

STATE OF
COLORADO

Eschberger - DNR, Amy <amy.eschberger@state.co.us>

September 2021 Schwartzwalder Surface Water Report

Evan Valencia <evalencia@ensero.com>

Fri, Nov 19, 2021 at 8:38 AM

To: "Eschberger - DNR, Amy" <amy.eschberger@state.co.us>, "daniel.arnold@denverwater.org" <daniel.arnold@denverwater.org>, Evelyn Rhodes <erhodes@arvada.org>, "eric.mink@state.co.us" <eric.mink@state.co.us>, "bwyant@arvada.org"

<bwyant@arvada.org>

Cc: Jim Harrington <jimharrington@ensero.com>, Elizabeth Busby <ebusby@ensero.com>, Billy Ray <bray@ensero.com>

Ms. Eschberger, Mr. Mink, Mr. Arnold, Mr. Wyant, and Ms. Rhodes,

Please find attached a transmittal letter, report, and electronic deliverable (EDD) for surface water data collected in September 2021 from the Schwartzwalder Mine in Golden, Colorado.

Best,

Evan Valencia, EIT

Environmental Engineer I



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Centennial, CO 80112

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November 19, 2021

Colorado Department of Public Health and Environment
Water Quality Control Division / WQCD-B2-CAS
Compliance Assurance Section
Attention: Eric Mink
4300 Cherry Creek Drive South
Denver, CO 80246-1530

Subject: September 2021 SW-AWD and SW-BPL Surface Monitoring Data for Sampling Stations, Schwartzwalder Mine, Paragraph 26, WQCD Order Number: IO 100601-1, June 1, 2010, Schwartzwalder Mine, Golden, Colorado

Dear Mr. Mink:

Pursuant to Paragraph 26 of the above referenced Order, please find enclosed data reports from contract laboratories as received by Ensero Solutions, Inc working on behalf of Colorado Legacy Land. This data originates from the analysis of the surface water sample collected in September 2021 at the Schwartzwalder Mine, monitoring station SW-BPL. Review of the data indicates that the total and dissolved uranium concentrations at SW-BPL were below 30 µg/L. Ralston Creek was dry at monitoring station SW-AWD.

If you have any questions, please don't hesitate to contact me.

Sincerely,

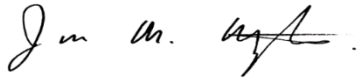
Jim Harrington, Managing Director
COLORADO LEGACY LAND
jim@ColoradoLegacy.Land

Distribution List:

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Evelyn Rhodes, City of Arvada, 1 electronic copy, erhodes@arvada.org

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Jim Harrington, Managing Director
COLORADO LEGACY LAND



September 2021 Schwartzwalder Monthly Surface Water Report

Contents:

Sample Location	Sample Date	Analysis	Sample ID	Temp (°C)	Field pH (S.U.)	Conductivity (µS/cm)	DO (mg/L)	ORP (mV)
SW-BPL	9/15/2021	Sample Suite 2	L68577-01	18.6	7.62	178.9	6.75	170.9

November 16, 2021

Report to:

Christie Brizinski
Ensero Solutions
131 E. Lincoln Ave Ste. 200
Fort Collins, CO 80524

Bill to:

Pauline Wong
Ensero Solutions
131 E. Lincoln Ave Ste. 200
Fort Collins, CO 80524

cc: Ensero/Alexco Importer, Evan Valencia

Project ID: 3100-PO205

ACZ Project ID: L68577

Christie Brizinski:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on September 17, 2021. This project has been assigned to ACZ's project number, L68577. Please reference this number in all future inquiries.

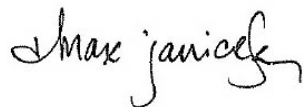
All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L68577. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

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

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

All samples and sub-samples associated with this project will be disposed of after December 16, 2021. If the samples are determined to be hazardous, additional charges apply for disposal (typically \$11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

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



Max Janicek has reviewed and
approved this report.



Ensero Solutions

Project ID: 3100-PO205

Sample ID: SW-BPL

ACZ Sample ID: **L68577-01**

Date Sampled: 09/15/21 09:25

Date Received: 09/17/21

Sample Matrix: Surface Water

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, WAD	SM4500-CN I- distillation								09/24/21 12:19	mjj1
Phosphorus, total	M365.1 - Auto Ascorbic Acid Digestion								09/23/21 10:28	bls
Total Hot Plate Digestion	M200.2 ICP-MS								09/30/21 10:00	mfm
Total Hot Plate Digestion	M200.2 ICP								09/23/21 14:12	kja
Total Recoverable Digestion	M200.2 ICP-MS								09/23/21 7:28	bsu
Total Recoverable Digestion	M200.2 ICP								09/21/21 17:15	kja

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, total recoverable	M200.8 ICP-MS	1	<0.0004	U		mg/L	0.0004	0.002	09/23/21 14:48	bsu
Arsenic, total	M200.8 ICP-MS	1	0.00326			mg/L	0.0002	0.001	10/06/21 19:09	bsu
Boron, total	M200.7 ICP	1	0.187			mg/L	0.03	0.1	09/25/21 0:27	jlw
Chromium, total recoverable	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	09/23/21 11:33	jlw
Copper, dissolved	M200.7 ICP	1	0.024	B		mg/L	0.01	0.05	10/03/21 19:30	kja
Molybdenum, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.1	10/03/21 19:30	kja
Molybdenum, total	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.1	09/25/21 0:27	jlw
Silver, dissolved	M200.8 ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	10/09/21 19:12	bsu
Thallium, total recoverable	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	09/23/21 14:48	bsu
Uranium, dissolved	M200.8 ICP-MS	1	0.0102			mg/L	0.0001	0.0005	10/09/21 19:12	bsu
Uranium, total	M200.8 ICP-MS	1	0.0125		*	mg/L	0.0001	0.0005	10/04/21 12:32	mfm
Zinc, dissolved	M200.7 ICP	1	<0.02	U	*	mg/L	0.02	0.05	10/03/21 19:30	kja

