

March 25, 2022

Report to:
Kent Applegate
Rio Algom Mining Company
P.O. Box 218
Grants, NM 87020

Bill to:
Accounts Payable
Rio Algom Mining Company
P.O. Box 218
Grants, NM 87020

cc: Michaella Gorospe, jcarroll, Jeremy Scott Collyard, Marcus Powell, Sharon Clouse, Drew Werth, Casandra Woodward, Shubhangi Agarwal, Anupama Subbakrishna, Revathi Ekambaram, Clark Short, Angela Pe

Project ID: 4512060294
ACZ Project ID: L71281

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 07, 2022. This project has been assigned to ACZ's project number, L71281. 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 L71281. 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 April 24, 2022. 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.



Scott Habermehl has reviewed
and approved this report.



Rio Algom Mining Company

March 25, 2022

Project ID: 4512060294

ACZ Project ID: L71281

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 1 groundwater sample from Rio Algom Mining Company on February 7, 2022. The sample was received in good condition. Upon receipt, the sample custodian removed the sample from the cooler, inspected the contents, and logged the sample into ACZ's computerized Laboratory Information Management System (LIMS). The sample was assigned ACZ LIMS project number L71281. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

Any analyses not performed within EPA recommended holding times have been qualified with an "H" flag.

Sample Analysis

This sample was analyzed for inorganic, radiochemistry parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. (N1) Applies to: L71281-01/CYANIDE

Prior analyses performed while troubleshooting the instrument. Reanalysis after resolving the instrument issues is likely to be more representative of the true values and should be favored over historic data from previous runs.

Rio Algom Mining Company

Project ID: 4512060294
 Sample ID: 32-04-TRA-02022022

ACZ Sample ID: **L71281-01**
 Date Sampled: 02/02/22 11:15
 Date Received: 02/07/22
 Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1	<0.05	U		mg/L	0.05	0.25	02/16/22 15:28	jlw
Antimony, dissolved	M200.8 ICP-MS	1	0.00058	B		mg/L	0.0004	0.002	02/08/22 18:26	bsu
Arsenic, dissolved	M200.8 ICP-MS	1	0.00090	B		mg/L	0.0002	0.001	02/08/22 18:26	bsu
Barium, dissolved	M200.7 ICP	1	0.0164	B		mg/L	0.007	0.035	02/16/22 15:28	jlw
Beryllium, dissolved	M200.8 ICP-MS	1	<0.00008	U		mg/L	0.00008	0.00025	02/08/22 18:26	bsu
Boron, dissolved	M200.7 ICP	1	0.406			mg/L	0.03	0.1	02/16/22 15:28	jlw
Cadmium, dissolved	M200.8 ICP-MS	1	<0.00005	U		mg/L	0.00005	0.00025	02/08/22 18:26	bsu
Calcium, dissolved	M200.7 ICP	1	175		*	mg/L	0.1	0.5	02/16/22 15:28	jlw
Chromium, dissolved	M200.8 ICP-MS	1	<0.0005	U		mg/L	0.0005	0.002	02/08/22 18:26	bsu
Cobalt, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	02/16/22 15:28	jlw
Copper, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	02/16/22 15:28	jlw
Iron, dissolved	M200.7 ICP	1	<0.06	U		mg/L	0.06	0.15	02/16/22 15:28	jlw
Lead, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	02/08/22 18:26	bsu
Magnesium, dissolved	M200.7 ICP	1	56.0			mg/L	0.2	1	02/16/22 15:28	jlw
Manganese, dissolved	M200.7 ICP	1	<0.01	U	*	mg/L	0.01	0.05	02/17/22 14:04	jlw
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	02/10/22 16:50	mlh
Molybdenum, dissolved	M200.8 ICP-MS	1	0.00999			mg/L	0.0002	0.0005	02/08/22 18:26	bsu
Nickel, dissolved	M200.8 ICP-MS	1	0.00079	B		mg/L	0.0004	0.001	02/08/22 18:26	bsu
Potassium, dissolved	M200.7 ICP	1	7.33			mg/L	0.2	1	02/16/22 15:28	jlw
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	02/09/22 12:16	mlh
Selenium, dissolved	M200.8 ICP-MS	1	0.00012	B		mg/L	0.0001	0.00025	02/08/22 18:26	bsu
Silver, dissolved	M200.7 ICP	1	<0.01	U	*	mg/L	0.01	0.025	02/16/22 15:28	jlw
Sodium, dissolved	M200.7 ICP	1	258			mg/L	0.2	1	02/16/22 15:28	jlw
Thallium, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	02/08/22 18:26	bsu
Uranium, dissolved	M200.8 ICP-MS	1	0.00591			mg/L	0.0001	0.0005	02/08/22 18:26	bsu
Zinc, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.05	02/16/22 15:28	jlw

