

Civitas - CO

Sample Delivery Group: L1753526
Samples Received: 07/03/2024
Project Number: P1137
Description: Bury Crandell 61N68/NENE/C unit

Report To: Sam Vogt / Jacob Evans
6855 W. 118th Ave
Broomfield, CO 80020

Entire Report Reviewed By:



Chris Ward
Project Manager

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SAMPLE SUMMARY

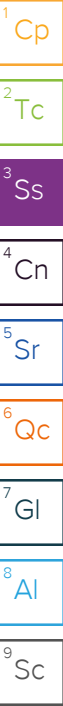
BG01@6" L1753526-01 Solid

Collected by
Sean Clarke

Collected date/time
07/01/24 13:45

Received date/time
07/03/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2319127	1	07/14/24 08:15	07/14/24 08:15	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2317848	1	07/11/24 14:04	07/15/24 12:02	EKB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2322320	1	07/13/24 09:30	07/13/24 10:48	KA	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2322316	1	07/13/24 09:31	07/13/24 13:56	KA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2319133	1	07/11/24 15:12	07/12/24 16:06	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2317504	5	07/10/24 15:57	07/25/24 13:35	SJM	Mt. Juliet, TN



BG02@6" L1753526-02 Solid

Collected by
Sean Clarke

Collected date/time
07/01/24 13:50

Received date/time
07/03/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2319127	1	07/14/24 08:17	07/14/24 08:17	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2317848	1	07/11/24 14:04	07/15/24 12:11	EKB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2322320	1	07/13/24 09:30	07/13/24 10:48	KA	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2322316	1	07/13/24 09:31	07/13/24 13:56	KA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2319133	1	07/11/24 15:12	07/12/24 16:08	JTM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2317528	5	07/09/24 06:51	07/24/24 13:06	SJM	Mt. Juliet, TN

BG03@6" L1753526-03 Solid

Collected by
Sean Clarke

Collected date/time
07/01/24 13:55

Received date/time
07/03/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2319116	1	07/14/24 07:40	07/14/24 07:40	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2317848	1	07/11/24 14:04	07/15/24 13:14	EKB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2322321	1	07/13/24 09:29	07/13/24 10:37	KA	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2322319	1	07/13/24 09:32	07/13/24 14:21	KA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2319119	1	07/12/24 13:25	07/14/24 08:32	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2317528	5	07/09/24 06:51	07/24/24 13:10	SJM	Mt. Juliet, TN

BG04@6" L1753526-04 Solid

Collected by
Sean Clarke

Collected date/time
07/01/24 14:00

Received date/time
07/03/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2319116	1	07/14/24 07:42	07/14/24 07:42	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2317848	1	07/11/24 14:04	07/15/24 13:32	EKB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2322321	1	07/13/24 09:29	07/13/24 10:37	KA	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2322319	1	07/13/24 09:32	07/13/24 14:21	KA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2319119	1	07/12/24 13:25	07/14/24 08:34	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2317504	5	07/10/24 15:57	07/25/24 13:38	SJM	Mt. Juliet, TN

BG05@6" L1753526-05 Solid

Collected by
Sean Clarke

Collected date/time
07/01/24 14:05

Received date/time
07/03/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2319124	1	07/11/24 22:45	07/11/24 22:45	DJS	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2317848	1	07/11/24 14:04	07/15/24 13:41	EKB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2321219	1	07/11/24 12:27	07/11/24 14:00	KA	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2321221	1	07/11/24 12:29	07/11/24 15:00	KRB	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2319130	1	07/10/24 10:28	07/10/24 19:09	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2317504	5	07/10/24 15:57	07/25/24 13:42	SJM	Mt. Juliet, TN

CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	0.628		1	07/14/2024 08:15	WG2319127

Wet Chemistry by Method 7199

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Hexavalent Chromium	U		0.255	1.00	1	07/15/2024 12:02	WG2317848

Wet Chemistry by Method 9045D

	Result su	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
pH	7.98	T8	1	07/13/2024 10:48	WG2322320

Sample Narrative:

L1753526-01 WG2322320: 7.98 at 22.5C

Wet Chemistry by Method 9050AMod

	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Analyte						
Specific Conductance	352		10.0	1	07/13/2024 13:56	WG2322316

Sample Narrative:

L1753526-01 WG2322316: at 25C

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

	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Analyte							
Hot Water Sol. Boron	1.07		0.0167	0.200	1	07/12/2024 16:06	WG2319133

