

January 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: Michaela 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: L70511

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on December 15, 2021. This project has been assigned to ACZ's project number, L70511. 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 L70511. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

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

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

All samples and sub-samples associated with this project will be disposed of after February 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

Project ID: 4512060294

Sample ID: 32-45 KD-R-12092021

ACZ Sample ID: **L70511-01**

Date Sampled: 12/09/21 12:10

Date Received: 12/15/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0932			mg/L	0.0002	0.0005	01/12/22 14:03	kja/mf m

Rio Algom Mining Company

Project ID:

Sample ID: 36-06 KD-12092021

ACZ Sample ID: **L70511-02**

Date Sampled: 12/09/21 11:05

Date Received: 12/15/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Beryllium, dissolved	M200.8 ICP-MS	5	0.0184			mg/L	0.0004	0.00125	01/24/22 16:09	kja


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: **L70511**

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
WG535511													
WG535511ICV	ICV	01/24/22 15:33	MS220105-1	.05		.054707	mg/L	109	90	110			
WG535511ICB	ICB	01/24/22 15:35				U	mg/L		-0.000176	0.000176			
WG535511LFB	LFB	01/24/22 15:37	MS211216-3	.05005		.051101	mg/L	102	85	115			
L70725-05AS	AS	01/24/22 16:22	MS211216-3	.05005	.006	.047535	mg/L	83	70	130			
L70725-05ASD	ASD	01/24/22 16:28	MS211216-3	.05005	.006	.04921	mg/L	86	70	130	3	20	

Molybdenum, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG534864													
WG534864ICV	ICV	01/12/22 13:57	MS220105-1	.02		.02004	mg/L	100	90	110			
WG534864ICB	ICB	01/12/22 13:59				U	mg/L		-0.00044	0.00044			
WG534864LFB	LFB	01/12/22 14:01	MS211216-3	.05005		.04506	mg/L	90	85	115			
L70598-02AS	AS	01/12/22 14:16	MS211216-3	.05005	.00132	.05231	mg/L	102	70	130			
L70598-02ASD	ASD	01/12/22 14:18	MS211216-3	.05005	.00132	.05391	mg/L	105	70	130	3	20	

Rio Algom Mining Company

ACZ Project ID: **L70511**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
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No extended qualifiers associated with this analysis

Rio Algom Mining Company

ACZ Project ID: **L70511**

No certification qualifiers associated with this analysis

Rio Algom Mining Company

ACZ Project ID: L70511

Date Received: 12/15/2021 12:11

Received By:

Date Printed: 12/17/2021

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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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?
NA36615	2.7	NA	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

ACZ Project ID: L70511

Date Received: 12/15/2021 12:11

Received By:

Date Printed: 12/17/2021

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).

November 03, 2021

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: Michaela Gorospe, jcarroll, Jeremy Scott Collyard, Marcus Powell, Clark Short, Angela Persico

Project ID: 4510319940
ACZ Project ID: L68078

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 26, 2021. This project has been assigned to ACZ's project number, L68078. 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 L68078. 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 03, 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.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.



Rio Algom Mining Company

November 03, 2021

Project ID: 4510319940

ACZ Project ID: L68078

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 5 groundwater samples from Rio Algom Mining Company on August 26, 2021. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L68078. 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

These samples were 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. (N1A) Applies to: /LEAD 210

Matrix Spike carrier recovery outside of acceptance limits. This is attributable to matrix interference. MS exhibited abnormal precip during step 11.7 and was unable to reach a pH of 8 during step 11.11.1. Sample did not dissolve at step 11.13

2. (B1) Applies to: /LEAD 210

Analyte detected in blank above acceptance limits. PBW fails high by ~0.8 pCi while having an error of 1.53 pCi.

3. (N1) Applies to: L68078-04/LEAD 210

Lead carrier recovery outside of acceptance limits. This is attributable to matrix interference.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 5-02 KD-20210823

ACZ Sample ID: **L68078-01**

Date Sampled: 08/23/21 11:10

Date Received: 08/26/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, dissolved	M200.8 ICP-MS	1	<0.0004	U		mg/L	0.0004	0.002	09/13/21 17:13	mfm
Arsenic, dissolved	M200.8 ICP-MS	1	<0.0002	U		mg/L	0.0002	0.001	09/13/21 17:13	mfm
Barium, dissolved	M200.7 ICP	1	0.0212	B		mg/L	0.007	0.035	09/10/21 17:04	jlw
Beryllium, dissolved	M200.8 ICP-MS	1	<0.00008	U		mg/L	0.00008	0.00025	09/13/21 17:13	mfm
Cadmium, dissolved	M200.8 ICP-MS	1	<0.00005	U		mg/L	0.00005	0.00025	09/13/21 17:13	mfm
Calcium, dissolved	M200.7 ICP	1	92.3			mg/L	0.1	0.5	09/10/21 17:04	jlw
Iron, dissolved	M200.7 ICP	1	0.114	B		mg/L	0.06	0.15	09/10/21 17:04	jlw
Lead, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	09/13/21 17:13	mfm
Magnesium, dissolved	M200.7 ICP	1	67.5			mg/L	0.2	1	09/10/21 17:04	jlw
Molybdenum, dissolved	M200.8 ICP-MS	1	0.00038	B		mg/L	0.0002	0.0005	09/13/21 17:13	mfm
Nickel, dissolved	M200.8 ICP-MS	1	0.00115			mg/L	0.0004	0.001	09/13/21 17:13	mfm
Potassium, dissolved	M200.7 ICP	1	15.9			mg/L	0.2	1	09/10/21 17:04	jlw
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	08/31/21 12:55	mlh
Sodium, dissolved	M200.7 ICP	1	75.7			mg/L	0.2	1	09/10/21 17:04	jlw
Uranium, dissolved	M200.8 ICP-MS	1	0.00143			mg/L	0.0001	0.0005	09/13/21 17:13	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	383			mg/L	2	20	09/03/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	09/03/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	09/03/21 0:00	jck
Total Alkalinity		1	383		*	mg/L	2	20	09/03/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-3.4			%			11/03/21 0:00	calc
Sum of Anions			15			meq/L			11/03/21 0:00	calc
Sum of Cations			14			meq/L			11/03/21 0:00	calc
Chloride	SM4500Cl-E	1	10.3		*	mg/L	0.5	2	09/10/21 14:47	md
Conductivity @25C	SM2510B	1	1220			umhos/cm	1	10	09/03/21 22:31	jck
Cyanide, Total	D7511-09	1	0.013			mg/L	0.003	0.01	08/30/21 13:33	md
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	0.496			mg/L	0.02	0.1	09/15/21 3:01	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	836			mg/L	40	80	08/30/21 15:04	scd
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	15	312		*	mg/L	15	75	09/10/21 11:33	wtc
TDS (calculated)	Calculation		807			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.04						11/03/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 5-73 ALL-R-20210823