Rio Algom Mining Company

Project ID: 4512060294
 Sample ID: 32-04-TRA-02022022

ACZ Sample ID: **L71281-01**
 Date Sampled: 02/02/22 11:15
 Date Received: 02/07/22
 Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	150			mg/L	2	20	02/11/22 0:00	eep
Carbonate as CaCO3		1	<2	U		mg/L	2	20	02/11/22 0:00	eep
Hydroxide as CaCO3		1	<2	U		mg/L	2	20	02/11/22 0:00	eep
Total Alkalinity		1	150			mg/L	2	20	02/11/22 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			2.0			%			03/25/22 0:00	calc
Sum of Anions			24			meq/L			03/25/22 0:00	calc
Sum of Cations			25			meq/L			03/25/22 0:00	calc
Chloride	M300.0 - Ion Chromatography	20	29.7	B	*	mg/L	8	40	02/24/22 0:57	md
Cyanide, Total	D7511-09	1	<0.003	UH	*	mg/L	0.003	0.01	03/04/22 13:10	md
Fluoride	M300.0 - Ion Chromatography	20	<1	U	*	mg/L	1	5	02/24/22 0:57	md
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.084	B	*	mg/L	0.02	0.1	02/13/22 1:09	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	1710		*	mg/L	20	40	02/07/22 14:31	anc
Sulfate	M300.0 - Ion Chromatography	50	943			mg/L	20	100	02/21/22 20:51	md
TDS (calculated)	Calculation		1560			mg/L			03/25/22 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.10						03/25/22 0:00	calc

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>

QUIVIRA

ACZ Project ID: **L71281**

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.

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536519													
WG536519PBW1	PBW	02/10/22 17:20				6.1	mg/L		-20	20			
WG536519LCSW3	LCSW	02/10/22 17:39	WC220202-3	820.0001		780.6	mg/L	95	90	110			
WG536519LCSW6	LCSW	02/10/22 20:37	WC220202-3	820.0001		799.4	mg/L	97	90	110			
WG536519PBW2	PBW	02/10/22 20:44				5.7	mg/L		-20	20			
L71300-01DUP	DUP	02/11/22 1:27			266	272.1	mg/L				2	20	
WG536519LCSW9	LCSW	02/11/22 1:47	WC220202-3	820.0001		810.7	mg/L	99	90	110			
WG536519PBW3	PBW	02/11/22 1:54				4.9	mg/L		-20	20			

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536792													
WG536792ICV	ICV	02/16/22 14:49	II220215-3	2		2.033	mg/L	102	95	105			
WG536792ICB	ICB	02/16/22 14:56				.137	mg/L		-0.15	0.15			
WG536792LFB	LFB	02/16/22 15:09	II220215-2	1.0008		1.118	mg/L	112	85	115			
L71292-06AS	AS	02/16/22 15:48	II220215-2	1.0008	.066	1.115	mg/L	105	85	115			
L71292-06ASD	ASD	02/16/22 15:51	II220215-2	1.0008	.066	1.104	mg/L	104	85	115	1	20	

Antimony, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536371													
WG536371ICV	ICV	02/08/22 17:28	MS220125-1	.0201		.01957	mg/L	97	90	110			
WG536371ICB	ICB	02/08/22 17:29				U	mg/L		-0.00088	0.00088			
WG536371LFB	LFB	02/08/22 17:37	MS220126-3	.01		.0099	mg/L	99	85	115			
L71228-03AS	AS	02/08/22 18:09	MS220126-3	.01	U	.00978	mg/L	98	70	130			
L71228-03ASD	ASD	02/08/22 18:11	MS220126-3	.01	U	.00957	mg/L	96	70	130	2	20	

