021 19:33	WG1762830
Magnesium	84.3		1.00	1	10/25/2021 18:15	WG1761194
Magnesium,Dissolved	83.8		1.00	1	10/25/2021 19:33	WG1762830
Manganese,Dissolved	ND		0.0100	1	10/25/2021 19:33	WG1762830
Molybdenum,Dissolved	0.00641		0.00500	1	10/25/2021 19:33	WG1762830
Potassium,Dissolved	7.93		2.00	1	10/25/2021 19:33	WG1762830
Selenium,Dissolved	0.0603		0.0100	1	10/25/2021 19:33	WG1762830
Sodium	464		3.00	1	10/25/2021 18:15	WG1761194
Sodium,Dissolved	457		3.00	1	10/25/2021 19:33	WG1762830

DH-96

Collected date/time: 09/28/21 11:40

SAMPLE RESULTS - 08

L1416228

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.45		1	10/25/2021 18:18	WG1761194

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	493		2.50	1	10/25/2021 18:18	WG1761194

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	1350	T8	20.0	1	10/13/2021 14:11	WG1756375

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	304	T8	20.0	1	10/14/2021 17:40	WG1756797
Alkalinity,Carbonate	ND	T8	20.0	1	10/14/2021 17:40	WG1756797

Sample Narrative:

L1416228-08 WG1756797: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia	33.7		1.00	1	10/22/2021 00:09	WG1761476
Fluoride	2.44		0.150	1	10/22/2021 00:09	WG1761476
Sulfate	750		50.0	10	10/22/2021 00:21	WG1761476

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Antimony,Dissolved	ND		0.0100	1	10/25/2021 19:36	WG1762830
Arsenic,Dissolved	ND		0.0100	1	10/25/2021 19:36	WG1762830
Barium,Dissolved	0.0100		0.00500	1	10/25/2021 19:36	WG1762830
Boron,Dissolved	0.464		0.200	1	10/25/2021 19:36	WG1762830
Cadmium,Dissolved	ND		0.00200	1	10/25/2021 19:36	WG1762830
Calcium	114		1.00	1	10/25/2021 18:18	WG1761194
Calcium,Dissolved	116		1.00	1	10/25/2021 19:36	WG1762830
Iron,Dissolved	ND		0.100	1	10/25/2021 19:36	WG1762830
Lead,Dissolved	ND		0.00600	1	10/25/2021 19:36	WG1762830
Magnesium	50.7		1.00	1	10/25/2021 18:18	WG1761194
Magnesium,Dissolved	51.9		1.00	1	10/25/2021 19:36	WG1762830
Manganese,Dissolved	0.536		0.0100	1	10/25/2021 19:36	WG1762830
Molybdenum,Dissolved	0.00673		0.00500	1	10/25/2021 19:36	WG1762830
Potassium,Dissolved	4.28		2.00	1	10/25/2021 19:36	WG1762830
Selenium,Dissolved	ND		0.0100	1	10/25/2021 19:36	WG1762830
Sodium	278		3.00	1	10/25/2021 18:18	WG1761194
Sodium,Dissolved	279		3.00	1	10/25/2021 19:36	WG1762830

DH-122

Collected date/time: 09/29/21 12:15

SAMPLE RESULTS - 09

L1416228

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.16		1	10/25/2021 18:27	WG1761194

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	721		2.50	1	10/25/2021 18:27	WG1761194

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	1850	T8	25.0	1	10/13/2021 14:11	WG1756375

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	316	T8	20.0	1	10/14/2021 17:44	WG1756797
Alkalinity,Carbonate	ND	T8	20.0	1	10/14/2021 17:44	WG1756797

Sample Narrative:

L1416228-09 WG1756797: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	120		20.0	20	10/22/2021 00:44	WG1761476
Fluoride	1.24		0.150	1	10/22/2021 00:32	WG1761476
Sulfate	960		100	20	10/22/2021 00:44	WG1761476

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Antimony,Dissolved	ND		0.0100	1	10/25/2021 19:39	WG1762830
Arsenic,Dissolved	ND		0.0100	1	10/25/2021 19:39	WG1762830
Barium,Dissolved	0.0216		0.00500	1	10/25/2021 19:39	WG1762830
Boron,Dissolved	0.285		0.200	1	10/25/2021 19:39	WG1762830
Cadmium,Dissolved	ND		0.00200	1	10/25/2021 19:39	WG1762830
Calcium	186		1.00	1	10/25/2021 18:27	WG1761194
Calcium,Dissolved	192		1.00	1	10/25/2021 19:39	WG1762830
Iron,Dissolved	ND		0.100	1	10/25/2021 19:39	WG1762830
Lead,Dissolved	ND		0.00600	1	10/25/2021 19:39	WG1762830
Magnesium	62.2		1.00	1	10/25/2021 18:27	WG1761194
Magnesium,Dissolved	63.7		1.00	1	10/25/2021 19:39	WG1762830
Manganese,Dissolved	0.699		0.0100	1	10/25/2021 19:39	WG1762830
Molybdenum,Dissolved	0.00790		0.00500	1	10/25/2021 19:39	WG1762830
Potassium,Dissolved	4.09		2.00	1	10/25/2021 19:39	WG1762830
Selenium,Dissolved	ND		0.0100	1	10/25/2021 19:39	WG1762830
Sodium	319		3.00	1	10/25/2021 18:27	WG1761194
Sodium,Dissolved	324		3.00	1	10/25/2021 19:39	WG1762830