ACZ Sample ID: **L68078-02**

Date Sampled: 08/23/21 14:47

Date Received: 08/26/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	5	702			mg/L	0.5	2.5	09/10/21 17:07	jlw
Iron, dissolved	M200.7 ICP	5	<0.3	U		mg/L	0.3	0.75	09/10/21 17:07	jlw
Magnesium, dissolved	M200.7 ICP	5	491			mg/L	1	5	09/10/21 17:07	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.00782			mg/L	0.001	0.0025	09/13/21 17:15	mfm
Nickel, dissolved	M200.8 ICP-MS	5	0.00937			mg/L	0.002	0.005	09/13/21 17:15	mfm
Potassium, dissolved	M200.7 ICP	5	2.60	B		mg/L	1	5	09/10/21 17:07	jlw
Selenium, dissolved	SM 3114 B, AA-Hydride	10	0.193		*	mg/L	0.02	0.05	09/07/21 10:36	mlh
Sodium, dissolved	M200.7 ICP	5	872			mg/L	1	5	09/10/21 17:07	jlw
Uranium, dissolved	M200.8 ICP-MS	5	1.97			mg/L	0.0005	0.0025	09/13/21 17:15	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	655			mg/L	2	20	09/03/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	09/03/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	09/03/21 0:00	jck
Total Alkalinity		1	655		*	mg/L	2	20	09/03/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.1			%			11/03/21 0:00	calc
Sum of Anions			119			meq/L			11/03/21 0:00	calc
Sum of Cations			114			meq/L			11/03/21 0:00	calc
Chloride	SM4500Cl-E	25	1810		*	mg/L	12.5	50	09/10/21 15:21	md
Conductivity @25C	SM2510B	1	8710			umhos/cm	1	10	09/03/21 22:44	jck
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	3	5.17			mg/L	0.06	0.3	09/15/21 3:35	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	7170			mg/L	40	80	08/30/21 15:06	scd
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	100	2610		*	mg/L	100	500	09/10/21 11:59	wtc
TDS (calculated)	Calculation		6890			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.04						11/03/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-59 ALL-20210823

ACZ Sample ID: **L68078-03**

Date Sampled: 08/23/21 17:11

Date Received: 08/26/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	5	653			mg/L	0.5	2.5	09/10/21 17:10	jlw
Iron, dissolved	M200.7 ICP	5	<0.3	U		mg/L	0.3	0.75	09/10/21 17:10	jlw
Magnesium, dissolved	M200.7 ICP	5	242			mg/L	1	5	09/10/21 17:10	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.00509			mg/L	0.001	0.0025	09/13/21 17:20	mfm
Nickel, dissolved	M200.8 ICP-MS	5	0.00431	B		mg/L	0.002	0.005	09/13/21 17:20	mfm
Potassium, dissolved	M200.7 ICP	5	1.59	B		mg/L	1	5	09/10/21 17:10	jlw
Selenium, dissolved	SM 3114 B, AA-Hydride	1	0.0303			mg/L	0.002	0.005	08/31/21 13:03	mlh
Sodium, dissolved	M200.7 ICP	5	518			mg/L	1	5	09/10/21 17:10	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.336			mg/L	0.0005	0.0025	09/13/21 17:20	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	398			mg/L	2	20	09/03/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	09/03/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	09/03/21 0:00	jck
Total Alkalinity		1	398		*	mg/L	2	20	09/03/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.0			%			11/03/21 0:00	calc
Sum of Anions			78			meq/L			11/03/21 0:00	calc
Sum of Cations			75			meq/L			11/03/21 0:00	calc
Chloride	SM4500Cl-E	25	906		*	mg/L	12.5	50	09/10/21 15:22	md
Conductivity @25C	SM2510B	1	5740			umhos/cm	1	10	09/03/21 22:54	jck
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	4	6.85			mg/L	0.08	0.4	09/15/21 3:41	pjb
Residue, Filterable (TDS) @180C	SM2540C	5	5030			mg/L	100	200	08/30/21 15:09	scd
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	80	2140		*	mg/L	80	400	09/10/21 12:00	wtc
TDS (calculated)	Calculation		4700			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.07						11/03/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-02 TRB-20210824

ACZ Sample ID: **L68078-04**

Date Sampled: 08/24/21 12:50

Date Received: 08/26/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	5	320		*	mg/L	0.5	2.5	09/10/21 17:13	jlw
Iron, dissolved	M200.7 ICP	5	21.4		*	mg/L	0.3	0.75	09/10/21 17:13	jlw
Magnesium, dissolved	M200.7 ICP	5	1130		*	mg/L	1	5	09/10/21 17:13	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	<0.001	U	*	mg/L	0.001	0.0025	09/13/21 17:26	mfm
Nickel, dissolved	M200.8 ICP-MS	5	0.00461	B	*	mg/L	0.002	0.005	09/13/21 17:26	mfm
Potassium, dissolved	M200.7 ICP	5	16.6		*	mg/L	1	5	09/10/21 17:13	jlw
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	08/31/21 13:05	mlh
Sodium, dissolved	M200.7 ICP	5	668		*	mg/L	1	5	09/10/21 17:13	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.00350		*	mg/L	0.0005	0.0025	09/13/21 17:26	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	1270			mg/L	2	20	09/03/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	09/03/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	09/03/21 0:00	jck
Total Alkalinity		1	1270		*	mg/L	2	20	09/03/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.8			%			11/03/21 0:00	calc
Sum of Anions			148			meq/L			11/03/21 0:00	calc
Sum of Cations			140			meq/L			11/03/21 0:00	calc
Chloride	SM4500Cl-E	25	2220		*	mg/L	12.5	50	09/10/21 15:22	md
Conductivity @25C	SM2510B	1	10100		*	umhos/cm	1	10	09/03/21 23:11	jck
Cyanide, Total	D7511-09	1	<0.003	U	*	mg/L	0.003	0.01	08/30/21 13:41	md
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	0.414			mg/L	0.02	0.1	09/15/21 3:09	pjb
Residue, Filterable (TDS) @180C	SM2540C	5	8180			mg/L	100	200	08/30/21 15:11	scd
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	100	2870		*	mg/L	100	500	09/15/21 10:46	wtc
TDS (calculated)	Calculation		8020			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.02						11/03/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 33-01 TRA -20210825

ACZ Sample ID: **L68078-05**

Date Sampled: 08/25/21 11:10

Date Received: 08/26/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	2	165			mg/L	0.2	1	09/10/21 17:17	jlw
Iron, dissolved	M200.7 ICP	2	<0.12	U		mg/L	0.12	0.3	09/10/21 17:17	jlw
Magnesium, dissolved	M200.7 ICP	2	52.5			mg/L	0.4	2	09/10/21 17:17	jlw
Molybdenum, dissolved	M200.8 ICP-MS	2	0.00203			mg/L	0.0004	0.001	09/13/21 17:27	mfm
Nickel, dissolved	M200.8 ICP-MS	2	<0.0008	U		mg/L	0.0008	0.002	09/13/21 17:27	mfm
Potassium, dissolved	M200.7 ICP	2	5.86			mg/L	0.4	2	09/10/21 17:17	jlw
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	08/31/21 13:07	mlh
Sodium, dissolved	M200.7 ICP	2	586			mg/L	0.4	2	09/10/21 17:17	jlw
Uranium, dissolved	M200.8 ICP-MS	2	0.00067	B		mg/L	0.0002	0.001	09/13/21 17:27	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	81.0			mg/L	2	20	09/03/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	09/03/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	09/03/21 0:00	jck
Total Alkalinity		1	81.0		*	mg/L	2	20	09/03/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			1.3			%			11/03/21 0:00	calc
Sum of Anions			38			meq/L			11/03/21 0:00	calc
Sum of Cations			39			meq/L			11/03/21 0:00	calc
Chloride	SM4500Cl-E	1	31.9		*	mg/L	0.5	2	09/10/21 14:49	md
Conductivity @25C	SM2510B	1	3330			umhos/cm	1	10	09/03/21 23:20	jck
Cyanide, Total	D7511-09	1	<0.003	U		mg/L	0.003	0.01	08/30/21 13:43	md
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U		mg/L	0.02	0.1	09/15/21 3:10	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	2710			mg/L	20	40	08/30/21 15:14	scd
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	50	1680		*	mg/L	50	250	09/15/21 10:52	wtc
TDS (calculated)	Calculation		2570			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.05						11/03/21 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: **L68078**