Arsenic, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536371													
WG536371ICV	ICV	02/08/22 17:28	MS220125-1	.05		.05214	mg/L	104	90	110			
WG536371ICB	ICB	02/08/22 17:29				U	mg/L		-0.00044	0.00044			
WG536371LFB	LFB	02/08/22 17:37	MS220126-3	.05005		.047	mg/L	94	85	115			
L71228-03AS	AS	02/08/22 18:09	MS220126-3	.05005	.00139	.0521	mg/L	101	70	130			
L71228-03ASD	ASD	02/08/22 18:11	MS220126-3	.05005	.00139	.05349	mg/L	104	70	130	3	20	

Barium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536792													
WG536792ICV	ICV	02/16/22 14:49	II220215-3	2		1.9828	mg/L	99	95	105			
WG536792ICB	ICB	02/16/22 14:56				U	mg/L		-0.021	0.021			
WG536792LFB	LFB	02/16/22 15:09	II220215-2	.5		.5074	mg/L	101	85	115			
L71292-06AS	AS	02/16/22 15:48	II220215-2	.5	.0602	.5363	mg/L	95	85	115			
L71292-06ASD	ASD	02/16/22 15:51	II220215-2	.5	.0602	.5381	mg/L	96	85	115	0	20	

QUIVIRA

ACZ Project ID: **L71281**

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.

Beryllium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536371													
WG536371ICV	ICV	02/08/22 17:28	MS220125-1	.05		.052035	mg/L	104	90	110			
WG536371ICB	ICB	02/08/22 17:29				.000091	mg/L		-0.000176	0.000176			
WG536371LFB	LFB	02/08/22 17:37	MS220126-3	.05005		.048221	mg/L	96	85	115			
L71228-03AS	AS	02/08/22 18:09	MS220126-3	.05005	U	.046636	mg/L	93	70	130			
L71228-03ASD	ASD	02/08/22 18:11	MS220126-3	.05005	U	.047397	mg/L	95	70	130	2	20	

Boron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536792													
WG536792ICV	ICV	02/16/22 14:49	II220215-3	2		2.026	mg/L	101	95	105			
WG536792ICB	ICB	02/16/22 14:56				U	mg/L		-0.09	0.09			
WG536792LFB	LFB	02/16/22 15:09	II220215-2	.5005		.549	mg/L	110	85	115			
L71292-06AS	AS	02/16/22 15:48	II220215-2	.5005	.128	.643	mg/L	103	85	115			
L71292-06ASD	ASD	02/16/22 15:51	II220215-2	.5005	.128	.661	mg/L	106	85	115	3	20	

Cadmium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536371													
WG536371ICV	ICV	02/08/22 17:28	MS220125-1	.05		.053212	mg/L	106	90	110			
WG536371ICB	ICB	02/08/22 17:29				U	mg/L		-0.00011	0.00011			
WG536371LFB	LFB	02/08/22 17:37	MS220126-3	.05005		.048078	mg/L	96	85	115			
L71228-03AS	AS	02/08/22 18:09	MS220126-3	.05005	U	.047735	mg/L	95	70	130			
L71228-03ASD	ASD	02/08/22 18:11	MS220126-3	.05005	U	.048247	mg/L	96	70	130	1	20	

Calcium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536792													
WG536792ICV	ICV	02/16/22 14:49	II220215-3	100		99.35	mg/L	99	95	105			
WG536792ICB	ICB	02/16/22 14:56				.1	mg/L		-0.3	0.3			
WG536792LFB	LFB	02/16/22 15:09	II220215-2	67.99026		66.92	mg/L	98	85	115			
L71292-06AS	AS	02/16/22 15:48	II220215-2	67.99026	246	298.1	mg/L	77	85	115			M3
L71292-06ASD	ASD	02/16/22 15:51	II220215-2	67.99026	246	298.3	mg/L	77	85	115	0	20	M3

Chloride

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536286													
WG536286ICV	ICV	02/04/22 22:11	WI220207-4	19.96		20.21	mg/L	101	90	110			
WG536286ICB	ICB	02/04/22 22:29				U	mg/L		-0.4	0.4			
WG537187													
WG537187LFB	LFB	02/24/22 0:39	WI211112-6	30		29.3	mg/L	98	90	110			
L71281-01DUP	DUP	02/24/22 1:14				29.7	29.65	mg/L			0	20	RA
L71353-09AS	AS	02/25/22 21:08	WI211112-6	1500	1580	3009.99	mg/L	95	90	110			