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, WAD	SM4500-CN I,E- Colorimetric w/ distillation	0.5	<0.003	U	*	mg/L	0.003	0.01	09/24/21 14:05	mjj1
Fluoride	SM4500F-C	1	<0.15	U		mg/L	0.15	0.35	10/01/21 15:58	eep
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.022	B	*	mg/L	0.02	0.1	10/02/21 23:55	pjb
Phosphate, total	Calculation based on total Phosphorus		<0.03	U		mg/L	0.03	0.2	11/16/21 0:00	calc
Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	1	<0.01	U	*	mg/L	0.01	0.05	09/28/21 17:16	mjj1
Residue, Filterable (TDS) @180C	SM2540C	1	114			mg/L	20	40	09/21/21 17:59	jck
Residue, Non-Filterable (TSS) @105C	SM2540D	1	<5	U	*	mg/L	5	20	09/22/21 10:51	scd
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	1	4.3	B	*	mg/L	1	5	09/29/21 11:11	wtc

Report Header Explanations

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

QC Sample Types

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

QC Sample Type Explanations

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

ACZ Qualifiers (Qual)

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

Method References

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

Comments

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

For a complete list of ACZ's Extended Qualifiers, please click:

<https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf>

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ACZ Project ID: **L68577**

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

Antimony, total recoverable

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527894													
WG527894ICV	ICV	09/23/21 14:24	MS210727-2	.0201		.0189	mg/L	94	90	110			
WG527894ICB	ICB	09/23/21 14:26				U	mg/L		-0.0012	0.0012			
WG527768LRB	LRB	09/23/21 14:28				U	mg/L		-0.00088	0.00088			
WG527768LFB	LFB	09/23/21 14:29	MS210827-2	.01		.01038	mg/L	104	85	115			
L68510-01LFM	LFM	09/23/21 14:37	MS210827-2	.01	U	.01046	mg/L	105	70	130			
L68510-01LFMD	LFMD	09/23/21 14:38	MS210827-2	.01	U	.01054	mg/L	105	70	130	1	20	
WG527894CCV	CCV	09/23/21 14:42	MS210909-2	.0125		.01228	mg/L	98	90	110			
WG527894CCB	CCB	09/23/21 14:44				U	mg/L		-0.0012	0.0012			
WG527894CCV1	CCV	09/23/21 14:51	MS210909-2	.0125		.01239	mg/L	99	90	110			
WG527894CCB1	CCB	09/23/21 14:53				U	mg/L		-0.0012	0.0012			

Arsenic, total

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528847													
WG528847ICV	ICV	10/06/21 18:48	MS211001-2	.05		.05058	mg/L	101	90	110			
WG528847ICB	ICB	10/06/21 18:49				U	mg/L		-0.0006	0.0006			
WG528847CCV1	CCV	10/06/21 19:01	MS210909-2	.1001		.10075	mg/L	101	90	110			
WG528847CCB1	CCB	10/06/21 19:02				U	mg/L		-0.0006	0.0006			
WG528367LRB	LRB	10/06/21 19:04				U	mg/L		-0.00044	0.00044			
WG528367LFB	LFB	10/06/21 19:06	MS210927-3	.05005		.04973	mg/L	99	85	115			
L68594-01LFM	LFM	10/06/21 19:12	MS210927-3	.05005	U	.04847	mg/L	97	70	130			
L68594-01LFMD	LFMD	10/06/21 19:14	MS210927-3	.05005	U	.04812	mg/L	96	70	130	1	20	
WG528847CCV2	CCV	10/06/21 19:20	MS210909-2	.1001		.09852	mg/L	98	90	110			
WG528847CCB2	CCB	10/06/21 19:22				U	mg/L		-0.0006	0.0006			
WG528847CCV3	CCV	10/06/21 19:28	MS210909-2	.1001		.09788	mg/L	98	90	110			
WG528847CCB3	CCB	10/06/21 19:30				U	mg/L		-0.0006	0.0006			

Boron, total

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527973													
WG527973ICV	ICV	09/24/21 23:22	II210923-1	2		1.978	mg/L	99	95	105			
WG527973ICB	ICB	09/24/21 23:28				U	mg/L		-0.09	0.09			
WG527973PQV	PQV	09/24/21 23:31	II210901-4	.1001		.105	mg/L	105	70	130			
WG527973SIC	SIC	09/24/21 23:34	II210901-6	.1001		.096	mg/L	96	80	120			
WG527852LRB	LRB	09/24/21 23:41				U	mg/L		-0.066	0.066			
WG527852LFB	LFB	09/24/21 23:44	II210910-2	.5005		.512	mg/L	102	85	115			
L68552-02LFM	LFM	09/24/21 23:58	II210910-2	.5005	U	.517	mg/L	103	70	130			
L68552-02LFMD	LFMD	09/25/21 0:01	II210910-2	.5005	U	.514	mg/L	103	70	130	1	20	
WG527973CCV1	CCV	09/25/21 0:14	II210912-1	1		.969	mg/L	97	90	110			
WG527973CCB1	CCB	09/25/21 0:17				U	mg/L		-0.09	0.09			
WG527973CCV2	CCV	09/25/21 0:53	II210912-1	1		.985	mg/L	99	90	110			
WG527973CCB2	CCB	09/25/21 0:56				U	mg/L		-0.09	0.09			
WG527973CCV3	CCV	09/25/21 1:16	II210912-1	1		.972	mg/L	97	90	110			
WG527973CCB3	CCB	09/25/21 1:19				U	mg/L		-0.09	0.09			