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
WG526603													
WG526603PBW1	PBW	09/03/21 18:31				4.7	mg/L		-20	20			
WG526603LCSW3	LCSW	09/03/21 18:50	WC210821-1	820.0001		808.3	mg/L	99	90	110			
WG526603LCSW6	LCSW	09/03/21 21:47	WC210821-1	820.0001		808.2	mg/L	99	90	110			
WG526603PBW2	PBW	09/03/21 21:55				U	mg/L		-20	20			
L68079-02DUP	DUP	09/03/21 23:45			U	U	mg/L				0	20	RA
WG526603LCSW9	LCSW	09/04/21 1:43	WC210821-1	820.0001		808.9	mg/L	99	90	110			
WG526603PBW3	PBW	09/04/21 1:51				2.1	mg/L		-20	20			
WG526603LCSW12	LCSW	09/04/21 5:15	WC210821-1	820.0001		810.6	mg/L	99	90	110			
WG526603PBW4	PBW	09/04/21 5:23				2.8	mg/L		-20	20			
WG526603LCSW15	LCSW	09/04/21 8:55	WC210821-1	820.0001		819.2	mg/L	100	90	110			

Antimony, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527084													
WG527084ICV	ICV	09/13/21 16:39	MS210727-2	.0201		.01863	mg/L	93	90	110			
WG527084ICB	ICB	09/13/21 16:41				.00053	mg/L		-0.00088	0.00088			
WG527084LFB	LFB	09/13/21 16:42	MS210827-2	.01		.00876	mg/L	88	85	115			
L68078-02AS	AS	09/13/21 17:17	MS210827-2	.05	U	.04019	mg/L	80	70	130			
L68078-02ASD	ASD	09/13/21 17:18	MS210827-2	.05	U	.0404	mg/L	81	70	130	1	20	

Arsenic, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527084													
WG527084ICV	ICV	09/13/21 16:39	MS210727-2	.05		.04698	mg/L	94	90	110			
WG527084ICB	ICB	09/13/21 16:41				U	mg/L		-0.00044	0.00044			
WG527084LFB	LFB	09/13/21 16:42	MS210827-2	.05005		.04899	mg/L	98	85	115			
L68078-02AS	AS	09/13/21 17:17	MS210827-2	.25025	U	.229	mg/L	92	70	130			
L68078-02ASD	ASD	09/13/21 17:18	MS210827-2	.25025	U	.22696	mg/L	91	70	130	1	20	

Barium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526939													
WG526939ICV	ICV	09/10/21 16:41	II210826-1	2		2.007	mg/L	100	95	105			
WG526939ICB	ICB	09/10/21 16:47				U	mg/L		-0.021	0.021			
WG526939LFB	LFB	09/10/21 17:00	II210910-2	.5		.4939	mg/L	99	85	115			
L68182-03AS	AS	09/10/21 17:30	II210910-2	.5	U	.5019	mg/L	100	85	115			
L68182-03ASD	ASD	09/10/21 17:39	II210910-2	.5	U	.4936	mg/L	99	85	115	2	20	

Beryllium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527084													
WG527084ICV	ICV	09/13/21 16:39	MS210727-2	.05		.049216	mg/L	98	90	110			
WG527084ICB	ICB	09/13/21 16:41				U	mg/L		-0.000176	0.000176			
WG527084LFB	LFB	09/13/21 16:42	MS210827-2	.05005		.049343	mg/L	99	85	115			
L68078-02AS	AS	09/13/21 17:17	MS210827-2	.25025	U	.22954	mg/L	92	70	130			
L68078-02ASD	ASD	09/13/21 17:18	MS210827-2	.25025	U	.22649	mg/L	91	70	130	1	20	

QUIVIRA

ACZ Project ID: **L68078**

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.

Cadmium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527084													
WG527084ICV	ICV	09/13/21 16:39	MS210727-2	.05		.048228	mg/L	96	90	110			
WG527084ICB	ICB	09/13/21 16:41				U	mg/L		-0.00011	0.00011			
WG527084LFB	LFB	09/13/21 16:42	MS210827-2	.05005		.047742	mg/L	95	85	115			
L68078-02AS	AS	09/13/21 17:17	MS210827-2	.25025	U	.226252	mg/L	90	70	130			
L68078-02ASD	ASD	09/13/21 17:18	MS210827-2	.25025	U	.225714	mg/L	90	70	130	0	20	

Calcium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526939													
WG526939ICV	ICV	09/10/21 16:41	II210826-1	100		97.85	mg/L	98	95	105			
WG526939ICB	ICB	09/10/21 16:47				U	mg/L		-0.3	0.3			
WG526939LFB	LFB	09/10/21 17:00	II210910-2	67.98972		67.13	mg/L	99	85	115			
L68182-03AS	AS	09/10/21 17:30	II210910-2	67.98972	.31	68.26	mg/L	100	85	115			
L68182-03ASD	ASD	09/10/21 17:39	II210910-2	67.98972	.31	67.25	mg/L	98	85	115	1	20	

Chloride

SM4500Cl-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526877													
WG526877ICV	ICV	09/10/21 14:27	WI210503-1	54.89		53.44	mg/L	97	90	110			
WG526877ICB	ICB	09/10/21 14:27				.98	mg/L		-1.5	1.5			
WG526877LFB2	LFB	09/10/21 14:43	WI210908-11	29.97		29.96	mg/L	100	90	110			
L68077-05DUP	DUP	09/10/21 14:45			16.4	16.01	mg/L				2	20	
L68077-04AS	AS	09/10/21 15:09	5XCL	30	437	456.25	mg/L	64	90	110			M3

Conductivity @25C

SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526603													
WG526603LCSW2	LCSW	09/03/21 18:37	PCN63140	1408		1391	umhos/cm	99	90	110			
WG526603LCSW5	LCSW	09/03/21 21:34	PCN63140	1408		1386	umhos/cm	98	90	110			
L68079-02DUP	DUP	09/03/21 23:45			6710	6730	umhos/cm				0	20	
WG526603LCSW8	LCSW	09/04/21 1:30	PCN63140	1408		1381	umhos/cm	98	90	110			
WG526603LCSW11	LCSW	09/04/21 5:02	PCN63140	1408		1373	umhos/cm	98	90	110			
WG526603LCSW14	LCSW	09/04/21 8:42	PCN63140	1408		1358	umhos/cm	96	90	110			

Cyanide, Total

D7511-09

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526166													
WG526166ICV	ICV	08/30/21 13:09	WI210823-4	.3		.3121	mg/L	104	90	110			
WG526166ICB	ICB	08/30/21 13:11				U	mg/L		-0.003	0.003			
WG526166LFB1	LFB	08/30/21 13:17	WI210823-7	.1		.1059	mg/L	106	84	116			
L67718-03AS	AS	08/30/21 13:21	WI210823-7	.1	U	.101	mg/L	101	84	116			
L67718-03ASD	ASD	08/30/21 13:23	WI210823-7	.1	U	.1049	mg/L	105	84	116	4	20	
WG526166LFB2	LFB	08/30/21 15:30	WI210823-7	.1		.0918	mg/L	92	84	116			