QUIVIRA

ACZ Project ID: **L71281**

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, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536371													
WG536371ICV	ICV	02/08/22 17:28	MS220125-1	.05		.05286	mg/L	106	90	110			
WG536371ICB	ICB	02/08/22 17:29				U	mg/L		-0.0011	0.0011			
WG536371LFB	LFB	02/08/22 17:37	MS220126-3	.05		.04766	mg/L	95	85	115			
L71228-03AS	AS	02/08/22 18:09	MS220126-3	.05	U	.04758	mg/L	95	70	130			
L71228-03ASD	ASD	02/08/22 18:11	MS220126-3	.05	U	.04867	mg/L	97	70	130	2	20	

Cobalt, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536792													
WG536792ICV	ICV	02/16/22 14:49	II220215-3	2.01		1.968	mg/L	98	95	105			
WG536792ICB	ICB	02/16/22 14:56				U	mg/L		-0.06	0.06			
WG536792LFB	LFB	02/16/22 15:09	II220215-2	.5005		.502	mg/L	100	85	115			
L71292-06AS	AS	02/16/22 15:48	II220215-2	.5005	U	.477	mg/L	95	85	115			
L71292-06ASD	ASD	02/16/22 15:51	II220215-2	.5005	U	.481	mg/L	96	85	115	1	20	

Copper, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536792													
WG536792ICV	ICV	02/16/22 14:49	II220215-3	2		1.99	mg/L	100	95	105			
WG536792ICB	ICB	02/16/22 14:56				U	mg/L		-0.03	0.03			
WG536792LFB	LFB	02/16/22 15:09	II220215-2	.5		.51	mg/L	102	85	115			
L71292-06AS	AS	02/16/22 15:48	II220215-2	.5	U	.494	mg/L	99	85	115			
L71292-06ASD	ASD	02/16/22 15:51	II220215-2	.5	U	.494	mg/L	99	85	115	0	20	

Cyanide, Total

D7511-09

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG537610													
WG537610ICV	ICV	03/04/22 12:50	WI220218-7	.3003		.3248	mg/L	108	90	110			
WG537610ICB	ICB	03/04/22 12:52				U	mg/L		-0.003	0.003			
WG537610LFB	LFB	03/04/22 12:58	WI220218-5	.1		.1098	mg/L	110	84	116			
L71279-01AS	AS	03/04/22 13:02	WI220218-5	.1	U	.1105	mg/L	111	84	116			
L71279-01ASD	ASD	03/04/22 13:04	WI220218-5	.1	U	.1088	mg/L	109	84	116	2	20	

Fluoride

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536286													
WG536286ICV	ICV	02/04/22 22:11	WI220207-4	4.016		4.05	mg/L	101	90	110			
WG536286ICB	ICB	02/04/22 22:29				U	mg/L		-0.05	0.05			
WG537187													
WG537187LFB	LFB	02/24/22 0:39	WI211112-6	1.5		1.497	mg/L	100	90	110			
L71281-01DUP	DUP	02/24/22 1:14			U	U	mg/L				0	20	RA
L71353-09AS	AS	02/25/22 21:08	WI211112-6	75	U	71.757	mg/L	96	90	110			

QUIVIRA

ACZ Project ID: **L71281**

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.

Iron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536792													
WG536792ICV	ICV	02/16/22 14:49	II220215-3	2		1.971	mg/L	99	95	105			
WG536792ICB	ICB	02/16/22 14:56				.119	mg/L		-0.18	0.18			
WG536792LFB	LFB	02/16/22 15:09	II220215-2	1.0001		1.042	mg/L	104	85	115			
L71292-06AS	AS	02/16/22 15:48	II220215-2	1.0001	U	.996	mg/L	100	85	115			
L71292-06ASD	ASD	02/16/22 15:51	II220215-2	1.0001	U	.998	mg/L	100	85	115	0	20	

Lead, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536371													
WG536371ICV	ICV	02/08/22 17:28	MS220125-1	.05		.0533	mg/L	107	90	110			
WG536371ICB	ICB	02/08/22 17:29				U	mg/L		-0.00022	0.00022			
WG536371LFB	LFB	02/08/22 17:37	MS220126-3	.05005		.04851	mg/L	97	85	115			
L71228-03AS	AS	02/08/22 18:09	MS220126-3	.05005	U	.05021	mg/L	100	70	130			
L71228-03ASD	ASD	02/08/22 18:11	MS220126-3	.05005	U	.05143	mg/L	103	70	130	2	20	