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ACZ Project ID: **L68577**

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

Chromium, total recoverable

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527790													
WG527790ICV	ICV	09/23/21 9:48	II210916-1	2		2.008	mg/L	100	95	105			
WG527790ICB	ICB	09/23/21 9:55				U	mg/L		-0.06	0.06			
WG527790PQV	PQV	09/23/21 9:58	II210901-4	.0502		.055	mg/L	110	70	130			
WG527790SIC	SIC	09/23/21 10:01	II210907-1	.1004		.092	mg/L	92	80	120			
WG527631LRB	LRB	09/23/21 10:08				U	mg/L		-0.044	0.044			
WG527631LFB	LFB	09/23/21 10:11	II210910-2	.5005		.507	mg/L	101	85	115			
WG527790CCV1	CCV	09/23/21 10:40	II210916-2	1		1.032	mg/L	103	90	110			
WG527790CCB1	CCB	09/23/21 10:44				U	mg/L		-0.06	0.06			
WG527790CCV2	CCV	09/23/21 11:20	II210916-2	1		1.03	mg/L	103	90	110			
WG527790CCB2	CCB	09/23/21 11:23				U	mg/L		-0.06	0.06			
L68581-01LFM	LFM	09/23/21 11:39	II210910-2	.5005	U	.529	mg/L	106	70	130			
L68581-01LFMD	LFMD	09/23/21 11:42	II210910-2	.5005	U	.54	mg/L	108	70	130	2	20	
WG527790CCV3	CCV	09/23/21 11:46	II210916-2	1		1.031	mg/L	103	90	110			
WG527790CCB3	CCB	09/23/21 11:49				U	mg/L		-0.06	0.06			

Copper, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528409													
WG528409ICV	ICV	10/03/21 19:03	II211001-1	2		1.973	mg/L	99	95	105			
WG528409ICB	ICB	10/03/21 19:09				U	mg/L		-0.03	0.03			
WG528409PQV	PQV	10/03/21 19:12	II211003-2	.05		.05	mg/L	100	70	130			
WG528409SIC	SIC	10/03/21 19:15	II210907-1	.1		.11	mg/L	110	80	120			
WG528409LFB	LFB	10/03/21 19:21	II210910-2	.5		.528	mg/L	106	85	115			
L68581-01AS	AS	10/03/21 19:36	II210910-2	.5	U	.544	mg/L	109	85	115			
L68581-01ASD	ASD	10/03/21 19:39	II210910-2	.5	U	.56	mg/L	112	85	115	3	20	
WG528409CCV1	CCV	10/03/21 19:51	II211001-2	1		.998	mg/L	100	90	110			
WG528409CCB1	CCB	10/03/21 19:54				U	mg/L		-0.03	0.03			
WG528409CCV2	CCV	10/03/21 20:28	II211001-2	1		.989	mg/L	99	90	110			
WG528409CCB2	CCB	10/03/21 20:31				U	mg/L		-0.03	0.03			
WG528409CCV3	CCV	10/03/21 20:49	II211001-2	1		1.004	mg/L	100	90	110			
WG528409CCB3	CCB	10/03/21 20:52				U	mg/L		-0.03	0.03			

ENSERO

ACZ Project ID: **L68577**

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

Cyanide, WAD

SM4500-CN I,E-Colorimetric w/ distillation

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527970													
WG527970ICV	ICV	09/24/21 13:43	WI210913-7	.3		.297	mg/L	99	90	110			
WG527970ICB	ICB	09/24/21 13:44				U	mg/L		-0.003	0.003			
WG527846LRB	LRB	09/24/21 13:44				U	mg/L		-0.003	0.003			
WG527846LFB	LFB	09/24/21 13:45	WI210913-4	.2		.1935	mg/L	97	90	110			
WG527970CCV1	CCV	09/24/21 13:53	WI210913-6	.25		.2501	mg/L	100	90	110			
WG527970CCB1	CCB	09/24/21 13:54				U	mg/L		-0.003	0.003			
L68551-01LFM	LFM	09/24/21 14:00	WI210913-4	.2	U	.19	mg/L	95	90	110			
WG527970CCV2	CCV	09/24/21 14:03	WI210913-6	.25		.2486	mg/L	99	90	110			
WG527970CCB2	CCB	09/24/21 14:04				U	mg/L		-0.003	0.003			
WG527970CCV3	CCV	09/24/21 14:13	WI210913-6	.25		.2523	mg/L	101	90	110			
WG527970CCB3	CCB	09/24/21 14:14				U	mg/L		-0.003	0.003			
WG527970ICV1	ICV	09/24/21 14:40	WI210913-7	.3		.2975	mg/L	99	90	110			
WG527970ICB1	ICB	09/24/21 14:41				U	mg/L		-0.003	0.003			
L68525-01DUP	DUP	09/24/21 14:45			.0121	U	mg/L				200	20	RA
WG527970CCV4	CCV	09/24/21 14:47	WI210913-6	.25		.2485	mg/L	99	90	110			
WG527970CCB4	CCB	09/24/21 14:48				U	mg/L		-0.003	0.003			
WG527970ICV2	ICV	09/24/21 15:23	WI210913-7	.3		.2982	mg/L	99	90	110			
WG527970ICB2	ICB	09/24/21 15:24				U	mg/L		-0.003	0.003			
WG527970CCV5	CCV	09/24/21 15:27	WI210913-6	.25		.2488	mg/L	100	90	110			
WG527970CCB5	CCB	09/24/21 15:28				U	mg/L		-0.003	0.003			