QUIVIRA

ACZ Project ID: **L68078**

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
WG526939													
WG526939ICV	ICV	09/10/21 16:41	II210826-1	2		1.977	mg/L	99	95	105			
WG526939ICB	ICB	09/10/21 16:47				U	mg/L		-0.18	0.18			
WG526939LFB	LFB	09/10/21 17:00	II210910-2	1.0001		1.017	mg/L	102	85	115			
L68182-03AS	AS	09/10/21 17:30	II210910-2	1.0001	U	1.014	mg/L	101	85	115			
L68182-03ASD	ASD	09/10/21 17:39	II210910-2	1.0001	U	1.004	mg/L	100	85	115	1	20	

Lead, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527084													
WG527084ICV	ICV	09/13/21 16:39	MS210727-2	.05		.04923	mg/L	98	90	110			
WG527084ICB	ICB	09/13/21 16:41				U	mg/L		-0.00022	0.00022			
WG527084LFB	LFB	09/13/21 16:42	MS210827-2	.05005		.04871	mg/L	97	85	115			
L68078-02AS	AS	09/13/21 17:17	MS210827-2	.25025	U	.26515	mg/L	106	70	130			
L68078-02ASD	ASD	09/13/21 17:18	MS210827-2	.25025	U	.26041	mg/L	104	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
WG526939													
WG526939ICV	ICV	09/10/21 16:41	II210826-1	100		95.67	mg/L	96	95	105			
WG526939ICB	ICB	09/10/21 16:47				U	mg/L		-0.6	0.6			
WG526939LFB	LFB	09/10/21 17:00	II210910-2	49.99828		47.68	mg/L	95	85	115			
L68182-03AS	AS	09/10/21 17:30	II210910-2	49.99828	U	48.45	mg/L	97	85	115			
L68182-03ASD	ASD	09/10/21 17:39	II210910-2	49.99828	U	47.88	mg/L	96	85	115	1	20	

Molybdenum, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527084													
WG527084ICV	ICV	09/13/21 16:39	MS210727-2	.01992		.01936	mg/L	97	90	110			
WG527084ICB	ICB	09/13/21 16:41				U	mg/L		-0.00044	0.00044			
WG527084LFB	LFB	09/13/21 16:42	MS210827-2	.05005		.0485	mg/L	97	85	115			
L68078-02AS	AS	09/13/21 17:17	MS210827-2	.25025	.00782	.27552	mg/L	107	70	130			
L68078-02ASD	ASD	09/13/21 17:18	MS210827-2	.25025	.00782	.27261	mg/L	106	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
WG527084													
WG527084ICV	ICV	09/13/21 16:39	MS210727-2	.05		.04874	mg/L	97	90	110			
WG527084ICB	ICB	09/13/21 16:41				U	mg/L		-0.00088	0.00088			
WG527084LFB	LFB	09/13/21 16:42	MS210827-2	.05		.04878	mg/L	98	85	115			
L68078-02AS	AS	09/13/21 17:17	MS210827-2	.25	.00937	.2235	mg/L	86	70	130			
L68078-02ASD	ASD	09/13/21 17:18	MS210827-2	.25	.00937	.21955	mg/L	84	70	130	2	20	

QUIVIRA

ACZ Project ID: **L68078**

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
WG527194													
WG527194ICV	ICV	09/15/21 0:32	WI210904-1	2.4161		2.394	mg/L	99	90	110			
WG527194ICB	ICB	09/15/21 0:33				U	mg/L		-0.02	0.02			
WG527199													
WG527199LFB1	LFB	09/15/21 2:50	WI210331-13	2		2.026	mg/L	101	90	110			
L68077-01AS	AS	09/15/21 2:52	WI210331-13	2	U	2.117	mg/L	106	90	110			
L68077-02DUP	DUP	09/15/21 2:55			.247	.263	mg/L				6	20	
L68078-05AS	AS	09/15/21 3:12	WI210331-13	2	U	2.019	mg/L	101	90	110			
L68200-02DUP	DUP	09/15/21 3:14			2.73	2.7	mg/L				1	20	
WG527199LFB2	LFB	09/15/21 3:30	WI210331-13	2		2.002	mg/L	100	90	110			

Potassium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526939													
WG526939ICV	ICV	09/10/21 16:41	II210826-1	20		19.8	mg/L	99	95	105			
WG526939ICB	ICB	09/10/21 16:47				U	mg/L		-0.6	0.6			
WG526939LFB	LFB	09/10/21 17:00	II210910-2	99.96008		97.78	mg/L	98	85	115			
L68182-03AS	AS	09/10/21 17:30	II210910-2	99.96008	U	99.23	mg/L	99	85	115			
L68182-03ASD	ASD	09/10/21 17:39	II210910-2	99.96008	U	97.93	mg/L	98	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
WG526212													
WG526212PBW	PBW	08/30/21 14:30				U	mg/L		-20	20			
WG526212LCSW	LCSW	08/30/21 14:32	PCN64125	1000		990	mg/L	99	80	120			
L68079-05DUP	DUP	08/30/21 15:30			5760	5760	mg/L				0	10	

Selenium, dissolved

SM 3114 B, AA-Hydride

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526235													
WG526235ICV	ICV	08/31/21 12:17	SE210707-1	.025		.0254	mg/L	102	90	110			
WG526235ICB	ICB	08/31/21 12:19				U	mg/L		-0.006	0.006			
WG526254													
WG526254LRB	LRB	08/31/21 12:49				U	mg/L		-0.006	0.006			
WG526254LFB	LFB	08/31/21 12:51	SE210601-8	.0225		.0224	mg/L	100	85	115			
L68078-01LFM	LFM	08/31/21 12:57	SE210601-8	.0225	U	.0239	mg/L	106	85	115			
L68078-01LFMD	LFMD	08/31/21 12:59	SE210601-8	.0225	U	.0227	mg/L	101	85	115	5	20	
WG526620													
WG526620ICV	ICV	09/07/21 9:48	SE210707-1	.025		.0268	mg/L	107	90	110			
WG526620ICB	ICB	09/07/21 9:50				U	mg/L		-0.006	0.006			
WG526621													
WG526621LRB	LRB	09/07/21 10:32				U	mg/L		-0.006	0.006			
WG526621LFB	LFB	09/07/21 10:34	SE210901-2	.0225		.0206	mg/L	92	85	115			
L68169-03LFM	LFM	09/07/21 10:45	SE210901-2	.0225	.0027	.0193	mg/L	74	85	115			M2
L68169-03LFMD	LFMD	09/07/21 10:47	SE210901-2	.0225	.0027	.0191	mg/L	73	85	115	1	20	M2

QUIVIRA

ACZ Project ID: **L68078**

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

Sodium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526939													
WG526939ICV	ICV	09/10/21 16:41	II210826-1	100		99.83	mg/L	100	95	105			
WG526939ICB	ICB	09/10/21 16:47				U	mg/L		-0.6	0.6			
WG526939LFB	LFB	09/10/21 17:00	II210910-2	100.007		98.81	mg/L	99	85	115			
L68182-03AS	AS	09/10/21 17:30	II210910-2	100.007	U	100.4	mg/L	100	85	115			
L68182-03ASD	ASD	09/10/21 17:39	II210910-2	100.007	U	99.17	mg/L	99	85	115	1	20	