Magnesium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536792													
WG536792ICV	ICV	02/16/22 14:49	II220215-3	100		95.6	mg/L	96	95	105			
WG536792ICB	ICB	02/16/22 14:56				U	mg/L		-0.6	0.6			
WG536792LFB	LFB	02/16/22 15:09	II220215-2	49.99828		50.91	mg/L	102	85	115			
L71292-06AS	AS	02/16/22 15:48	II220215-2	49.99828	23	70.63	mg/L	95	85	115			
L71292-06ASD	ASD	02/16/22 15:51	II220215-2	49.99828	23	70.21	mg/L	94	85	115	1	20	

Manganese, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536848													
WG536848ICV	ICV	02/17/22 13:16	II220215-3	2		1.961	mg/L	98	95	105			
WG536848ICB	ICB	02/17/22 13:22				U	mg/L		-0.03	0.03			
WG536848LFB	LFB	02/17/22 13:35	II220215-2	.499		.495	mg/L	99	85	115			
L67720-27AS	AS	02/17/22 13:51	II220215-2	.499	1.48	1.883	mg/L	81	85	115			M2
L67720-27ASD	ASD	02/17/22 13:55	II220215-2	.499	1.48	1.885	mg/L	81	85	115	0	20	M2

Mercury, total

M245.1 CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536405													
WG536405ICV1	ICV	02/10/22 11:22	HG220124-3	.00501		.00521	mg/L	104	95	105			
WG536405ICB	ICB	02/10/22 11:23				U	mg/L		-0.0002	0.0002			
WG536452													
WG536452LRB	LRB	02/10/22 16:33				U	mg/L		-0.00044	0.00044			
WG536452LFB	LFB	02/10/22 16:34	HG220131-4	.002002		.00184	mg/L	92	85	115			
L71292-07LFM	LFM	02/10/22 16:59	HG220131-4	.002002	U	.00187	mg/L	93	85	115			
L71292-07LFMD	LFMD	02/10/22 17:00	HG220131-4	.002002	U	.00186	mg/L	93	85	115	1	20	

QUIVIRA

ACZ Project ID: **L71281**

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

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536371													
WG536371ICV	ICV	02/08/22 17:28	MS220125-1	.02		.01991	mg/L	100	90	110			
WG536371ICB	ICB	02/08/22 17:29				U	mg/L		-0.00044	0.00044			
WG536371LFB	LFB	02/08/22 17:37	MS220126-3	.05005		.04777	mg/L	95	85	115			
L71228-03AS	AS	02/08/22 18:09	MS220126-3	.05005	.0051	.05534	mg/L	100	70	130			
L71228-03ASD	ASD	02/08/22 18:11	MS220126-3	.05005	.0051	.05604	mg/L	102	70	130	1	20	

Nickel, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536371													
WG536371ICV	ICV	02/08/22 17:28	MS220125-1	.05		.05341	mg/L	107	90	110			
WG536371ICB	ICB	02/08/22 17:29				U	mg/L		-0.00088	0.00088			
WG536371LFB	LFB	02/08/22 17:37	MS220126-3	.05		.04808	mg/L	96	85	115			
L71228-03AS	AS	02/08/22 18:09	MS220126-3	.05	.00228	.04716	mg/L	90	70	130			
L71228-03ASD	ASD	02/08/22 18:11	MS220126-3	.05	.00228	.04798	mg/L	91	70	130	2	20	

Nitrate/Nitrite as N

M353.2 - H2SO4 preserved

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536613													
WG536613ICV	ICV	02/13/22 0:27	WI211205-1	2.4161		2.338	mg/L	97	90	110			
WG536613ICB	ICB	02/13/22 0:28				U	mg/L		-0.02	0.02			
WG536613LFB	LFB	02/13/22 0:32	WI211001-5	2		1.929	mg/L	96	90	110			
L65078-46AS	AS	02/13/22 0:54	WI211001-5	2	.038	2.089	mg/L	103	90	110			
L71223-01DUP	DUP	02/13/22 0:57			.044	.043	mg/L				2	20	RA

Potassium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536792													
WG536792ICV	ICV	02/16/22 14:49	II220215-3	20		19.78	mg/L	99	95	105			
WG536792ICB	ICB	02/16/22 14:56				U	mg/L		-0.6	0.6			
WG536792LFB	LFB	02/16/22 15:09	II220215-2	99.95169		104.1	mg/L	104	85	115			
L71292-06AS	AS	02/16/22 15:48	II220215-2	99.95169	16.5	117.3	mg/L	101	85	115			
L71292-06ASD	ASD	02/16/22 15:51	II220215-2	99.95169	16.5	115.8	mg/L	99	85	115	1	20	

Residue, Filterable (TDS) @180C

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536279													
WG536279PBW	PBW	02/07/22 13:39				U	mg/L		-20	20			
WG536279LCSW	LCSW	02/07/22 13:41	PCN64725	1000		980	mg/L	98	80	120			
L71284-04DUP	DUP	02/07/22 14:39			U	U	mg/L				0	10	RA

QUIVIRA

ACZ Project ID: **L71281**

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.