Fluoride

SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528471													
WG528471ICV	ICV	10/01/21 12:42	WC210920-1	2.002		2.15	mg/L	107	90	110			
WG528471ICB	ICB	10/01/21 12:47				U	mg/L		-0.3	0.3			
WG528471PQV	PQV	10/01/21 12:51	WC210803-3	.3514		.4	mg/L	114	70	130			
WG528471LFB1	LFB	10/01/21 12:54	WC210803-9	5.02		5.09	mg/L	101	90	110			
WG528471CCV1	CCV	10/01/21 13:48	WC210920-1	2.002		2.05	mg/L	102	90	110			
WG528471CCB1	CCB	10/01/21 13:54				U	mg/L		-0.3	0.3			
L68526-02AS	AS	10/01/21 14:51	WC210803-9	5.02	1.05	6.04	mg/L	99	90	110			
L68526-02ASD	ASD	10/01/21 14:59	WC210803-9	5.02	1.05	5.98	mg/L	98	90	110	1	20	
WG528471CCV2	CCV	10/01/21 15:10	WC210920-1	2.002		2.17	mg/L	108	90	110			
WG528471CCB2	CCB	10/01/21 15:18				U	mg/L		-0.3	0.3			
WG528471LFB2	LFB	10/01/21 16:02	WC210803-9	5.02		5.16	mg/L	103	90	110			
WG528471CCV3	CCV	10/01/21 16:37	WC210920-1	2.002		2.15	mg/L	107	90	110			
WG528471CCB3	CCB	10/01/21 16:45				U	mg/L		-0.3	0.3			
WG528471CCV4	CCV	10/01/21 18:09	WC210920-1	2.002		2.15	mg/L	107	90	110			
WG528471CCB4	CCB	10/01/21 18:17				U	mg/L		-0.3	0.3			
WG528471CCV5	CCV	10/01/21 19:41	WC210920-1	2.002		2.11	mg/L	105	90	110			
WG528471CCB5	CCB	10/01/21 19:49				U	mg/L		-0.3	0.3			

ENSERO

ACZ Project ID: **L68577**

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

Molybdenum, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528409													
WG528409ICV	ICV	10/03/21 19:03	II211001-1	2		2.011	mg/L	101	95	105			
WG528409ICB	ICB	10/03/21 19:09				U	mg/L		-0.06	0.06			
WG528409PQV	PQV	10/03/21 19:12	II211003-2	.1002		.099	mg/L	99	70	130			
WG528409SIC	SIC	10/03/21 19:15	II210907-1	.1002		.09	mg/L	90	80	120			
WG528409LFB	LFB	10/03/21 19:21	II210910-2	.501		.535	mg/L	107	85	115			
L68581-01AS	AS	10/03/21 19:36	II210910-2	.501	U	.533	mg/L	106	85	115			
L68581-01ASD	ASD	10/03/21 19:39	II210910-2	.501	U	.551	mg/L	110	85	115	3	20	
WG528409CCV1	CCV	10/03/21 19:51	II211001-2	1		1.025	mg/L	103	90	110			
WG528409CCB1	CCB	10/03/21 19:54				U	mg/L		-0.06	0.06			
WG528409CCV2	CCV	10/03/21 20:28	II211001-2	1		1.002	mg/L	100	90	110			
WG528409CCB2	CCB	10/03/21 20:31				U	mg/L		-0.06	0.06			
WG528409CCV3	CCV	10/03/21 20:49	II211001-2	1		1.011	mg/L	101	90	110			
WG528409CCB3	CCB	10/03/21 20:52				U	mg/L		-0.06	0.06			

Molybdenum, total

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527973													
WG527973ICV	ICV	09/24/21 23:22	II210923-1	2		1.986	mg/L	99	95	105			
WG527973ICB	ICB	09/24/21 23:28				U	mg/L		-0.06	0.06			
WG527973PQV	PQV	09/24/21 23:31	II210901-4	.1002		.103	mg/L	103	70	130			
WG527973SIC	SIC	09/24/21 23:34	II210901-6	.1002		.089	mg/L	89	80	120			
WG527852LRB	LRB	09/24/21 23:41				U	mg/L		-0.044	0.044			
WG527852LFB	LFB	09/24/21 23:44	II210910-2	.501		.51	mg/L	102	85	115			
L68552-02LFM	LFM	09/24/21 23:58	II210910-2	.501	U	.505	mg/L	101	70	130			
L68552-02LFMD	LFMD	09/25/21 0:01	II210910-2	.501	U	.501	mg/L	100	70	130	1	20	
WG527973CCV1	CCV	09/25/21 0:14	II210912-1	1		.974	mg/L	97	90	110			
WG527973CCB1	CCB	09/25/21 0:17				U	mg/L		-0.06	0.06			
WG527973CCV2	CCV	09/25/21 0:53	II210912-1	1		.99	mg/L	99	90	110			
WG527973CCB2	CCB	09/25/21 0:56				U	mg/L		-0.06	0.06			
WG527973CCV3	CCV	09/25/21 1:16	II210912-1	1		.971	mg/L	97	90	110			
WG527973CCB3	CCB	09/25/21 1:19				U	mg/L		-0.06	0.06			