Sulfate

D516-02/-07/-11 - TURBIDIMETRIC

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526823													
WG526823ICB	ICB	09/10/21 9:45				U	mg/L		-3	3			
WG526823ICV	ICV	09/10/21 9:45	WI210909-1	20.46		20	mg/L	98	90	110			
WG526823LFB	LFB	09/10/21 10:46	WI210105-3	10		9.3	mg/L	93	90	110			
L66183-15DUP	DUP	09/10/21 10:46			20.3	20.5	mg/L				1	20	
L68077-01AS	AS	09/10/21 11:59	SO4TURB40X	9.99	817	828.1	mg/L	111	90	110			M3
WG527177													
WG527177ICB	ICB	09/15/21 9:54				U	mg/L		-3	3			
WG527177ICV	ICV	09/15/21 9:54	WI210909-1	20.46		19.9	mg/L	97	90	110			
WG527177LFB	LFB	09/15/21 10:21	WI210105-3	10		9.2	mg/L	92	90	110			
L67909-02DUP	DUP	09/15/21 10:52			1590	1564	mg/L				2	20	
L68078-04AS	AS	09/15/21 11:06	SO4TURB	10	2870	3166.8	mg/L	2968	90	110			M3

Uranium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527084													
WG527084ICV	ICV	09/13/21 16:39	MS210727-2	.05		.04786	mg/L	96	90	110			
WG527084ICB	ICB	09/13/21 16:41				U	mg/L		-0.00022	0.00022			
WG527084LFB	LFB	09/13/21 16:42	MS210827-2	.05		.04735	mg/L	95	85	115			
L68078-02AS	AS	09/13/21 17:17	MS210827-2	.25	1.97	2.21933	mg/L	100	70	130			
L68078-02ASD	ASD	09/13/21 17:18	MS210827-2	.25	1.97	2.17877	mg/L	84	70	130	2	20	

Rio Algom Mining Company

ACZ Project ID: **L68078**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68078-01	WG526877	Chloride	SM4500CI-E	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.
	WG526823	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.
	WG526603	Total Alkalinity	SM2320B - Titration	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).
L68078-02	WG526877	Chloride	SM4500CI-E	B7	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 10X the concentration in the method blank.
			SM4500CI-E	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.
	WG526621	Selenium, dissolved	SM 3114 B, AA-Hydride	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG526823	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.
	WG526603	Total Alkalinity	SM2320B - Titration	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).
L68078-03	WG526877	Chloride	SM4500CI-E	B7	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 10X the concentration in the method blank.
			SM4500CI-E	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.
	WG526823	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.
	WG526603	Total Alkalinity	SM2320B - Titration	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).

Rio Algom Mining Company

ACZ Project ID: **L68078**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68078-04	WG526939	Calcium, dissolved	M200.7 ICP	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
	WG526877	Chloride	SM4500CI-E	B7	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 10X the concentration in the method blank.
			SM4500CI-E	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.
	WG526603	Conductivity @25C	SM2510B	ZW	Method deviation. The sample was centrifuged prior to analysis due to high solid content.
	WG526166	Cyanide, Total	D7511-09	Q3	Sample received with improper or inadequate chemical preservation.
	WG526939	Iron, dissolved	M200.7 ICP	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
		Magnesium, dissolved	M200.7 ICP	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
	WG527084	Molybdenum, dissolved	M200.8 ICP-MS	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
		Nickel, dissolved	M200.8 ICP-MS	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
	WG526939	Potassium, dissolved	M200.7 ICP	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
		Sodium, dissolved	M200.7 ICP	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
	WG527177	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.
	WG526603	Total Alkalinity	SM2320B - Titration	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).
			SM2320B - Titration	ZW	Method deviation. The sample was centrifuged prior to analysis due to high solid content.
	WG527084	Uranium, dissolved	M200.8 ICP-MS	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
L68078-05	WG526877	Chloride	SM4500CI-E	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.
	WG527177	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.
	WG526603	Total Alkalinity	SM2320B - Titration	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).

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 5-02 KD-20210823

Locator:

ACZ Sample ID: **L68078-01**

Date Sampled: 08/23/21 11:10

Date Received: 08/26/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/29/21 16:12		-0.46	2.5	4.4	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	10/05/21 13:24		1.19	2.6	2.9	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	10/20/21 0:02		0.81	0.15	0.73	pCi/L	*	fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/29/21 15:42		0.27	0.77	2	pCi/L	*	slc

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/28/21 12:16		0.493	1.1	1.9	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 5-73 ALL-R-20210823

Locator:

ACZ Sample ID: **L68078-02**

Date Sampled: 08/23/21 14:47

Date Received: 08/26/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/29/21 16:12		-2.7	3.2	5.8	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	10/06/21 13:11		1.01	1.8	1.8	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	10/20/21 0:04		0.09	0.08	0.45	pCi/L	*	fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/29/21 15:42		0.28	0.89	2.2	pCi/L	*	slc

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/28/21 12:16		1.38	0.77	1	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-59 ALL-20210823

Locator:

ACZ Sample ID: **L68078-03**

Date Sampled: 08/23/21 17:11

Date Received: 08/26/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/29/21 16:12		2.2	1.5	2.4	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	10/05/21 13:24		2.22	2.2	1.6	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	10/20/21 0:05		1.3	0.27	0.89	pCi/L	*	fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/29/21 15:42		1	0.94	2.6	pCi/L	*	slc

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/28/21 12:16		1.04	0.62	0.83	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-02 TRB-20210824

Locator:

ACZ Sample ID: **L68078-04**

Date Sampled: 08/24/21 12:50

Date Received: 08/26/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/29/21 16:12		10	110	190	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	10/06/21 9:39		0.971	2.8	3.2	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	10/20/21 0:07		0.33	0.12	0.65	pCi/L	*	fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/29/21 15:42		-0.32	1.1	2.8	pCi/L	*	slc

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/29/21 9:02		1.04	0.55	0.64	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 33-01 TRA -20210825

Locator:

ACZ Sample ID: **L68078-05**

Date Sampled: 08/25/21 11:10

Date Received: 08/26/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/29/21 16:12		-0.47	1.5	2.7	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	10/05/21 13:24		0.899	2.6	3	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	10/20/21 0:08		1.2	0.13	0.3	pCi/L	*	fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/29/21 15:43		0.13	0.81	2.1	pCi/L	*	slc

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/29/21 9:02		0.59	0.55	0.85	pCi/L	*	djc

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>

QUIVIRA

ACZ Project ID: **L68078**

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
WG528510																
WG528510LCSW	LCSW	10/28/1921	PCN64361	99.69				89	4.2	3	89	55	121			
WG528510PBW	PBW	10/28/1921						5.2	1.5	2.2			4.4			B1
L67827-01DUP	DUP-RER	10/28/1921			2.2	1.4	2.3	.65	1.7	2.9				0.7	2	
L67827-01DUP	DUP-RPD	10/28/1921			2.2	1.4	2.3	.65	1.7	2.9				109	20	N1A RG
L67960-02MS	MS	10/28/21	PCN64361	99.69	110	47	73	44	13	19	-66	55	121			M2 N1A
L68078-03DUP	DUP-RPD	10/29/21			2.2	1.5	2.4	2.1	1.5	2.5				5	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
WG528575																
WG528575LCSW	LCSW	10/05/21	PCN64361	500				532	120	3.4	106	51	128			
WG528575PBW	PBW	10/05/21						.505	4.6	5.6			11.2			
L68078-05MS	MS	10/05/21	PCN64361	500	0.899	2.6	3	504	110	2	101	51	128			
L68078-02DUP	DUP-RPD	10/06/21			1.01	1.8	1.8	1.12	1.8	1.8				10	20	