Selenium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536371													
WG536371ICV	ICV	02/08/22 17:28	MS220125-1	.05		.05216	mg/L	104	90	110			
WG536371ICB	ICB	02/08/22 17:29				.00013	mg/L		-0.00022	0.00022			
WG536371LFB	LFB	02/08/22 17:37	MS220126-3	.05		.04785	mg/L	96	85	115			
L71228-03AS	AS	02/08/22 18:09	MS220126-3	.05	U	.05247	mg/L	105	70	130			
L71228-03ASD	ASD	02/08/22 18:11	MS220126-3	.05	U	.05457	mg/L	109	70	130	4	20	

Selenium, dissolved

SM 3114 B, AA-Hydride

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536384													
WG536384ICV	ICV	02/09/22 11:24	SE220124-2	.025		.026	mg/L	104	90	110			
WG536384ICB	ICB	02/09/22 11:26				U	mg/L		-0.006	0.006			
WG536385													
WG536385LRB	LRB	02/09/22 12:03				U	mg/L		-0.006	0.006			
WG536385LFB	LFB	02/09/22 12:06	SE220124-4	.0225		.0216	mg/L	96	85	115			
L71280-01LFM	LFM	02/09/22 12:12	SE220124-4	.0225	U	.0205	mg/L	91	85	115			
L71280-01LFMD	LFMD	02/09/22 12:14	SE220124-4	.0225	U	.0197	mg/L	88	85	115	4	20	

Silver, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536792													
WG536792ICV	ICV	02/16/22 14:49	II220215-3	1		1.007	mg/L	101	95	105			
WG536792ICB	ICB	02/16/22 14:56				U	mg/L		-0.03	0.03			
WG536792LFB	LFB	02/16/22 15:09	II220215-2	.5		.506	mg/L	101	85	115			
L71292-06AS	AS	02/16/22 15:48	II220215-2	.5	U	.279	mg/L	56	85	115			M2 ZA
L71292-06ASD	ASD	02/16/22 15:51	II220215-2	.5	U	.287	mg/L	57	85	115	3	20	M2 ZA

Sodium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536792													
WG536792ICV	ICV	02/16/22 14:49	II220215-3	100		99.18	mg/L	99	95	105			
WG536792ICB	ICB	02/16/22 14:56				U	mg/L		-0.6	0.6			
WG536792LFB	LFB	02/16/22 15:09	II220215-2	100.0039		104.4	mg/L	104	85	115			
L71292-06AS	AS	02/16/22 15:48	II220215-2	100.0039	166	260.3	mg/L	94	85	115			
L71292-06ASD	ASD	02/16/22 15:51	II220215-2	100.0039	166	257.8	mg/L	92	85	115	1	20	

Sulfate

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536286													
WG536286ICV	ICV	02/04/22 22:11	WI220207-4	51.15		48.39	mg/L	95	90	110			
WG536286ICB	ICB	02/04/22 22:29				U	mg/L		-0.4	0.4			
WG536839													
WG536839LFB1	LFB	02/17/22 15:32	WI211112-6	30		29.6	mg/L	99	90	110			
WG536839LFB2	LFB	02/18/22 0:11	WI211112-6	30		28.15	mg/L	94	90	110			
L71223-05DUP	DUP	02/18/22 0:47			145	137.8	mg/L				5	20	
L71223-06AS	AS	02/21/22 19:22	WI211112-6	60	87.3	146.57	mg/L	99	90	110			

QUIVIRA

ACZ Project ID: **L71281**

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, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536371													
WG536371ICV	ICV	02/08/22 17:28	MS220125-1	.05		.05417	mg/L	108	90	110			
WG536371ICB	ICB	02/08/22 17:29				U	mg/L		-0.00022	0.00022			
WG536371LFB	LFB	02/08/22 17:37	MS220126-3	.05		.04722	mg/L	94	85	115			
L71228-03AS	AS	02/08/22 18:09	MS220126-3	.05	U	.0501	mg/L	100	70	130			
L71228-03ASD	ASD	02/08/22 18:11	MS220126-3	.05	U	.05128	mg/L	103	70	130	2	20	