DP-1

Collected date/time: 09/28/21 00:00

SAMPLE RESULTS - 10

L1416228

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.50		1	10/25/2021 18:30	WG1761194

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	1290		2.50	1	10/25/2021 18:30	WG1761194

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	1690	T8	20.0	1	10/13/2021 14:11	WG1756375

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	219	T8	20.0	1	10/14/2021 17:49	WG1756797
Alkalinity,Carbonate	ND	T8	20.0	1	10/14/2021 17:49	WG1756797

Sample Narrative:

L1416228-10 WG1756797: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	31.3		1.00	1	10/22/2021 00:56	WG1761476
Fluoride	0.863		0.150	1	10/22/2021 00:56	WG1761476
Sulfate	873		50.0	10	10/22/2021 01:08	WG1761476

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Antimony,Dissolved	ND		0.0100	1	10/25/2021 19:43	WG1762830
Arsenic,Dissolved	ND		0.0100	1	10/25/2021 19:43	WG1762830
Barium,Dissolved	0.0322		0.00500	1	10/25/2021 19:43	WG1762830
Boron,Dissolved	ND		0.200	1	10/25/2021 19:43	WG1762830
Cadmium,Dissolved	ND		0.00200	1	10/25/2021 19:43	WG1762830
Calcium	349		1.00	1	10/25/2021 18:30	WG1761194
Calcium,Dissolved	280		1.00	1	10/25/2021 19:43	WG1762830
Iron,Dissolved	ND		0.100	1	10/25/2021 19:43	WG1762830
Lead,Dissolved	ND		0.00600	1	10/25/2021 19:43	WG1762830
Magnesium	102		1.00	1	10/25/2021 18:30	WG1761194
Magnesium,Dissolved	77.9		1.00	1	10/25/2021 19:43	WG1762830
Manganese,Dissolved	ND		0.0100	1	10/25/2021 19:43	WG1762830
Molybdenum,Dissolved	ND		0.00500	1	10/25/2021 19:43	WG1762830
Potassium,Dissolved	3.90		2.00	1	10/25/2021 19:43	WG1762830
Selenium,Dissolved	0.0313		0.0100	1	10/25/2021 19:43	WG1762830
Sodium	124		3.00	1	10/25/2021 18:30	WG1761194
Sodium,Dissolved	136		3.00	1	10/25/2021 19:43	WG1762830

ACCOUNT:

American Environmental - CO

PROJECT:

SDG:

L1416228

DATE/TIME:

10/28/21 13:58

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FPW

Collected date/time: 09/28/21 13:10

SAMPLE RESULTS - 11

L1416228

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.35		1	10/25/2021 18:34	WG1761194

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	545		2.50	1	10/25/2021 18:34	WG1761194

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	900	T8	13.3	1	10/13/2021 14:11	WG1756375

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	201	T8	20.0	1	10/14/2021 17:54	WG1756797
Alkalinity,Carbonate	ND	T8	20.0	1	10/14/2021 17:54	WG1756797

Sample Narrative:

L1416228-11 WG1756797: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chloride	40.9		1.00	1	10/22/2021 01:19	WG1761476
Fluoride	1.12		0.150	1	10/22/2021 01:19	WG1761476
Sulfate	198		25.0	5	10/22/2021 01:31	WG1761476

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Antimony,Dissolved	ND		0.0100	1	10/25/2021 19:46	WG1762830
Arsenic,Dissolved	ND		0.0100	1	10/25/2021 19:46	WG1762830
Barium,Dissolved	0.0712		0.00500	1	10/25/2021 19:46	WG1762830
Boron,Dissolved	ND		0.200	1	10/25/2021 19:46	WG1762830
Cadmium,Dissolved	ND		0.00200	1	10/25/2021 19:46	WG1762830
Calcium	150		1.00	1	10/25/2021 18:34	WG1761194
Calcium,Dissolved	155		1.00	1	10/25/2021 19:46	WG1762830
Iron,Dissolved	ND		0.100	1	10/25/2021 19:46	WG1762830
Lead,Dissolved	ND		0.00600	1	10/25/2021 19:46	WG1762830
Magnesium	41.4		1.00	1	10/25/2021 18:34	WG1761194
Magnesium,Dissolved	43.1		1.00	1	10/25/2021 19:46	WG1762830
Manganese,Dissolved	ND		0.0100	1	10/25/2021 19:46	WG1762830
Molybdenum,Dissolved	ND		0.00500	1	10/25/2021 19:46	WG1762830
Potassium,Dissolved	3.09		2.00	1	10/25/2021 19:46	WG1762830
Selenium,Dissolved	ND		0.0100	1	10/25/2021 19:46	WG1762830
Sodium	72.5		3.00	1	10/25/2021 18:34	WG1761194
Sodium,Dissolved	76.4		3.00	1	10/25/2021 19:46	WG1762830