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
WG529153																
WG529153LCSW	LCSW	10/20/21	PCN64374	20				22	0.53	0.43	110	43	148			
WG529153PBW	PBW	10/20/21						0	0.06	0.53			1.06			
L68078-05DUP	DUP-RPD	10/20/21			1.2	0.13	0.3	1.5	0.23	0.83				22	20	RG
L68078-05DUP	DUP-RER	10/20/21			1.2	0.13	0.3	1.5	0.23	0.83				1.13	2	
L68417-01MS	MS	10/20/21	PCN64374	20	0.95	0.12	0.25	19	0.49	0.1	90	43	148			
L68568-01DUP	DUP-RPD	10/20/21			0.07	0.06	0.32	.05	0.07	0.54				33	20	RG
L68568-01DUP	DUP-RER	10/20/21			0.07	0.06	0.32	.05	0.07	0.54				0.22	2	

QUIVIRA

ACZ Project ID: **L68078**

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
WG527947																
L68125-02DUP	DUP-RER	09/29/21			0.55	0.81	1.9	1.6	1.1	2.5				0.77	2	
L68125-02DUP	DUP-RPD	09/29/21			0.55	0.81	1.9	1.6	1.1	2.5				98	20	RG
WG527947LCSW	LCSW	09/29/21	PCN63356	9.41				7.2	1.3	0.99	77	47	123			
WG527947PBW	PBW	09/29/21						.14	0.34	0.35			0.7			
L68077-01DUP	DUP-RER	09/29/21			1.3	0.87	1.9	2.1	0.74	1.6				0.7	2	
L68077-01DUP	DUP-RPD	09/29/21			1.3	0.87	1.9	2.1	0.74	1.6				47	20	RG
L68077-06MS	MS	09/29/21	PCN63356	9.41	0.5	0.68	1.6	8.2	0.97	1.6	82	47	123			

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
WG527570																
WG527570PBW	PBW	09/28/21						.377	0.28	0.4			0.8			
WG527570LCSW	LCSW	09/28/21	PCN58726	200				206	26	0.41	103	91	126			
L68280-01DUP	DUP-RER	09/29/21			0.578	0.32	0.4	.205	0.21	0.34				0.97	2	
L68280-01DUP	DUP-RPD	09/29/21			0.578	0.32	0.4	.205	0.21	0.34				95	20	RG
L68280-04DUP	DUP-RPD	09/29/21			0.806	0.33	0.3	.487	0.32	0.45				49	20	RG
L68280-04DUP	DUP-RER	09/29/21			0.806	0.33	0.3	.487	0.32	0.45				0.69	2	
L68280-02MS	MS	09/29/21	PCN58726	200	0.147	0.22	0.37	212	27	0.32	106	91	126			

Rio Algom Mining Company

ACZ Project ID: **L68078**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68078-01	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1A	See Case Narrative.
	WG529153	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.
	WG527947	Radium 228, dissolved	M9320	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.
	WG527570	Thorium 230, dissolved	ESM 4506	DJ	Sample dilution required due to insufficient sample.
			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.
L68078-02	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1A	See Case Narrative.
	WG529153	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.
	WG527947	Radium 228, dissolved	M9320	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.
	WG527570	Thorium 230, dissolved	ESM 4506	DJ	Sample dilution required due to insufficient sample.
			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.
L68078-03	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1A	See Case Narrative.
	WG529153	Radium 226, dissolved	M903.1	DJ	Sample dilution required due to insufficient sample.
			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.
	WG527947	Radium 228, dissolved	M9320	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.
	WG527570	Thorium 230, dissolved	ESM 4506	DJ	Sample dilution required due to insufficient sample.
			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: **L68078**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68078-04	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1	See Case Narrative.
			EICHROM, OTW01	N1A	See Case Narrative.
	WG529153	Radium 226, dissolved	M903.1	DJ	Sample dilution required due to insufficient sample.
			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.
	WG527947	Radium 228, dissolved	M9320	DJ	Sample dilution required due to insufficient sample.
			M9320	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.
	WG527570	Thorium 230, dissolved	ESM 4506	DJ	Sample dilution required due to insufficient sample.
			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.
L68078-05	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1A	See Case Narrative.
	WG529153	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.
	WG527947	Radium 228, dissolved	M9320	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.
	WG527570	Thorium 230, dissolved	ESM 4506	DJ	Sample dilution required due to insufficient sample.
			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: **L68078**

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
4510319940

ACZ Project ID: L68078
Date Received: 08/26/2021 08:42
Received By:
Date Printed: 8/27/2021

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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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 L68078-04 Container B2444338 (GREEN PC): Added 1 mls nitric acid to the sub-sample to adjust the pH to the appropriate range.	<input type="checkbox"/>	<input checked="" 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?
6532	13.4	NA	22	Yes
NA35773	19.2	NA	17	Yes
6566	4	<=6.0	15	Yes
6527	1.2	<=6.0	15	Yes

Was ice present in the shipment container(s)?

Rio Algom Mining Company
4510319940

ACZ Project ID: L68078
Date Received: 08/26/2021 08:42
Received By:
Date Printed: 8/27/2021

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.

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).

CHAIN of CUSTODY

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

Report to:

Name: Kent Applegate	Address: PO Box 218
Company: Rio Algom Mining LLC	Grants, NM 87020
E-mail: Kent.KC.Applegate@bhpbilliton.com	Telephone: 1-505-287-8851

Copy of Report to:

Name: See Attached Note Sheet	E-mail: See Attached Note Sheet
Company: INTERA, INC.	Telephone: 505-246-1600 x1207

Invoice to:

Name: Kent Applegate	Address: PO Box 218
Company: Rio Algom Mining LLC	Grants, NM 87020
E-mail: Kent.KC.Applegate@bhpbilliton.com	Telephone: 1-505-287-8851

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?

YES	<input checked="" type="checkbox"/>
NO	<input type="checkbox"/>

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

Are samples for SDWA Compliance Monitoring?

Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
-----	--------------------------	----	-------------------------------------

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

Sampler's Name: D. W. Mason Sampler's Site Information State NM Zip code 87020 Time Zone MST

*Sampler's Signature: B. Miller

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

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: <u>N/A</u>					# of Containers	NRC-KD	NRC-ALL	NRC-TRB	NRC-TRA								
PO#: <u>4502646257</u>																	
Reporting state for compliance testing: <u>NM</u>					<input checked="" type="checkbox"/>												
Check box if samples include NRC licensed material?																	
SAMPLE IDENTIFICATION		DATE:TIME	Matrix														
5-02 KD-20210823		8/23/21 1110	GW	6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-73 ALL-R-20210823		8/23/21 1447	GW	5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32-59 ALL-20210823		8/23/21 1711	GW	5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36-02 TRB-20210824		8/24/21 1250	GW	6	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33-01 TRA-20210825		8/25/21 1110	GW	6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> </								

REMARKS

RAML COC#: 21-62. Note different COC's may have different PO's. Shipment of 4 Coolers.

See Attached Note Sheet

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

RELINQUISHED BY:		DATE:TIME		RECEIVED BY:		DATE:TIME	
B.W. Williams		9/25/21 1630		[Signature]		9/26/21 8:33	

FRMAD050 06 14 14

FRMAD050.06.14.14

White - Return with sample. Yellow - Retain for your records.