Uranium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536371													
WG536371ICV	ICV	02/08/22 17:28	MS220125-1	.05		.05242	mg/L	105	90	110			
WG536371ICB	ICB	02/08/22 17:29				U	mg/L		-0.00022	0.00022			
WG536371LFB	LFB	02/08/22 17:37	MS220126-3	.05		.04772	mg/L	95	85	115			
L71228-03AS	AS	02/08/22 18:09	MS220126-3	.05	.00233	.05452	mg/L	104	70	130			
L71228-03ASD	ASD	02/08/22 18:11	MS220126-3	.05	.00233	.05524	mg/L	106	70	130	1	20	

Zinc, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG536792													
WG536792ICV	ICV	02/16/22 14:49	II220215-3	2		1.921	mg/L	96	95	105			
WG536792ICB	ICB	02/16/22 14:56				U	mg/L		-0.06	0.06			
WG536792LFB	LFB	02/16/22 15:09	II220215-2	.50045		.537	mg/L	107	85	115			
L71292-06AS	AS	02/16/22 15:48	II220215-2	.50045	.024	.528	mg/L	101	85	115			
L71292-06ASD	ASD	02/16/22 15:51	II220215-2	.50045	.024	.524	mg/L	100	85	115	1	20	

Rio Algom Mining Company

ACZ Project ID: **L71281**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L71281-01	WG536792	Calcium, dissolved	M200.7 ICP	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.
	WG537187	Chloride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			M300.0 - Ion Chromatography	QA	Sample container with preservation type specified by the method was not available for analysis. Alternate sample container was used.
			M300.0 - Ion Chromatography	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).
WG537610	Cyanide, Total	M300.0 - Ion Chromatography	ZU	Analysis date/time precedes filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.	
		D7511-09	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.	
WG537187	Fluoride	D7511-09	N1	See Case Narrative.	
		M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.	
		M300.0 - Ion Chromatography	QA	Sample container with preservation type specified by the method was not available for analysis. Alternate sample container was used.	
WG536848	Manganese, dissolved	M300.0 - Ion Chromatography	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).	
		M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.	
WG536613	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).	
WG536279	Residue, Filterable (TDS) @180C	SM2540C	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).	
WG536792	Silver, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.	
		M200.7 ICP	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.	

Rio Algom Mining Company

Project ID: 4512060294
 Sample ID: 32-04-TRA-02022022
 Locator:

ACZ Sample ID: **L71281-01**
 Date Sampled: 02/02/22 11:15
 Date Received: 02/07/22
 Sample Matrix: Groundwater

Lead 210, dissolved
 EICHROM, OTW01

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	03/22/22 11:42		-1.2	1.8	5.1	pCi/L	*	amk

Polonium 210, dissolved
 HASL Po-01-RC

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	02/11/22 13:25		0.0	23	3.5	pCi/L	*	slc

Radium 226, dissolved
 M903.1

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	03/11/22 0:10		0.22	0.07	0.23	pCi/L	*	fdw

Radium 228, dissolved
 M9320

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	03/09/22 17:31		0.73	0.76	1.9	pCi/L	*	ttg

Thorium 230, dissolved
 ESM 4506

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	03/16/22 14:06		1.16	0.45	0.5	pCi/L	*	amk

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

QUIVIRA

ACZ Project ID: **L71281**

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.

Lead 210, dissolved

EICHROM, OTW01

Units: pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG537353																
WG537353LCSW	LCSW	03/22/22	PCN64363	98.43				83	3.1	3.6	84	55	121			
WG537353PBW	PBW	03/22/22						-36	1.2	3.3			6.6			
L71215-04MS	MS	03/22/22	PCN64363	328.08	-3.9	4.7	13	240	11	14	74	55	121			
L71215-04DUP	DUP-RER	03/22/22			-3.9	4.7	13	3.1	4.1	11				1.12	2	
L71215-04DUP	DUP-RPD	03/22/22			-3.9	4.7	13	3.1	4.1	11				1750	20	RG
L71353-08DUP	DUP-RPD	03/22/22			1.5	1.6	4.2	1.6	1.7	4.3				6	20	