Metals (ICPMS) by Method 6020

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Arsenic	11.1		0.100	1.00	5	07/25/2024 13:35	WG2317504
Barium	198		0.152	2.50	5	07/25/2024 13:35	WG2317504
Cadmium	0.427	J	0.0855	1.00	5	07/25/2024 13:35	WG2317504
Copper	22.0		0.132	5.00	5	07/25/2024 13:35	WG2317504
Lead	17.2		0.0990	2.00	5	07/25/2024 13:35	WG2317504
Nickel	20.4		0.197	2.50	5	07/25/2024 13:35	WG2317504
Selenium	1.91	J	0.180	2.50	5	07/25/2024 13:35	WG2317504
Silver	0.150	J	0.0865	0.500	5	07/25/2024 13:35	WG2317504
Zinc	73.2		0.740	25.0	5	07/25/2024 13:35	WG2317504

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	1.02		1	07/14/2024 08:17	WG2319127

Wet Chemistry by Method 7199

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Hexavalent Chromium	U	J6	0.255	1.00	1	07/15/2024 12:11	WG2317848

Wet Chemistry by Method 9045D

	Result su	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
pH	7.99	T8	1	07/13/2024 10:48	WG2322320

Sample Narrative:

L1753526-02 WG2322320: 7.99 at 22.5C

Wet Chemistry by Method 9050AMod

	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Analyte						
Specific Conductance	372		10.0	1	07/13/2024 13:56	WG2322316

Sample Narrative:

L1753526-02 WG2322316: at 25C

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

	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Analyte							
Hot Water Sol. Boron	1.18		0.0167	0.200	1	07/12/2024 16:08	WG2319133

Metals (ICPMS) by Method 6020

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Arsenic	7.43		0.100	1.00	5	07/24/2024 13:06	WG2317528
Barium	190		0.152	2.50	5	07/24/2024 13:06	WG2317528
Cadmium	0.413	J	0.0855	1.00	5	07/24/2024 13:06	WG2317528
Copper	19.3		0.132	5.00	5	07/24/2024 13:06	WG2317528
Lead	17.3		0.0990	2.00	5	07/24/2024 13:06	WG2317528
Nickel	17.7		0.197	2.50	5	07/24/2024 13:06	WG2317528
Selenium	2.02	J	0.180	2.50	5	07/24/2024 13:06	WG2317528
Silver	0.184	J	0.0865	0.500	5	07/24/2024 13:06	WG2317528
Zinc	63.5		0.740	25.0	5	07/24/2024 13:06	WG2317528

Cp

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	1.21		1	07/14/2024 07:40	WG2319116

Wet Chemistry by Method 7199

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Hexavalent Chromium	U		0.255	1.00	1	07/15/2024 13:14	WG2317848

Wet Chemistry by Method 9045D

	Result su	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
pH	8.15	T8	1	07/13/2024 10:37	WG2322321

Sample Narrative:

L1753526-03 WG2322321: 8.15 at 23C

Wet Chemistry by Method 9050AMod

	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Analyte						
Specific Conductance	284		10.0	1	07/13/2024 14:21	WG2322319

Sample Narrative:

L1753526-03 WG2322319: at 25C

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

	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Analyte							
Hot Water Sol. Boron	0.388		0.0167	0.200	1	07/14/2024 08:32	WG2319119

Metals (ICPMS) by Method 6020

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Arsenic	5.17		0.100	1.00	5	07/24/2024 13:10	WG2317528
Barium	207		0.152	2.50	5	07/24/2024 13:10	WG2317528
Cadmium	0.312	J	0.0855	1.00	5	07/24/2024 13:10	WG2317528
Copper	15.4		0.132	5.00	5	07/24/2024 13:10	WG2317528
Lead	13.8		0.0990	2.00	5	07/24/2024 13:10	WG2317528
Nickel	16.8		0.197	2.50	5	07/24/2024 13:10	WG2317528
Selenium	1.77	J	0.180	2.50	5	07/24/2024 13:10	WG2317528
Silver	U		0.0865	0.500	5	07/24/2024 13:10	WG2317528
Zinc	53.2		0.740	25.0	5	07/24/2024 13:10	WG2317528

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	0.398		1	07/14/2024 07:42	WG2319116