68078 Chain of Custody

October 19, 2021

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, Clark Short, Angela Persico

Project ID: 4510319940

ACZ Project ID: L68800

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on September 25, 2021. This project has been assigned to ACZ's project number, L68800. 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 L68800. 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 November 18, 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.



Scott Habermehl has reviewed
and approved this report.



Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-06 KD-09232021

ACZ Sample ID: **L68800-01**

Date Sampled: 09/23/21 12:40

Date Received: 09/25/21

Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Beryllium, dissolved	M200.8 ICP-MS	1	0.0143			mg/L	0.00008	0.00025	10/14/21 19:34	bsu

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-45 KD-R 09232021

ACZ Sample ID: **L68800-02**

Date Sampled: 09/23/21 14:05

Date Received: 09/25/21

Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Molybdenum, dissolved M200.8 ICP-MS		1	0.0779			mg/L	0.0002	0.0005	10/14/21 19:39	bsu



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: **L68800**

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
WG529457													
WG529457ICV	ICV	10/14/21 18:50	MS211013-2	.05		.051075	mg/L	102	90	110			
WG529457ICB	ICB	10/14/21 18:51				.000087	mg/L		-0.000176	0.000176			
WG529457LFB	LFB	10/14/21 18:53	MS210927-3	.05005		.046088	mg/L	92	85	115			
L68800-01AS	AS	10/14/21 19:36	MS210927-3	.05005	.0143	.05615	mg/L	84	70	130			
L68800-01ASD	ASD	10/14/21 19:37	MS210927-3	.05005	.0143	.05803	mg/L	87	70	130	3	20	

Molybdenum, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529457													
WG529457ICV	ICV	10/14/21 18:50	MS211013-2	.01992		.02054	mg/L	103	90	110			
WG529457ICB	ICB	10/14/21 18:51				U	mg/L		-0.00044	0.00044			
WG529457LFB	LFB	10/14/21 18:53	MS210927-3	.05005		.04763	mg/L	95	85	115			
L68800-01AS	AS	10/14/21 19:36	MS210927-3	.05005	U	.05063	mg/L	101	70	130			
L68800-01ASD	ASD	10/14/21 19:37	MS210927-3	.05005	U	.05211	mg/L	104	70	130	3	20	

Rio Algom Mining Company

ACZ Project ID: **L68800**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
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No extended qualifiers associated with this analysis

Rio Algom Mining Company

ACZ Project ID: **L68800**

No certification qualifiers associated with this analysis

Rio Algom Mining Company
4510319940

ACZ Project ID: L68800
Date Received: 09/25/2021 11:45
Received By:
Date Printed: 9/28/2021

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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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?
-----	-----	-----	-----	-----
6785	17.8	NA	16	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not 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
4510319940

ACZ Project ID: L68800

Date Received: 09/25/2021 11:45

Received By:

Date Printed: 9/28/2021

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).

December 16, 2021

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: Michaela Gorospe, jcarroll, Jeremy Scott Collyard, Marcus Powell, Sharon Clouse, Drew Werth, Casandra Woodward, Shubhangi Agarwal, Anupama Subbakrishna, Clark Short, Angela Persico

Project ID: 4510319940

ACZ Project ID: L69101

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 07, 2021. This project has been assigned to ACZ's project number, L69101. 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 L69101. 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 January 15, 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

December 16, 2021

Project ID: 4510319940

ACZ Project ID: L69101

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 10 groundwater samples from Rio Algom Mining Company on October 7, 2021. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L69101. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic, 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: L69101-10/THORIUM 230

Tracer recovery outside of acceptance limits due to matrix. During step 11.9, sample exhibited very low amount of precip. Sample already run on a dilution.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-05-TRA_10052021

ACZ Sample ID: **L69101-01**

Date Sampled: 10/05/21 10:42

Date Received: 10/07/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	<0.1	U		mg/L	0.1	0.5	10/19/21 16:43	kja
Antimony, dissolved	M200.8 ICP-MS	2	<0.0008	U		mg/L	0.0008	0.004	10/27/21 15:40	mfm
Arsenic, dissolved	M200.8 ICP-MS	2	0.00424			mg/L	0.0004	0.002	10/27/21 15:40	mfm
Barium, dissolved	M200.7 ICP	2	<0.014	U		mg/L	0.014	0.07	10/19/21 16:43	kja
Beryllium, dissolved	M200.8 ICP-MS	2	<0.00016	U		mg/L	0.00016	0.0005	10/27/21 15:40	mfm
Boron, dissolved	M200.7 ICP	2	0.375			mg/L	0.06	0.2	10/19/21 16:43	kja
Cadmium, dissolved	M200.8 ICP-MS	2	<0.0001	U		mg/L	0.0001	0.0005	10/27/21 15:40	mfm
Calcium, dissolved	M200.7 ICP	2	162			mg/L	0.2	1	10/19/21 16:43	kja
Chromium, dissolved	M200.8 ICP-MS	2	<0.001	U		mg/L	0.001	0.004	10/27/21 15:40	mfm
Cobalt, dissolved	M200.7 ICP	2	<0.04	U		mg/L	0.04	0.1	10/19/21 16:43	kja
Copper, dissolved	M200.7 ICP	2	<0.02	U		mg/L	0.02	0.1	10/19/21 16:43	kja
Iron, dissolved	M200.7 ICP	2	<0.12	U		mg/L	0.12	0.3	10/19/21 16:43	kja
Lead, dissolved	M200.8 ICP-MS	2	<0.0002	U		mg/L	0.0002	0.001	10/27/21 15:40	mfm
Magnesium, dissolved	M200.7 ICP	2	64.9			mg/L	0.4	2	10/19/21 16:43	kja
Manganese, dissolved	M200.7 ICP	2	0.143			mg/L	0.02	0.1	10/19/21 16:43	kja
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	10/14/21 10:46	mlh
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0155			mg/L	0.0004	0.001	10/27/21 15:40	mfm
Nickel, dissolved	M200.8 ICP-MS	2	0.00158	B		mg/L	0.0008	0.002	10/27/21 15:40	mfm
Potassium, dissolved	M200.7 ICP	2	8.17			mg/L	0.4	2	10/19/21 16:43	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	10/13/21 14:49	mlh
Selenium, dissolved	M200.8 ICP-MS	2	<0.0002	U		mg/L	0.0002	0.0005	10/27/21 15:40	mfm
Silver, dissolved	M200.7 ICP	2	<0.02	U	*	mg/L	0.02	0.05	10/19/21 16:43	kja
Sodium, dissolved	M200.7 ICP	2	372			mg/L	0.4	2	10/19/21 16:43	kja
Thallium, dissolved	M200.8 ICP-MS	2	<0.0002	U		mg/L	0.0002	0.001	10/27/21 15:40	mfm
Uranium, dissolved	M200.8 ICP-MS	2	0.00330			mg/L	0.0002	0.001	10/27/21 15:40	mfm
Zinc, dissolved	M200.7 ICP	2	<0.04	U		mg/L	0.04	0.1	10/19/21 16:43	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-05-TRA_10052021