ENSERO

ACZ Project ID: **L68577**

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

Nitrate/Nitrite as N

M353.2 - H2SO4 preserved

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528526													
WG528526ICV	ICV	10/02/21 21:12	WI210904-1	2.4161		2.375	mg/L	98	90	110			
WG528526ICB	ICB	10/02/21 21:13				U	mg/L		-0.02	0.02			
WG528529													
WG528529CCV1	CCV	10/02/21 23:46	WI211002-1	2		2.064	mg/L	103	90	110			
WG528529CCB1	CCB	10/02/21 23:50				U	mg/L		-0.02	0.02			
WG528529LFB	LFB	10/02/21 23:51	WI211001-5	2		2.048	mg/L	102	90	110			
L41361-202AS	AS	10/02/21 23:53	WI211001-5	2		2.103	mg/L	105	90	110			
L68577-01DUP	DUP	10/02/21 23:56			.022	.025	mg/L				13	20	RA
WG528529CCV2	CCV	10/03/21 0:03	WI211002-1	2		2.063	mg/L	103	90	110			
WG528529CCB2	CCB	10/03/21 0:07				U	mg/L		-0.02	0.02			
WG528529CCV3	CCV	10/03/21 0:20	WI211002-1	2		2.052	mg/L	103	90	110			
WG528529CCB3	CCB	10/03/21 0:24				U	mg/L		-0.02	0.02			
WG528529CCV4	CCV	10/03/21 0:37	WI211002-1	2		2.054	mg/L	103	90	110			
WG528529CCB4	CCB	10/03/21 0:40				U	mg/L		-0.02	0.02			
WG528529CCV5	CCV	10/03/21 0:46	WI211002-1	2		2.04	mg/L	102	90	110			
WG528529CCB5	CCB	10/03/21 0:49				U	mg/L		-0.02	0.02			
WG528529CCV6	CCV	10/03/21 0:53	WI211002-1	2		2.041	mg/L	102	90	110			
WG528529CCB6	CCB	10/03/21 0:56				U	mg/L		-0.02	0.02			

Phosphorus, total

M365.1 - Auto Ascorbic Acid (digest)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528205													
WG528205ICV	ICV	09/28/21 17:08	WI210831-6	.65228		.681	mg/L	104	90	110			
WG528205ICB	ICB	09/28/21 17:11				U	mg/L		-0.01	0.01			
WG527859LRB	LRB	09/28/21 17:12				U	mg/L		-0.01	0.01			
WG527859LFB	LFB	09/28/21 17:13	WI210921-14	1		.922	mg/L	92	90	110			
L68524-01LFM	LFM	09/28/21 17:15	WI210921-14	1	.014	.915	mg/L	90	90	110			
L68577-01DUP	DUP	09/28/21 17:17			U	U	mg/L				0	20	RA
WG528205CCV1	CCV	09/28/21 17:23	WI210831-5	.5		.5	mg/L	100	90	110			
WG528205CCB1	CCB	09/28/21 17:24				U	mg/L		-0.01	0.01			
WG528205CCV2	CCV	09/28/21 17:29	WI210831-5	.5		.494	mg/L	99	90	110			
WG528205CCB2	CCB	09/28/21 17:30				U	mg/L		-0.01	0.01			

Residue, Filterable (TDS) @180C

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527713													
WG527713PBW	PBW	09/21/21 17:05				U	mg/L		-20	20			
WG527713LCSW	LCSW	09/21/21 17:07	PCN64134	1000		994	mg/L	99	80	120			
L68594-01DUP	DUP	09/21/21 18:05			12800	12640	mg/L				1	10	

Residue, Non-Filterable (TSS) @105C

SM2540D

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527762													
WG527762PBW	PBW	09/22/21 10:30				U	mg/L		-2	2			
WG527762LCSW	LCSW	09/22/21 10:31	PCN64134	100		87	mg/L	87	80	120			
L68577-01DUP	DUP	09/22/21 10:53			U	U	mg/L				0	10	RA

ENSERO

ACZ Project ID: **L68577**

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

Silver, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529064													
WG529064ICV	ICV	10/09/21 19:07	MS211001-2	.02		.01947	mg/L	97	90	110			
WG529064ICB	ICB	10/09/21 19:08				U	mg/L		-0.00022	0.00022			
WG529064LFB	LFB	10/09/21 19:10	MS210927-3	.01		.00974	mg/L	97	85	115			
WG529064CCV1	CCV	10/09/21 19:24	MS210909-2	.02505		.02595	mg/L	104	90	110			
WG529064CCB1	CCB	10/09/21 19:25				U	mg/L		-0.0003	0.0003			
L68633-08AS	AS	10/09/21 19:30	MS210927-3	.01	U	.00735	mg/L	74	70	130			
L68633-08ASD	ASD	10/09/21 19:32	MS210927-3	.01	U	.00673	mg/L	67	70	130	9	20	M2 ZA
WG529064CCV2	CCV	10/09/21 19:44	MS210909-2	.02505		.02592	mg/L	103	90	110			
WG529064CCB2	CCB	10/09/21 19:46				U	mg/L		-0.0003	0.0003			
WG529064CCV3	CCV	10/09/21 19:59	MS210909-2	.02505		.02494	mg/L	100	90	110			
WG529064CCB3	CCB	10/09/21 20:01				U	mg/L		-0.0003	0.0003			