WG1750075

Gravimetric Analysis by Method 2540 C-2011

QUALITY CONTROL SUMMARY

L1416228-01,02,03,04,05,06,07,08,09,10,11

Method Blank (MB)

(MB) R3717162-1 10/13/21 14:11

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

L1416228-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1416228-08 10/13/21 14:11 • (DUP) R3717162-3 10/13/21 14:11

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	1350	1340	1	0.149		5

L1416228-09 Original Sample (OS) • Duplicate (DUP)

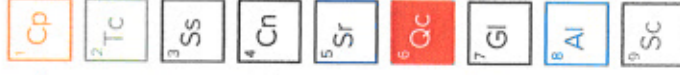
(OS) L1416228-09 10/13/21 14:11 • (DUP) R3717162-4 10/13/21 14:11

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	1850	1860	1	0.270		5

Laboratory Control Sample (LCS)

(LCS) R3717162-2 10/13/21 14:11

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8680	98.6	77.4-123	



Method Blank (MB)

(MB) R3716614-2 10/14/21 15:56

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Alkalinity,Bicarbonate	U	8.45	8.45	20.0
Alkalinity,Carbonate	U	8.45		20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1415899-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1415899-03 10/14/21 16:05 • (DUP) R3716614-3 10/14/21 16:10

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity,Bicarbonate	354	357	1	0.968		20
Alkalinity,Carbonate	ND	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1416228-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1416228-11 10/14/21 17:54 • (DUP) R3716614-4 10/14/21 17:59

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity,Bicarbonate	201	212	1	5.13		20
Alkalinity,Carbonate	ND	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

WG176171

Wet Chemis Method 9056A

QUALITY CONTROL SUMMARY

L1416228-03.04.05.06

Method Blank (MB)

(MB) R3721070-1 10/22/21 01:42

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.379	1.00
Fluoride	U		0.0640	0.150
Sulfate	U		0.594	5.00

L1416112-14 Original Sample (OS) • Duplicate (DUP)

(OS) L1416112-14 10/22/21 04:09 • (DUP) R3721070-3 10/22/21 04:59

Analyte	Original Result mg/l	DUP Result mg/l	DUP RPD %	DUP RPD Limits %
Fluoride	0.461	0.556	18.7	15

L1416112-18 Original Sample (OS) • Duplicate (DUP)

(OS) L1416112-18 10/22/21 06:21 • (DUP) R3721070-6 10/22/21 06:37

Analyte	Original Result mg/l	DUP Result mg/l	DUP RPD %	DUP RPD Limits %
Fluoride	ND	ND	0.000	15
Sulfate	2680	2510	6.51	15

Laboratory Control Sample (LCS)

(LCS) R3721070-2 10/22/21 01:58

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %
Chloride	40.0	39.8	99.5	80.0-120
Fluoride	8.00	8.26	103	80.0-120
Sulfate	40.0	39.8	99.5	80.0-120

L1416112-14 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1416112-14 10/22/21 04:09 • (MS) R3721070-4 10/22/21 05:15 • (MSD) R3721070-5 10/22/21 05:32

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Fluoride	5.00	0.461	3.76	4.16	1	80.0-120	J6	J6	10.1	15

L1416112-21 Original Sample (OS) • Matrix Spike (MS)

(OS) L1416112-21 10/22/21 07:26 • (MS) R3721070-7 10/22/21 08:16

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Fluoride	5.00	ND	1.61	30.4	1	80.0-120	J6
Sulfate	50.0	149	185	71.9	1	80.0-120	E J6

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

WG176076

Wet Chemis Method 9056A

QUALITY CONTROL SUMMARY

L1416228 08.09.10.11

Method Blank (MB)

(MB) R3720876-1 10/21/21 21:36

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.379	1.00
Fluoride	U		0.0640	0.150
Sulfate	U		0.594	5.00

L1412577-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1412577-01 10/21/21 22:00 • (DUP) R3720876-3 10/21/21 22:12

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	6.85	6.90	1	0.609		15
Fluoride	ND	ND	1	3.08		15

L1416347-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1416347-03 10/22/21 02:30 • (DUP) R3720876-6 10/22/21 02:41

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	1.56	1.51	1	3.15		15
Fluoride	ND	ND	1	0.000		15
Sulfate	ND	ND	1	0.000		15

Laboratory Control Sample (LCS)

(LCS) R3720876-2 10/21/21 21:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	40.3	101	80.0-120	
Fluoride	8.00	8.13	102	80.0-120	
Sulfate	40.0	40.6	102	80.0-120	

L1412577-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412577-01 10/21/21 22:00 • (MS) R3720876-4 10/21/21 22:23 • (MSD) R3720876-5 10/21/21 22:35

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50.0	6.85	58.3	59.1	1	80.0-120			1.38	15
Fluoride	5.00	ND	5.16	5.24	1	80.0-120			1.59	15

ACCOUNT:
American Environmental - CO

PROJECT:

SDG:
15456770DATE/TIME:
10/20/21 13:56PAGE:
22 of 22

WG1760076

Wet Chemistry Method 9056A

QUALITY CONTROL SUMMARY

L1416228 08.09.10.11

L1416347-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1416347-03 10/22/21 02:30 • (MS) R3720876-7 10/22/21 02:53