Wet Chemistry by Method 7199

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Hexavalent Chromium	0.295	J	0.255	1.00	1	07/15/2024 13:32	WG2317848

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	su				
pH	6.92	T8	1	07/13/2024 10:37	WG2322321

Sample Narrative:

L1753526-04 WG2322321: 6.92 at 23C

Wet Chemistry by Method 9050AMod

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	umhos/cm		umhos/cm			
Specific Conductance	132		10.0	1	07/13/2024 14:21	WG2322319

Sample Narrative:

L1753526-04 WG2322319: at 25C

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/l		mg/l	mg/l			
Hot Water Sol. Boron	2.65		0.0167	0.200	1	07/14/2024 08:34	WG2319119

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	3.90		0.100	1.00	5	07/25/2024 13:38	WG2317504
Barium	549		0.152	2.50	5	07/25/2024 13:38	WG2317504
Cadmium	0.450	J	0.0855	1.00	5	07/25/2024 13:38	WG2317504
Copper	18.7		0.132	5.00	5	07/25/2024 13:38	WG2317504
Lead	19.2		0.0990	2.00	5	07/25/2024 13:38	WG2317504
Nickel	10.2		0.197	2.50	5	07/25/2024 13:38	WG2317504
Selenium	1.48	J	0.180	2.50	5	07/25/2024 13:38	WG2317504
Silver	0.245	J	0.0865	0.500	5	07/25/2024 13:38	WG2317504
Zinc	48.1		0.740	25.0	5	07/25/2024 13:38	WG2317504

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	1.30		1	07/11/2024 22:45	WG2319124

Wet Chemistry by Method 7199

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Hexavalent Chromium	U		0.255	1.00	1	07/15/2024 13:41	WG2317848

Wet Chemistry by Method 9045D

	Result su	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
pH	7.20	T8	1	07/11/2024 14:00	WG2321219

Sample Narrative:

L1753526-05 WG2321219: 7.2 at 23.7C

Wet Chemistry by Method 9050AMod

	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Analyte						
Specific Conductance	586		10.0	1	07/11/2024 15:00	WG2321221

Sample Narrative:

L1753526-05 WG2321221: at 25C

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

	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Analyte							
Hot Water Sol. Boron	0.361		0.0167	0.200	1	07/10/2024 19:09	WG2319130

Metals (ICPMS) by Method 6020

	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Analyte							
Arsenic	3.96		0.100	1.00	5	07/25/2024 13:42	WG2317504
Barium	298		0.152	2.50	5	07/25/2024 13:42	WG2317504
Cadmium	0.452	J	0.0855	1.00	5	07/25/2024 13:42	WG2317504
Copper	21.2		0.132	5.00	5	07/25/2024 13:42	WG2317504
Lead	32.5		0.0990	2.00	5	07/25/2024 13:42	WG2317504
Nickel	9.71		0.197	2.50	5	07/25/2024 13:42	WG2317504
Selenium	1.11	J	0.180	2.50	5	07/25/2024 13:42	WG2317504
Silver	U		0.0865	0.500	5	07/25/2024 13:42	WG2317504
Zinc	59.2		0.740	25.0	5	07/25/2024 13:42	WG2317504

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4093939-1 07/15/24 09:22

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

L1753526-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1753526-03 07/15/24 13:14 • (DUP) R4093939-11 07/15/24 13:23

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

L1753530-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1753530-05 07/15/24 14:43 • (DUP) R4093939-12 07/15/24 14:52

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	0.286	U	1	200	P1	20

Laboratory Control Sample (LCS)

(LCS) R4093939-2 07/15/24 09:30

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	10.3	103	80.0-120	

L1753524-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1753524-01 07/15/24 10:24 • (MS) R4093939-3 07/15/24 10:33 • (MSD) R4093939-4 07/15/24 10:42

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	17.2	16.3	86.0	81.4	1	75.0-125			5.48	20

L1753526-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1753526-02 07/15/24 12:11 • (MS) R4093939-7 07/15/24 12:20 • (MSD) R4093939-8 07/15/24 12:29

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	11.7	13.1	58.4	65.6	1	75.0-125	J6	J6	11.6	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1753524-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1753524-01 07/15/24 10:24 • (MS) R4093939-5 07/15/24 11:09

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Hexavalent Chromium	643	U	557	86.6	50	75.0-125	

L1753526-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1753526-02 07/15/24 12:11 • (MS) R4093939-9 07/15/24 12:56