Sulfate

D516-02/-07/-11 - TURBIDIMETRIC

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528257													
WG528257ICB	ICB	09/29/21 10:45				U	mg/L		-3	3			
WG528257ICV	ICV	09/29/21 10:45	WI210923-1	20.46		19.3	mg/L	94	90	110			
WG528257CCV1	CCV	09/29/21 11:11	WI210923-2	25		25.1	mg/L	100	90	110			
WG528257CCB1	CCB	09/29/21 11:11				U	mg/L		-3	3			
WG528257LFB	LFB	09/29/21 11:11	WI210105-3	10		10.1	mg/L	101	90	110			
L67718-07DUP	DUP	09/29/21 11:11			U	U	mg/L				0	20	RA
WG528257CCV2	CCV	09/29/21 11:13	WI210923-2	25		25.1	mg/L	100	90	110			
WG528257CCB2	CCB	09/29/21 11:13				U	mg/L		-3	3			
WG528257CCV3	CCV	09/29/21 11:14	WI210923-2	25		24.7	mg/L	99	90	110			
WG528257CCB3	CCB	09/29/21 11:14				U	mg/L		-3	3			
WG528257CCV4	CCV	09/29/21 11:58	WI210923-2	25		25.5	mg/L	102	90	110			
WG528257CCB4	CCB	09/29/21 11:58				U	mg/L		-3	3			
L67719-07AS	AS	09/29/21 11:58	SO4TURB20X	10	375	377.1	mg/L	21	90	110			M3
WG528257CCV5	CCV	09/29/21 12:01	WI210923-2	25		25.3	mg/L	101	90	110			
WG528257CCB5	CCB	09/29/21 12:01				U	mg/L		-3	3			
WG528257CCV6	CCV	09/29/21 12:05	WI210923-2	25		24.2	mg/L	97	90	110			
WG528257CCB6	CCB	09/29/21 12:05				U	mg/L		-3	3			
WG528257CCV7	CCV	09/29/21 12:07	WI210923-2	25		24.8	mg/L	99	90	110			
WG528257CCB7	CCB	09/29/21 12:07				U	mg/L		-3	3			
WG528257CCV8	CCV	09/29/21 12:18	WI210923-2	25		25.5	mg/L	102	90	110			
WG528257CCB8	CCB	09/29/21 12:18				U	mg/L		-3	3			
WG528257CCV9	CCV	09/29/21 12:20	WI210923-2	25		24.6	mg/L	98	90	110			
WG528257CCB9	CCB	09/29/21 12:20				U	mg/L		-3	3			
WG528257CCV10	CCV	09/29/21 12:22	WI210923-2	25		25.3	mg/L	101	90	110			
WG528257CCB10	CCB	09/29/21 12:22				U	mg/L		-3	3			

ENSERO

ACZ Project ID: **L68577**

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

Thallium, total recoverable

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527894													
WG527894ICV	ICV	09/23/21 14:24	MS210727-2	.05		.05156	mg/L	103	90	110			
WG527894ICB	ICB	09/23/21 14:26				U	mg/L		-0.0003	0.0003			
WG527768LRB	LRB	09/23/21 14:28				U	mg/L		-0.00022	0.00022			
WG527768LFB	LFB	09/23/21 14:29	MS210827-2	.05		.04574	mg/L	91	85	115			
L68510-01LFM	LFM	09/23/21 14:37	MS210827-2	.05	U	.04689	mg/L	94	70	130			
L68510-01LFMD	LFMD	09/23/21 14:38	MS210827-2	.05	U	.04664	mg/L	93	70	130	1	20	
WG527894CCV	CCV	09/23/21 14:42	MS210909-2	.1		.10077	mg/L	101	90	110			
WG527894CCB	CCB	09/23/21 14:44				U	mg/L		-0.0003	0.0003			
WG527894CCV1	CCV	09/23/21 14:51	MS210909-2	.1		.10184	mg/L	102	90	110			
WG527894CCB1	CCB	09/23/21 14:53				U	mg/L		-0.0003	0.0003			

Uranium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529064													
WG529064ICV	ICV	10/09/21 19:07	MS211001-2	.05		.05086	mg/L	102	90	110			
WG529064ICB	ICB	10/09/21 19:08				U	mg/L		-0.00022	0.00022			
WG529064LFB	LFB	10/09/21 19:10	MS210927-3	.05		.0501	mg/L	100	85	115			
WG529064CCV1	CCV	10/09/21 19:24	MS210909-2	.1		.09792	mg/L	98	90	110			
WG529064CCB1	CCB	10/09/21 19:25				U	mg/L		-0.0003	0.0003			
L68633-08AS	AS	10/09/21 19:30	MS210927-3	.05	.00017	.05179	mg/L	103	70	130			
L68633-08ASD	ASD	10/09/21 19:32	MS210927-3	.05	.00017	.05113	mg/L	102	70	130	1	20	
WG529064CCV2	CCV	10/09/21 19:44	MS210909-2	.1		.09969	mg/L	100	90	110			
WG529064CCB2	CCB	10/09/21 19:46				U	mg/L		-0.0003	0.0003			
WG529064CCV3	CCV	10/09/21 19:59	MS210909-2	.1		.09888	mg/L	99	90	110			
WG529064CCB3	CCB	10/09/21 20:01				U	mg/L		-0.0003	0.0003			