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50.0	1.56	52.1	101	1	80.0-120	
Fluoride	5.00	ND	5.06	99.8	1	80.0-120	
Sulfate	50.0	ND	54.4	102	1	80.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

WG1760034

Metals (ICP) Method 6010B

Method Blank (MB)

(MB) R3721189-1 10/25/21 17:13

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium	U		0.0793	1.00
Magnesium	U		0.0853	1.00
Sodium	U		0.504	3.00

Laboratory Control Sample (LCS)

(LCS) R3721189-2 10/25/21 17:16

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Calcium	10.0	9.53	95.3	80.0-120	
Magnesium	10.0	9.68	96.8	80.0-120	
Sodium	10.0	10.3	103	80.0-120	

L1416197-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1416197-01 10/25/21 17:19 • (MS) R3721189-4 10/25/21 17:25 • (MSD) R3721189-5 10/25/21 17:28

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD	RPD Limits %
Calcium	10.0	87.7	96.3	95.5	1	75.0-125			0.839	20
Magnesium	10.0	79.6	88.5	87.5	1	75.0-125			1.12	20
Sodium	10.0	162	169	167	1	75.0-125	V	V	1.13	20

QUALITY CONTROL SUMMARY

L1416228-01,02,03,06,07,08,09,10,11

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

WG1762330

Metals (ICP) Method 6010B

Method Blank (MB)

QUALITY CONTROL SUMMARY

L1416228-01,02,03,05,06,07,08,09,10,11

(MB) R372190-1 10/25/21 18:49

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Antimony, Dissolved	U		0.00430	0.0100
Arsenic, Dissolved	U		0.00440	0.0100
Barium, Dissolved	U		0.000736	0.00500
Boron, Dissolved	U		0.0200	0.200
Cadmium, Dissolved	U		0.000479	0.00200
Calcium, Dissolved	U		0.0793	1.00
Iron, Dissolved	U		0.0180	0.100
Lead, Dissolved	U		0.00299	0.00600
Magnesium, Dissolved	U		0.0853	1.00
Manganese, Dissolved	U		0.000934	0.0100
Molybdenum, Dissolved	U		0.00116	0.00500
Potassium, Dissolved	0.343	J	0.261	2.00
Selenium, Dissolved	U		0.00735	0.0100
Sodium, Dissolved	U		0.504	3.00

Laboratory Control Sample (LCS)

(LCS) R372190-2 10/25/21 18:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Antimony, Dissolved	1.00	0.941	94.1	80.0-120	
Arsenic, Dissolved	1.00	0.925	92.5	80.0-120	
Barium, Dissolved	1.00	1.01	101	80.0-120	
Boron, Dissolved	1.00	0.957	95.7	80.0-120	
Cadmium, Dissolved	1.00	0.946	94.6	80.0-120	
Calcium, Dissolved	10.0	9.92	99.2	80.0-120	
Iron, Dissolved	10.0	9.57	95.7	80.0-120	
Lead, Dissolved	1.00	0.920	92.0	80.0-120	
Magnesium, Dissolved	10.0	10.2	102	80.0-120	
Manganese, Dissolved	1.00	1.02	102	80.0-120	
Molybdenum, Dissolved	1.00	0.981	98.1	80.0-120	
Potassium, Dissolved	10.0	9.87	98.7	80.0-120	
Selenium, Dissolved	1.00	0.928	92.8	80.0-120	
Sodium, Dissolved	10.0	10.8	108	80.0-120	

WG1762230

Metals (ICP) Method 6010B

QUALITY CONTROL SUMMARY

L1416228-01.02.03.04.05.06.07.08.09.10.11

L1415819-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1415819-02 10/25/21 18:55 • (MS) R3721190-4 10/25/21 19:01 • (MSD) R3721190-5 10/25/21 19:03

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 %
Antimony, Dissolved	1.00	ND	0.950	0.939	95.0	93.9	1	75.0-125			1.12	20
Arsenic, Dissolved	1.00	ND	0.938	0.926	93.8	92.6	1	75.0-125			1.28	20
Barium, Dissolved	1.00	ND	1.03	1.01	103	101	1	75.0-125			1.52	20
Boron, Dissolved	1.00	ND	0.950	0.965	95.0	96.5	1	75.0-125			1.55	20
Cadmium, Dissolved	1.00	ND	0.956	0.940	95.6	94.0	1	75.0-125			1.67	20
Calcium, Dissolved	10.0	ND	10.0	9.89	100	98.9	1	75.0-125			1.13	20
Iron, Dissolved	10.0	ND	9.66	9.54	96.6	95.4	1	75.0-125			1.21	20
Lead, Dissolved	1.00	ND	0.930	0.915	93.0	91.5	1	75.0-125			1.64	20
Magnesium, Dissolved	10.0	ND	10.2	10.1	102	101	1	75.0-125			0.304	20
Manganese, Dissolved	1.00	ND	1.03	1.03	103	103	1	75.0-125			0.772	20
Molybdenum, Dissolved	1.00	ND	0.993	0.975	99.3	97.5	1	75.0-125			1.87	20
Potassium, Dissolved	10.0	ND	9.79	9.88	93.7	94.7	1	75.0-125			0.963	20
Selenium, Dissolved	1.00	ND	0.941	0.930	94.1	93.0	1	75.0-125			1.17	20
Sodium, Dissolved	10.0	ND	10.8	10.9	108	109	1	75.0-125			1.02	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3721736-1 10/26/21 14:13