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Hexavalent Chromium	636	U	493	77.4	50	75.0-125	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1753501-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1753501-01 07/11/24 14:00 • (DUP) R4092661-2 07/11/24 14:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.57	7.54	1	0.397		1

Sample Narrative:

OS: 7.57 at 24.7C

DUP: 7.54 at 24.5C



L1753698-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1753698-04 07/11/24 14:00 • (DUP) R4092661-3 07/11/24 14:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.47	7.48	1	0.134		1

Sample Narrative:

OS: 7.47 at 23.5C

DUP: 7.48 at 23.3C

Laboratory Control Sample (LCS)

(LCS) R4092661-1 07/11/24 14:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	su	su	%	%	
pH	10.0	10.0	100	99.0-101	

Sample Narrative:

LCS: 10.01 at 22.9C

L1752191-26 Original Sample (OS) • Duplicate (DUP)

(OS) L1752191-26 07/13/24 10:48 • (DUP) R4093389-2 07/13/24 10:48

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	8.05	8.01	1	0.498		1

Sample Narrative:

OS: 8.05 at 23.1C

DUP: 8.01 at 23.2C

L1753698-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1753698-03 07/13/24 10:48 • (DUP) R4093389-3 07/13/24 10:48

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.86	7.83	1	0.382		1

Sample Narrative:

OS: 7.86 at 22.5C

DUP: 7.83 at 22.7C

Laboratory Control Sample (LCS)

(LCS) R4093389-1 07/13/24 10:48

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	su	su	%	%	
pH	10.0	10.0	100	99.0-101	

Sample Narrative:

LCS: 10 at 22.7C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1753526-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1753526-03 07/13/24 10:37 • (DUP) R4093385-2 07/13/24 10:37

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	8.15	8.18	1	0.367		1

Sample Narrative:

OS: 8.15 at 23C

DUP: 8.18 at 22.9C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1753945-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1753945-01 07/13/24 10:37 • (DUP) R4093385-3 07/13/24 10:37

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	8.21	8.19	1	0.244		1

Sample Narrative:

OS: 8.21 at 22.5C

DUP: 8.19 at 22.4C

Laboratory Control Sample (LCS)

(LCS) R4093385-1 07/13/24 10:37

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	su	su	%	%	
pH	10.0	10.0	100	99.0-101	

Sample Narrative:

LCS: 10 at 22.5C

Method Blank (MB)

(MB) R4092662-1 07/11/24 15:00

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

Sample Narrative:

BLANK: at 25C

L1753505-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1753505-03 07/11/24 15:00 • (DUP) R4092662-3 07/11/24 15:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1110	1110	1	0.000		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1753698-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1753698-01 07/11/24 15:00 • (DUP) R4092662-4 07/11/24 15:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	4810	4810	1	0.000		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R4092662-2 07/11/24 15:00

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	733	720	98.2	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4093445-1 07/13/24 13:56

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

Sample Narrative:

BLANK: at 25C

L1753501-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1753501-03 07/13/24 13:56 • (DUP) R4093445-3 07/13/24 13:56

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	504	507	1	0.593		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1753526-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1753526-02 07/13/24 13:56 • (DUP) R4093445-4 07/13/24 13:56

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	372	371	1	0.269		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R4093445-2 07/13/24 13:56

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	733	751	102	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4093448-1 07/13/24 14:21

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

Sample Narrative:

BLANK: at 25C

L1753544-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1753544-04 07/13/24 14:21 • (DUP) R4093448-3 07/13/24 14:21

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	701	707	1	0.852		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1753553-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1753553-01 07/13/24 14:21 • (DUP) R4093448-4 07/13/24 14:21

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	544	546	1	0.367		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R4093448-2 07/13/24 14:21

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	733	730	99.6	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4093621-1 07/14/24 08:27

Analyte	MB Result mg/l	<u>MB Qualifier</u>	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R4093621-2 07/14/24 08:29 • (LCSD) R4093621-3 07/14/24 08:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.02	1.02	102	102	80.0-120			0.236	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R4092282-1 07/10/24 18:45

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R4092282-2 07/10/24 18:47 • (LCSD) R4092282-3 07/10/24 18:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.04	1.03	104	103	80.0-120			0.816	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4093249-1 07/12/24 15:34

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R4093249-2 07/12/24 15:36 • (LCSD) R4093249-3 07/12/24 15:37