Polonium 210, dissolved

HASL Po-01-RC

Units: pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG536399																
L71283-01DUP	DUP-RER	02/11/22			0	23	3.5	.331	2.4	3.1				0.01	2	
L71283-01DUP	DUP-RPD	02/11/22			0	23	3.5	.331	2.4	3.1				200	20	RG
WG536399LCSW	LCSW	02/11/22	PCN64363	500				518	120	4.3	104	51	128			
WG536399PBW	PBW	02/11/22						.756	2.7	3.2			6.4			
L71280-01MS	MS	02/11/22	PCN64363	500	0	28	4	545	120	4.1	109	51	128			

Radium 226, dissolved

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
WG536562																
WG536562LCSW	LCSW	03/11/22	PCN64374	20				18	0.44	0.35	90	43	148			
WG536562PBW	PBW	03/11/22						.06	0.08	0.6			1.2			
L71279-01DUP	DUP-RER	03/11/22			0.24	0.07	0.34	.34	0.08	0.36				0.94	2	
L71279-01DUP	DUP-RPD	03/11/22			0.24	0.07	0.34	.34	0.08	0.36				34	20	RG
L71279-02MS	MS	03/11/22	PCN64374	20	1.1	0.11	0.25	19	0.43	0.29	90	43	148			
L71377-01DUP	DUP-RPD	03/11/22			0.11	0.07	0.3	.15	0.1	0.35				31	20	RG
L71377-01DUP	DUP-RER	03/11/22			0.11	0.07	0.3	.15	0.1	0.35				0.33	2	

QUIVIRA

ACZ Project ID: **L71281**

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, dissolved

M9320

Units: pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG537188																
WG537188LCSW	LCSW	03/09/22	PCN64684	9.52				7.5	1.1	2.1	79	47	123			
WG537188PBW	PBW	03/09/22						1.1	0.71	1.9			3.8			
L71212-02MS	MS	03/09/22	PCN64684	1904.93	1000	180	340	2800	270	390	94	47	123			
L71212-02DUP	DUP-RPD	03/09/22			1000	180	340	1600	230	430				46	20	RM
L71353-01DUP	DUP-RPD	03/09/22			2.3	3.3	8.1	3.2	3.9	9.4				33	20	RG
L71353-01DUP	DUP-RER	03/09/22			2.3	3.3	8.1	3.2	3.9	9.4				0.18	2	

Thorium 230, dissolved

ESM 4506

Units: pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG537467																
WG537467LCSW	LCSW	03/16/22	PCN63437	200				188	24	0.62	94	91	126			
WG537467PBW	PBW	03/16/22						.537	0.31	0.41			0.82			
L71215-04DUP	DUP-RPD	03/16/22			28.6	11	13	53.1	17	17				60	20	RG
L71215-04DUP	DUP-RER	03/16/22			28.6	11	13	53.1	17	17				1.21	2	
L71215-04MS	MS	03/16/22	PCN63437	5000	28.6	11	13	4990	620	12	99	91	126			

Rio Algom Mining Company

ACZ Project ID: **L71281**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L71281-01	WG537353	Lead 210, dissolved	EICHROM, OTW01	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.
	WG536399	Polonium 210, dissolved	HASL Po-01-RC	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.
	WG536562	Radium 226, dissolved	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.
	WG537188	Radium 228, dissolved	M9320	RM	For a water matrix, the duplicate precision assessment (RPD or RER) exceeded the control limit. High sediment, turbidity, or presence of an immiscible liquid attributed to non-homogeneity of the sample.
	WG537467	Thorium 230, dissolved	ESM 4506	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.

Rio Algom Mining Company

ACZ Project ID: **L71281**

Radiochemistry

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

Lead 210, dissolved	EICHROM, OTW01
Polonium 210, dissolved	HASL Po-01-RC
Thorium 230, dissolved	ESM 4506

Rio Algom Mining Company
 4512060294

ACZ Project ID: L71281
 Date Received: 02/07/2022 11:11
 Received By:
 Date Printed: 2/8/2022

Receipt Verification

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

Samples/Containers

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

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?
5109	2.7	<=6.0	15	Yes

Was ice present in the shipment container(s)?

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

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

Rio Algom Mining Company
4512060294

ACZ Project ID: L71281
Date Received: 02/07/2022 11:11
Received By:
Date Printed: 2/8/2022

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).