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Calcium	U		0.0793	1.00
Magnesium	U		0.0853	1.00
Sodium	U		0.504	3.00

Laboratory Control Sample (LCS)

(LCS) R3721736-2 10/26/21 14:16

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Calcium	10.0	9.35	93.5	80.0-120	
Magnesium	10.0	9.53	95.3	80.0-120	
Sodium	10.0	10.1	101	80.0-120	

L1417670-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1417670-01 10/26/21 14:19 • (MS) R3721736-4 10/26/21 14:31 • (MSD) R3721736-5 10/26/21 14:34

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	66.9	75.5	75.2	86.8	83.7	1	75.0-125		0.403	20	20
Magnesium	10.0	23.9	32.1	31.8	81.9	79.0	1	75.0-125		0.918	20	20
Sodium	10.0	89.4	97.8	97.5	83.8	80.9	1	75.0-125		0.302	20	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
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.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-05-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ²	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ¹ ⁶	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA - ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA - ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Billing Information:
Accounts Payable
 8191 Southpark Lane
 Suite 107
 Littleton, CO 80120
 Email To: selder@acdenver.com

Client Project #
AMEENVLCO-KEENESBURG

Site/Facility ID #
P.O. #

Rush? (Lab MUST Be Notified)
 Same Day ☐ Five Day ☐
 Next Day ☐ 5 Day (Rad Only) ☐
 Two Day ☐ 10 Day (Rad Only) ☐
 Three Day ☐

Sample ID
 16
 122
 PC-6
 DH-96
 DH-122
 DP-1
 FPW

Comp/Grab
 Matrix *
 Depth
 Date
 Time
 No. of
 Cntrs

Date Results Needed

City/State Collected:
 PT MT CT ET

Please Circle:
 PT MT CT ET

Project Description:
 Keeningsburg Mine

Phone: 303-948-7733

Port to:
 Elder

91 Southpark Lane
 Suite 107
 Littleton, CO 80120

Accounts Payable
 8191 Southpark Lane
 Suite 107
 Littleton, CO 80120

Email To: selder@acdenver.com

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of	Cntrs
16		GW				6	
122		GW				6	
PC-6		GW		9/30/21	1230	6	
DH-96				9/28/21	1140		
DH-122				9/29/21	1215		
DP-1				9/28/21	0200		
FPW				9/28/21	1310		

Remarks: Diss Metals-As, Ba, B, Ca, Cd, Fe, Kd, Mg, Mn, Na, Pb, Sb, Se
 PC-1, PC-2, PC-6, AMW-1, AMW-2, SMW-2: Fluoride, SBDICP, BDICP, KDICP, PC-5, PC-122: ALKOH, ALK

Samples returned via:
 UPS ☐ FedEx ☐ Courier ☐

Date: _____ Time: _____
 Received by: (Signature) _____

Date: _____ Time: _____
 Received by: (Signature) _____

Date: _____ Time: _____
 Received by: (Signature) _____

Temp Blank Received: ☒ Yes / ☐ No
 Temp: _____ °C Bottles Received: ☒ 66
 Date: 10/1/21 Time: 0930

If preservation required by Login: Date/Time
 Condition: ☒ N/A / ☐ OK

Chain of Custody
 Date: _____ of _____

Pace Analytical
 12005 Johnson Rd. Mount Juliet, TN 37122
 Submitting a sample via this chain of custody
 certifies acknowledgment and acceptance of the
 Pace Terms and Conditions found at:
<https://info.paceanalytical.com/submit/chain-of-custody>

SDG # 1416228

Table #

Account: AMEENVLCO
 Template: T160430
 Prelogin: P871944
 PM: 824 - Chris Ward
 PB:

Shipped Via: FedEx Ground

Remarks
 Sample # (lab only)

Sample #	Remarks	Sample # (lab only)
07		
08		
09		
10		
11		

Sample Receipt Checklist
 DOC Seal Present/Intact: ☒ Y / ☐ N
 DOC 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
 PAD Screen <0.5 mV/ht: ☒ Y / ☐ N

10/7/21 - NCF AMEENVLCO

R5

Time estimate: oh

Time spent: oh

Members

 Matthew Shacklock (responsible) Chris Ward

- ☐ Login Clarification needed
- ☐ Chain of custody is incomplete
- ☐ Please specify Metals requested
- ☐ Please specify TCLP requested
- ☐ Received additional samples not listed on COC
- ☐ Sample IDs on containers do not match IDs on COC
- ☐ Client did not "X" analysis
- ☒ Chain of Custody is missing
- ☒ If no COC: Received by: Matt Shacklock
- ☒ If no COC: Date/Time: 10/04/21 0930
- ☒ If no COC: Temp./Cont.Rec./pH: 10.2 / 15.2
- ☒ If no COC: Carrier: Fed Ex
- ☒ If no COC: Tracking #: 5217 3308 8939 / 9020
- ☐ Client informed by call
- ☒ Client informed by Email
- ☐ Client informed by Voicemail
- ☒ Date/Time: 10/8/21@1113
- ☒ PM initials: CMW
- ☒ Client Contact: Dan Barrett

Comments

Matthew Shacklock

7 October 2021 1:57 PM

No chain and out of temp.