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.03	1.05	103	105	80.0-120			1.56	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R4098429-1 07/25/24 11:27

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50
Cadmium	U		0.0855	1.00
Copper	U		0.133	5.00
Lead	U		0.0990	2.00
Nickel	U		0.197	2.50
Selenium	U		0.180	2.50
Silver	U		0.0865	0.500
Zinc	U		0.740	25.0

Laboratory Control Sample (LCS)

(LCS) R4098429-2 07/25/24 11:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	97.5	97.5	80.0-120	
Barium	100	89.9	89.9	80.0-120	
Cadmium	100	108	108	80.0-120	
Copper	100	96.6	96.6	80.0-120	
Lead	100	95.7	95.7	80.0-120	
Nickel	100	103	103	80.0-120	
Selenium	100	102	102	80.0-120	
Silver	20.0	20.2	101	80.0-120	
Zinc	100	95.2	95.2	80.0-120	

L1752978-14 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1752978-14 07/25/24 11:33 • (MS) R4098429-5 07/25/24 11:43 • (MSD) R4098429-6 07/25/24 11:47

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	2.48	109	98.9	106	96.5	5	75.0-125			9.25	20
Barium	100	21.7	120	119	97.8	97.7	5	75.0-125			0.101	20
Cadmium	100	43.6	168	143	125	99.4	5	75.0-125			16.4	20
Copper	100	41.8	141	158	99.0	116	5	75.0-125			11.3	20
Lead	100	3.69	105	105	101	102	5	75.0-125			0.589	20
Nickel	100	8.76	119	118	111	109	5	75.0-125			1.48	20
Selenium	100	1.09	107	102	106	101	5	75.0-125			5.17	20
Silver	20.0	U	20.5	19.5	103	97.5	5	75.0-125			5.09	20
Zinc	100	474	581	1640	107	1160	5	75.0-125		J3 V	95.2	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4097930-1 07/24/24 12:29

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50
Cadmium	U		0.0855	1.00
Copper	U		0.133	5.00
Lead	U		0.0990	2.00
Nickel	U		0.197	2.50
Selenium	U		0.180	2.50
Silver	U		0.0865	0.500
Zinc	U		0.740	25.0

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

Laboratory Control Sample (LCS)

(LCS) R4097930-2 07/24/24 12:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	102	102	80.0-120	
Barium	100	109	109	80.0-120	
Cadmium	100	115	115	80.0-120	
Copper	100	107	107	80.0-120	
Lead	100	110	110	80.0-120	
Nickel	100	111	111	80.0-120	
Selenium	100	106	106	80.0-120	
Silver	20.0	23.7	119	80.0-120	
Zinc	100	102	102	80.0-120	

7
Gl

8
Al

9
Sc

L1752915-18 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1752915-18 07/24/24 12:37 • (MS) R4097930-5 07/24/24 12:47 • (MSD) R4097930-6 07/24/24 12:50

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	1.25	84.5	74.4	83.2	73.1	5	75.0-125		J6	12.7	20
Barium	100	12.5	106	95.7	93.3	83.2	5	75.0-125			9.99	20
Cadmium	100	U	95.4	89.3	95.4	89.3	5	75.0-125			6.64	20
Copper	100	31.2	119	111	88.2	79.7	5	75.0-125			7.35	20
Lead	100	204	423	392	220	189	5	75.0-125	J5	J5	7.61	20
Nickel	100	5.14	91.3	78.3	86.2	73.2	5	75.0-125		J6	15.3	20
Selenium	100	0.985	91.3	82.8	90.3	81.9	5	75.0-125			9.74	20
Silver	20.0	U	20.3	19.9	101	99.4	5	75.0-125			2.05	20
Zinc	100	15.3	97.9	86.4	82.5	71.0	5	75.0-125		J6	12.5	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.

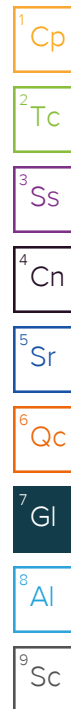
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

MDL	Method Detection Limit.
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

J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
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.



ACCREDITATIONS & LOCATIONS

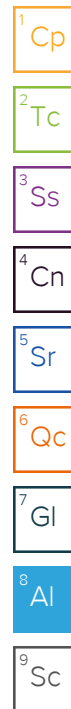
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



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