Uranium, total

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528509													
WG528509ICV	ICV	10/04/21 12:18	MS211001-2	.05		.05197	mg/L	104	90	110			
WG528509ICB	ICB	10/04/21 12:20				U	mg/L		-0.0003	0.0003			
WG528367LRB	LRB	10/04/21 12:25				U	mg/L		-0.00022	0.00022			
WG528367LFB	LFB	10/04/21 12:27	MS210927-3	.05		.0505	mg/L	101	85	115			
L68594-01LFM	LFM	10/04/21 12:36	MS210927-3	.05	U	.0666	mg/L	133	70	130			M1
L68594-01LFMD	LFMD	10/04/21 12:38	MS210927-3	.05	U	.06655	mg/L	133	70	130	0	20	M1
WG528509CCV1	CCV	10/04/21 12:43	MS210909-2	.1		.10609	mg/L	106	90	110			
WG528509CCB1	CCB	10/04/21 12:45				U	mg/L		-0.0003	0.0003			
WG528509ICV1	ICV	10/04/21 13:42	MS211001-2	.05		.05239	mg/L	105	90	110			
WG528509ICB1	ICB	10/04/21 13:44				U	mg/L		-0.0003	0.0003			
WG528509CCV2	CCV	10/04/21 14:04	MS210909-2	.1		.09842	mg/L	98	90	110			
WG528509CCB2	CCB	10/04/21 14:06				U	mg/L		-0.0003	0.0003			
WG528509CCV3	CCV	10/04/21 14:18	MS210909-2	.1		.10272	mg/L	103	90	110			
WG528509CCB3	CCB	10/04/21 14:20				U	mg/L		-0.0003	0.0003			

ENSERO

ACZ Project ID: **L68577**

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

Zinc, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528409													
WG528409ICV	ICV	10/03/21 19:03	II211001-1	2		1.93	mg/L	97	95	105			
WG528409ICB	ICB	10/03/21 19:09				U	mg/L		-0.06	0.06			
WG528409PQV	PQV	10/03/21 19:12	II211003-2	.05015		.047	mg/L	94	70	130			
WG528409SIC	SIC	10/03/21 19:15	II210907-1	.1003		.092	mg/L	92	80	120			
WG528409LFB	LFB	10/03/21 19:21	II210910-2	.50045		.537	mg/L	107	85	115			
L68581-01AS	AS	10/03/21 19:36	II210910-2	.50045	U	.553	mg/L	111	85	115			
L68581-01ASD	ASD	10/03/21 19:39	II210910-2	.50045	U	.581	mg/L	116	85	115	5	20	MA
WG528409CCV1	CCV	10/03/21 19:51	II211001-2	1		1.003	mg/L	100	90	110			
WG528409CCB1	CCB	10/03/21 19:54				U	mg/L		-0.06	0.06			
WG528409CCV2	CCV	10/03/21 20:28	II211001-2	1		.966	mg/L	97	90	110			
WG528409CCB2	CCB	10/03/21 20:31				U	mg/L		-0.06	0.06			
WG528409CCV3	CCV	10/03/21 20:49	II211001-2	1		.999	mg/L	100	90	110			
WG528409CCB3	CCB	10/03/21 20:52				U	mg/L		-0.06	0.06			

Ensero Solutions

ACZ Project ID: **L68577**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68577-01	WG527970	Cyanide, WAD	SM4500-CN I,E-Colorimetric w/ distillation	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528529	Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528205	Phosphorus, total	M365.1 - Auto Ascorbic Acid (digest)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527762	Residue, Non-Filterable (TSS) @105C	SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			SM2540D	Z3	Sample volume yielded a residue less than 2.5 mg
	WG529064	Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG528257	Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02/-07/-11 - TURBIDIMETRIC	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528509	Uranium, total	M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528409	Zinc, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.

Ensero Solutions

Project ID: 3100-PO205

Sample ID: SW-BPL

Locator:

ACZ Sample ID: **L68577-01**

Date Sampled: 09/15/21 9:25

Date Received: 09/17/21

Sample Matrix: *Surface Water*

Combined Radium (total)

Prep Method:

Calculation (RA226 + RA228)

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Combined Radium (total)	11/16/21 10:04		0			pCi/L		calc

Gross Alpha & Beta, total

Prep Method:

M900.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	10/22/21 0:04		3.8	2.1	5.9	pCi/L		ess
Gross Beta	10/22/21 0:04		10	3.4	7.6	pCi/L	*	ess

Radium 226, total

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, total	11/15/21 0:04		0.12	0.15	0.54	pCi/L	*	ess/amk

Radium 228, total

Prep Method:

M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, total	10/17/21 17:55		0.43	0.8	2	pCi/L	*	ess

Report Header Explanations

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Error(+/-)</i>	Calculated sample specific uncertainty
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>LCL</i>	Lower Control Limit, in % (except for LCSS, mg/Kg)
<i>LLD</i>	Calculated sample specific Lower Limit of Detection
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RER</i>	Relative Error Ratio, calculation used for Dup. QC taking into account the error factor.
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>UCL</i>	Upper Control Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