Chris Ward

7 October 2021 3:16 PM

Double check that these are Keesburg, if so log using T160430 for now.

Chris Ward

8 October 2021 11:15 AM

COC attached

Matthew Shacklock

11 October 2021 9:58 AM

L1416228

SURFACE WATER HYDROLOGY 2021

SURFACE WATER HYDROLOGY

The site drainage plan and descriptions of associated structures for the CEC Keenesburg Mine site are found in Appendix K of the Permit. Historically, as part of the reclamation process, CEC continues to maintain the diversion ditches, drainage ditches and drainage swales along the roads and around the north and east sides of the Permit Area. These features serve to convey all surface water runoff to Sediment Pond 2. The present drainage facilities, as well as existing site topographic features, are identified on the Existing Surface Features and Utilities Map. Certain surface water control features have been designated permanent facilities (by Permit revision, and at the direction of CDMG and others). These features will remain following the completion of all site reclamation activities. The permanent features include:

- Sediment Pond #2,
- The East and the West Perimeter Ditches
- The Dugout Pond

These permanent drainage features are identified on the existing Reclamation Contour and Drainage Plan Map.

With the exception of Sediment Pond 2 and the Dugout Pond, all previously existing man-made temporary pond sites have been closed and deleted from the drainage control mapping and monitoring requirement. This action was deemed appropriate because: 1) the sedimentation infill of Sediment Pond 2 has been virtually non-existent after more than fifteen years of continuous use; 2) Sediment Pond 2 has not had significant amounts of water stored in it for more than brief periods (except during the unusual and prolonged periods of excess precipitation in 1995, 1999, 2013, and 2018), and 3) even considering those unusual events of 1995, 1999, 2013, and 2018, to date there has not been an observed discharge from Sediment Pond 2. The rain event of 2018 took right up to the spillway, but significant outflow was not observed based on natural debris at the spillway.

Further, CEC implemented a dewatering scheme for Sediment Pond 2 in 1997, in conjunction with the preparation of a, "Spill Prevention, Control and Countermeasures Plan" for the site. This plan was last updated in 2003, but has been the subject of annual review. According to the plan, and when conditions warrant, CEC personnel will pump excess runoff water accumulated in Sediment Pond 2 back to the Dugout Pond, located about 700 feet slightly upgradient and to the south-southeast on the CEC property. The Dugout Pond has an available storage capacity exceeding the total contributing runoff volume associated with a 100-year,

24-hour design storm event (Technical Revision, "Drainage Control Plan II", January 1995). Pumps can be employed, as needed, to move the accumulated runoff water in Sediment Pond 2 back to the Dugout Pond within a maximum time frame of 72 hours, thus meeting a reasonable evacuation time period for Sediment Pond 2 dewatering. In this manner, CEC can maintain a continued lowered pond level in Sediment Pond 2 during prolonged periods of excess rainfall and runoff at the site (similar to that which was experienced during the spring of 1995). CEC did have occasion to employ this plan during rainfall events in April and May, 1999. This plan was also deployed in May and June of 2018 successfully. The system functioned in accordance with the design.

Except for the surface water accumulation from "recent" rainfall events, the practice of encouraging standing water to "pond" in the former mining pits (now confined to ash disposal B-Pit) has been eliminated. Deep eolian sand deposits (in some places as much as thirty feet in thickness) exist across much of the mine site. The sand's high infiltration characteristic contributes to a significant loss of surface moisture due to the "deep percolation" of rainfall during most storm events. The result is that normally only a minimal runoff is experienced. As additional segments of the Permit site are reclaimed (topsanded and seeded), less and less runoff has been observed.

DISPOSAL ACTIVITIES DATA 2021

DISPOSAL ACTIVITIES

Ash Disposal

For the calendar year 2021, no mixed fly and bottom ash were transported to, and disposed of at the Coors Energy Company, Keenesburg Mine site. Thus, the total ash disposal activity for the B-Pit ash volume remains at 816,024 tons. The total amount of ash disposed of at the Keenesburg Mine between 1987 and the end of ash disposal was 1,066,044 tons. The last load of ash was disposed of in March 2016. No further ash will be accepted.

In accordance with the conditions of the Permit, the Keenesburg site continued to accept only ash that is the by-product of the coal combustion process, and which is generated at the power plant located in Golden, Colorado, the MillerCoors, LLC (formerly Coors Brewing Company) plant location. Since September, 1995 this power plant has been owned and operated by Colorado-Golden Energy Corporation (CGEC). (formerly Trigen-Colorado Energy Corporation). According to the agreements between CGEC and CEC, ash from this power plant will continue to be transported to, and used for reclamation at the Keenesburg site until the reclamation requirement has been satisfied. As of March 2016, coal is no longer used at the power plant, as such no more ash will be deposited into the Keenesburg mine.

Mine Waste Rock Disposal

CEC obtained approvals from CDRMS (Minor Revision #34), from CDPHE, and from Weld County, to dispose of mine waste rock at the Keenesburg Mine site. During 1998 and 1999 a total of 12,467 tons of mine waste rock, the residual material from "hard rock" mine reclamation sites in the Clear Creek drainage, near Idaho Springs, Colorado, was transported to the Keenesburg site for disposal. This material was placed, in a layer approximately four feet thick, between layers of ash in the existing disposal pit (B-Pit). The specific intent of this method of mine waste rock disposal, as described in MR #34, was to isolate the material and thus minimize the possibility for future contamination.

No additional mine waste rock was received for disposal after calendar year 1999. The total quantity of this material placed at the Keenesburg site is still

12,467 tons. The placement location and horizontal extent of the mine waste rock has been identified on the Existing Surface Features and Utilities Map.

The site has been fully reclaimed, no further ash or rocks will be accepted or placed at the mine. All areas have been graded to final elevations and seeded.

RECLAMATION REPORT 2021

RECLAMATION REPORT

Coors Energy Company (CEC) continues to contract for the consultant engineering services of American Environmental Consulting, LLC, Littleton, Colorado (includes preparation of computer-generated drawings of the mine site, and compilation of volume and area estimates). In 2012, AzTec Consultants, Inc. provided surveying services for the new control points located for subsequent mapping work. These control points were used to place aerial targets again in 2020.

Note: To facilitate easier reference to, and discussion of the various acreage parcels shown on the Vegetation/Revegetation Map (see page 218) a numeric designation has been assigned to each revegetated parcel. This system, initiated for the 2002 AHR Report, has been carried forward with new designations assigned as parcels were first seeded with the reclamation seed mix. Reclamation sitework is now complete.

No additional acreage was "disturbed" during 2021. In fact, the mine closure activities were completed in 2020 and the mine is in post-closure monitoring. As such, no aerial photo was taken in 2021.

No seeding was completed in 2021 as the site is in post-closure monitoring.

Because of the national debate over classification of ash (hazardous vs nonhazardous), a management decision was made in 2010 to fill in as much of the bottom layer of B-Pit as soon as possible. The ash is normally placed in the pit in two layers, or lifts, before it is covered with spoils (6 feet) and topsand (2 feet). Additionally, management determined that a change from coal fuel to natural gas is economically sound and April 22, 2016 saw the last load of ash disposed of in the facility. The remaining fill into the B-Pit was completed using overburden materials from the onsite soils excavated during previous mining operations.

CEC will also use this opportunity to note that control efforts are being employed, specifically with respect to *Bromus tectorum* (cheatgrass). This particular noxious weed (Classification list "C" species on the State's noxious weed listing), has been the subject of discussions following more recent AHR Report submittals, and most recently the Application for Phase III bond release (SL-06). In response to concerns over this issue, CEC has

followed the recommendation of CDRMS and others in pursuing a test application of a control herbicide [Panoramic 2SL, manufactured by Alligare]. The test application was first made during the fall of 2010, specifically to Area 25. Then, following evidence of a successful control effort, the herbicide was applied to areas with noxious weeds.

In 2016, a technical revision to the permit was submitted and included removing approximately 212.45 acres from the mine permit. The reclamation summary for the end of 2021 is unchanged from 2016 and is as follows:

RECLAMATION ACREAGE SUMMARY

Total area remaining to be reclaimed 0 acres

Total area reclaimed and revegetated 225.10 ± acres

Grand Total 225.10 ± acres

[Note: It is still important to recognize that these acreage values vary significantly from the 2005 and earlier AHR Reports. These variances result from the improved accuracy of the photo mapping tools, and a redetermination of total site acreage following the assignment of acreage values to all parcels within the Permit area boundary. The results of this effort were submitted and approved as part of the Permit Renewal Application process in 2006. The most significant change was in the number of acres left "undisturbed" by mining activities, yet still within the Permit Area (a total of 173± acres before TR #42). Additionally, while the Permit Area boundary was changed (adjusted inward) in 2011 by TR #42, this Reclamation Acreage Summary accounts for all acreage reclaimed, whether now inside or outside of the boundary line.]

Additional Reclamation Information:

The total 435± acres "originally disturbed" by the Keenesburg Mine coal extraction operation can presently be assigned to one or more of the following categories:

- Acreage in previously active mining areas that has been reclaimed (includes the Long Term Spoil Area)
- Acreage backfilled and graded that has been previously seeded and growing
- Acreage designated as long-term mining or reclamation facilities (includes Access Road and SAE's)
- Acreage removed from Permit Area through approval of TR #42

Colorado Division of Reclamation, Mining and Safety

Annual Reclamation Report for Calendar Year – 2021

Kennesburg Mine

C-1981-028

Coors Energy Company

Mine Name

Permit Number

Permittee

PO Box 4030 Golden, CO 80402

Address

This report, required by Rule 2.04.13, is due by February 15 of each year, or other date, as agreed upon by the Division. It should include text, discussion, and maps, at a minimum, in addition to any other reclamation monitoring data as required by the approved permit. The location of the acreage reported under each land status category and year of seeding (if applicable) should be clearly identified on a map included with the report.