QC Sample Types

<i>DUP</i>	Sample Duplicate	<i>MS/MSD</i>	Matrix Spike/Matrix Spike Duplicate
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBS</i>	Prep Blank - Soil
<i>LCSW</i>	Laboratory Control Sample - Water	<i>PBW</i>	Prep Blank - Water

QC Sample Type Explanations

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

ACZ Qualifiers (Qual)

H	Analysis exceeded method hold time.
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Method Prefix Reference

M	EPA methodology, including those under SDWA, CWA, and RCRA
SM	Standard Methods for the Examination of Water and Wastewater.
D	ASTM
RP	DOE
ESM	DOE/ESM

Comments

- (1) Solid matrices are reported on a dry weight basis.
- (2) Preparation method: "Method" indicates preparation defined in analytical method.
- (3) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

For a complete list of ACZ's Extended Qualifiers, please click:

<https://aczk.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf>

ENSERO

ACZ Project ID: **L68577**

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

Alpha		M900.0										Units: pCi/L				
ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG529515																
WG529515PBW	PBW	10/22/21						.95	1	4.1			8.2			
WG529515LCSWA	LCSW	10/22/21	PCN64375	100				100	8.7	7.8	100	67	144			
L68577-01MSA	MS	10/22/21	PCN64375	100	3.8	2.1	5.9	100	9.5	5.7	96	67	144			
L68581-01DUP	DUP-RPD	10/22/21			6.9	2.8	16	7.6	2.9	17				10	20	
L68828-02DUP	DUP-RPD	10/22/21			0.99	2.1	9.4	3.4	2.4	8.6				110	20	RG
L68828-02DUP	DUP-RER	10/22/21			0.99	2.1	9.4	3.4	2.4	8.6				0.76	2	

Beta		M900.0										Units: pCi/L				
ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG529515																
WG529515PBW	PBW	10/22/21						1.6	3.1	10			20			
WG529515LCSWB	LCSW	10/22/21	RC210621-11	49.9				55	5.3	10	110	82	122			
L68581-01DUP	DUP-RPD	10/22/21			5	3.4	21	2.4	3	22				70	20	RG
L68581-01DUP	DUP-RER	10/22/21			5	3.4	21	2.4	3	22				0.57	2	
L68667-01MSB	MS	10/22/21	RC210621-11	49.9	17	4	8.5	77	6.4	6.4	120	82	122			
L68828-02DUP	DUP-RPD	10/22/21			7.1	3.4	8.1	5.6	3.6	9.8				24	20	RG
L68828-02DUP	DUP-RER	10/22/21			7.1	3.4	8.1	5.6	3.6	9.8				0.3	2	

Radium 226, total		M903.1										Units: pCi/L				
ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG531146																
WG531146LCSW	LCSW	11/15/21	PCN64374	20				26	0.65	0.44	130	43	148			
WG531146PBW	PBW	11/15/21						.09	0.08	0.45			0.9			
L68577-01DUP	DUP-RPD	11/15/21			0.12	0.15	0.54	.24	0.13	0.52				67	20	RG
L68577-01DUP	DUP-RER	11/15/21			0.12	0.15	0.54	.24	0.13	0.52				0.6	2	
L68700-01MS	MS	11/15/21	PCN64374	20	17	0.52	0.41	36	0.7	0.4	95	43	148			
L68774-01DUP	DUP-RPD	11/15/21			0.26	0.1	0.32	.29	0.09	0.3				11	20	

ENSERO

ACZ Project ID: **L68577**

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

Radium 228, total

M904.0

Units: pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG529052																
WG529052LCSW	LCSW	10/17/21	PCN63356	9.36				10	1	0.64	107	47	123			
WG529052PBW	PBW	10/17/21						.11	0.4	0.41			0.82			
L68577-01DUP	DUP-RER	10/17/21			0.43	0.8	2	.2	0.99	2.4				0.18	2	
L68577-01DUP	DUP-RPD	10/17/21			0.43	0.8	2	.2	0.99	2.4				73	20	RG
L68703-04MS	MS	10/17/21	PCN63356	9.36	0.69	0.6	1.5	8.6	1.1	1.9	85	47	123			
L68774-01DUP	DUP-RPD	10/17/21			1	0.91	2	2	0.65	1.5				67	20	RG
L68774-01DUP	DUP-RER	10/17/21			1	0.91	2	2	0.65	1.5				0.89	2	

Ensero Solutions

ACZ Project ID: **L68577**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68577-01	WG529515	Gross Beta	M900.0	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG531146	Radium 226, total	M903.1	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG529052	Radium 228, total	M904.0	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.

Ensero Solutions

ACZ Project ID: **L68577**

No certification qualifiers associated with this analysis

Ensero Solutions
3100-PO205

ACZ Project ID: L68577
Date Received: 09/17/2021 10:21
Received By:
Date Printed: 9/20/2021

Receipt Verification

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

Samples/Containers

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

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Temp Criteria (°C)	Rad (µR/Hr)	Custody Seal Intact?
-----	-----	-----	-----	-----
5168	2.6	<=6.0	15	N/A

Was ice present in the shipment container(s)?

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

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

Ensero Solutions
3100-PO205

ACZ Project ID: L68577

Date Received: 09/17/2021 10:21

Received By:

Date Printed: 9/20/2021

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