Land Category	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
Acreage in Active Mining Areas ¹	0	0	0	=	0.00

Land Category	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
Acres Disturbed ²	443.53	0	0	=	443.53
Acres Backfilled and Graded	373.16	0	0	=	373.16
Acres Topsoiled	373.16	0	0	=	373.16

Acreage in Long-term Facilities ³	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
Non-Permanent Facilities	0	0	0	=	0
Permanent Facilities (permitted)	70.37	0	0	=	70.37
Totals	70.37			=	70.37

Acres Seeded (permanent)	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
9 Years and Less	129.68	0	0	=	129.68
10 Years and Greater	233.59	0	0	=	233.59
Totals	363.27			=	363.27

Bond Release	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
Phase I Released	333.36	0	0	=	333.36
Phase II Released	272.07	0	0	=	272.07
Phase III Released	263.70	0	0	=	263.70

¹Includes pits, topsoil stripped areas in advance of pits, and spoil not backfilled and graded

²Surface Mine Acres Disturbed = B&G + Long-Term Facilities + Active Mining Areas; Underground Mine Acres Disturbed = B&G + Long-Term Facilities; Separately-permitted Loadouts = B&G + Long-Term Facilities

³Includes haul, access and light-use roads, temporary dams and impoundments; permanent dams and impoundments; diversion and collector ditches, water and air monitoring sites; topsoil stockpiles; overburden stockpiles; repair, storage and construction areas; office area, repair shops, and parking; coal stockpiles, loading, and processing areas; railroads; coal conveyors; refuse piles and coal mine waste impoundments; head-of-hollow fills; valley fills; ventilation shafts and entryways; and non-coal waste disposal area (garbage dumps and coal combustion by-products disposal areas).

February 8, 2019

Annual Reclamation Report Instructions

The Annual Reclamation Report (ARR) form has been designed to aid in the tracking of disturbed acres as they progress through the reclamation process. The rows are arranged so that the initial disturbed acres are entered at the top of the page and the acres will progress down through the rows to final bond release at the bottom.

Note: The "Last Year's Cumulative Total" columns need to have the values entered from the previous year's ARR "Cumulative Total" columns. This ensures accuracy from year to year.

Land Category –

Acres in Active Mining Areas – This section applies only to surface mines. It does not apply to underground mines nor to separately-permitted loadouts. Footnote 1 on the ARR form describes Active Mining Areas as pits, topsoil stripped areas in advance of pits and spoil not backfilled and graded.

Land Category –

Acres Disturbed – This is the total number of acres that have been disturbed by surface coal mining and reclamation operations for this permit number, regardless of name changes, bond releases and changes to the permit boundary. The subtraction column is for tracking acres transferred to another permit or corrections associated with record keeping and mapping. Do not subtract acres where Phase III bond release was achieved. A formula is shown in footnote 2 on the ARR form for surface and underground mines that explains how this value is determined.

Acres Backfilled and Graded – This is the total number of acres that have been backfilled and graded to the approved post-mining topography. The subtraction column is for tracking acres transferred to another permit, acres re-disturbed or corrections associated with record keeping and mapping. Do not subtract acres where Phase III bond release was achieved.

Acres Topsoiled – This is the total number of acres that have been topsoiled in advance of seeding with approved permanent seedmixes. Do not enter acres for topsoiled outslopes of pond embankments, topsoiled outslopes of road embankments, or topsoiled outslopes of cut-and-fill facility pads. The subtraction column is for tracking acres transferred to another permit, acres re-disturbed or corrections associated with record keeping and mapping. Do not subtract acres where Phase III bond release was achieved.

Acreage in Long-term Facilities –

Non-Permanent Facilities – This is the total number of acres that have a facility listed in Footnote 3 at the bottom of the ARR form that has not been approved in the permit to remain as permanent.

Permanent Features – This is the total number of acres that have a facility listed in Footnote 3 at the bottom of the ARR form that has been approved in the permit to remain as permanent. If the feature is intended to be permanent but has not been approved as permanent through a permitting action (TR, PR, etc.), then it is not considered permanent.

Acres Seeded –

The acres seeded rows are for permanently seeded acres. Do not enter temporary seeding of topsoil piles, cover crops, embankment stabilization, etc.

Acres that were seeded during the current reporting year are entered in the “9 Years and Less” row.

When a parcel becomes seeded for 10 years or greater, subtract the acres from the “9 Years and Less” row and add it to the “10 Years or Greater” row.

The subtraction column in the “10 Years or Greater” row is for tracking acres transferred to another permit, acres re-disturbed or corrections associated with record keeping and mapping. Do not subtract acres where Phase III bond release was achieved.

Bond Release –

This is the total number of acres that have achieved Phase I, II or III bond release for this permit number, regardless of name changes and changes to the permit boundary.

Acres are added to these categories after DRMS’ proposed decision becomes final (issuance).

The subtraction column is for tracking acres transferred to another permit, acres re-disturbed or corrections associated with record keeping and mapping. Do not subtract acres where Phase III bond release was achieved.

Objective – The “Cumulative Total” value in each of these rows will be the same as the value in “Acres Disturbed – Cumulative Total” when the mine achieves final bond release.