ACZ Sample ID: **L69101-01**

Date Sampled: 10/05/21 10:42

Date Received: 10/07/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	158			mg/L	2	20	10/15/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Total Alkalinity		1	158			mg/L	2	20	10/15/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-1.6			%			12/16/21 0:00	calc
Sum of Anions			31			meq/L			12/16/21 0:00	calc
Sum of Cations			30.0			meq/L			12/16/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	20	42.2		*	mg/L	8	40	10/26/21 19:40	krh
Cyanide, Total	D7511-09	1	<0.003	U	*	mg/L	0.003	0.01	10/11/21 14:35	md
Fluoride	M300.0 - Ion Chromatography	20	<1	U	*	mg/L	1	5	10/26/21 19:40	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U		mg/L	0.02	0.1	10/28/21 1:39	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	2100			mg/L	20	40	10/11/21 11:31	anc
Sulfate	M300.0 - Ion Chromatography	20	1260			mg/L	8	40	10/26/21 19:40	krh
TDS (calculated)	Calculation		2010			mg/L			12/16/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.04						12/16/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-06-KD_10052021

ACZ Sample ID: **L69101-02**

Date Sampled: 10/05/21 14:13

Date Received: 10/07/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Beryllium, dissolved	M200.8 ICP-MS	1	0.0145			mg/L	0.00008	0.00025	11/01/21 21:14	bsu

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-45-KDR_10052021

ACZ Sample ID: **L69101-03**

Date Sampled: 10/05/21 12:46

Date Received: 10/07/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0965			mg/L	0.0002	0.0005	10/27/21 15:44	mfm

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 17-VH-9_10042021

ACZ Sample ID: **L69101-04**

Date Sampled: 10/04/21 14:39

Date Received: 10/07/21

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								10/13/21 11:00	bls/md

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	10/19/21 16:46	kja
Arsenic, dissolved	M200.8 ICP-MS	1	0.00027	B		mg/L	0.0002	0.001	10/27/21 15:47	mfm
Barium, dissolved	M200.7 ICP	1	<0.007	U		mg/L	0.007	0.035	10/19/21 16:46	kja
Cadmium, dissolved	M200.8 ICP-MS	1	<0.00005	U		mg/L	0.00005	0.00025	10/27/21 15:47	mfm
Calcium, dissolved	M200.7 ICP	1	119			mg/L	0.1	0.5	10/19/21 16:46	kja
Chromium, dissolved	M200.8 ICP-MS	1	<0.0005	U		mg/L	0.0005	0.002	10/27/21 15:47	mfm
Cobalt, dissolved	M200.8 ICP-MS	1	0.000244	B		mg/L	0.00005	0.00025	10/27/21 15:47	mfm
Copper, dissolved	M200.7 ICP	1	<0.01	U		mg/L	0.01	0.05	10/19/21 16:46	kja
Iron, dissolved	M200.7 ICP	1	<0.06	U		mg/L	0.06	0.15	10/19/21 16:46	kja
Lead, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	10/27/21 15:47	mfm
Magnesium, dissolved	M200.7 ICP	1	46.9			mg/L	0.2	1	10/19/21 16:46	kja
Manganese, dissolved	M200.7 ICP	1	0.043	B		mg/L	0.01	0.05	10/19/21 16:46	kja
Molybdenum, dissolved	M200.7 ICP	1	<0.02	U		mg/L	0.02	0.1	10/19/21 16:46	kja
Nickel, dissolved	M200.7 ICP	1	<0.008	U		mg/L	0.008	0.04	10/19/21 16:46	kja
Potassium, dissolved	M200.7 ICP	1	5.29			mg/L	0.2	1	10/19/21 16:46	kja
Selenium, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.00025	10/27/21 15:47	mfm
Silver, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	10/29/21 14:42	mfm
Sodium, dissolved	M200.7 ICP	1	262			mg/L	0.2	1	10/19/21 16:46	kja
Uranium, dissolved	M200.8 ICP-MS	1	0.00015	B		mg/L	0.0001	0.0005	10/27/21 15:47	mfm
Zinc, dissolved	M200.7 ICP	1	0.034	B		mg/L	0.02	0.05	10/19/21 16:46	kja

Rio Algom Mining Company

Project ID: 4510319940
Sample ID: 17-VH-9_10042021

ACZ Sample ID: **L69101-04**
Date Sampled: 10/04/21 14:39
Date Received: 10/07/21
Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	224			mg/L	2	20	10/15/21 0:00	jck
Carbonate as CaCO ₃		1	5.9	B		mg/L	2	20	10/15/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Total Alkalinity		1	230			mg/L	2	20	10/15/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.0			%			12/16/21 0:00	calc
Sum of Anions			22			meq/L			12/16/21 0:00	calc
Sum of Cations			22			meq/L			12/16/21 0:00	calc
Chloride	SM4500Cl-E	1	11.3			mg/L	0.5	2	10/29/21 13:08	md
Fluoride	SM4500F-C	1	0.58			mg/L	0.15	0.35	10/26/21 21:30	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U		mg/L	0.02	0.1	10/28/21 1:44	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	<0.2	U	*	mg/L	0.2	0.5	10/23/21 1:58	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	1430			mg/L	20	40	10/11/21 11:35	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	20	794		*	mg/L	20	100	10/28/21 15:18	wtc
TDS (calculated)	Calculation		1380			mg/L			12/16/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.04						12/16/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: MW-35-09_10042021

ACZ Sample ID: **L69101-05**

Date Sampled: 10/04/21 17:07

Date Received: 10/07/21

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								10/13/21 11:19	bls/md

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	<0.25	U		mg/L	0.25	1.25	10/19/21 16:49	kja
Arsenic, dissolved	M200.8 ICP-MS	5	<0.001	U		mg/L	0.001	0.005	10/27/21 15:53	mfm
Barium, dissolved	M200.7 ICP	5	<0.035	U		mg/L	0.035	0.175	10/19/21 16:49	kja
Cadmium, dissolved	M200.8 ICP-MS	5	<0.00025	U		mg/L	0.00025	0.00125	10/27/21 15:53	mfm
Calcium, dissolved	M200.7 ICP	5	480			mg/L	0.5	2.5	10/19/21 16:49	kja
Chromium, dissolved	M200.8 ICP-MS	5	<0.0025	U		mg/L	0.0025	0.01	10/27/21 15:53	mfm
Cobalt, dissolved	M200.8 ICP-MS	5	0.00510			mg/L	0.00025	0.00125	10/27/21 15:53	mfm
Copper, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	10/19/21 16:49	kja
Iron, dissolved	M200.7 ICP	5	<0.3	U		mg/L	0.3	0.75	10/19/21 16:49	kja
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/27/21 15:53	mfm
Magnesium, dissolved	M200.7 ICP	5	213			mg/L	1	5	10/19/21 16:49	kja
Manganese, dissolved	M200.7 ICP	5	1.01			mg/L	0.05	0.25	10/19/21 16:49	kja
Molybdenum, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.5	10/19/21 16:49	kja
Nickel, dissolved	M200.7 ICP	5	<0.04	U		mg/L	0.04	0.2	10/19/21 16:49	kja
Potassium, dissolved	M200.7 ICP	5	6.56			mg/L	1	5	10/19/21 16:49	kja
Selenium, dissolved	M200.8 ICP-MS	5	0.00094	B		mg/L	0.0005	0.00125	10/27/21 15:53	mfm
Silver, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/29/21 14:44	mfm
Sodium, dissolved	M200.7 ICP	5	396			mg/L	1	5	10/19/21 16:49	kja
Uranium, dissolved	M200.8 ICP-MS	5	0.206			mg/L	0.0005	0.0025	10/27/21 15:53	mfm
Zinc, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	10/19/21 16:49	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: MW-35-09_10042021

ACZ Sample ID: **L69101-05**

Date Sampled: 10/04/21 17:07

Date Received: 10/07/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	178			mg/L	2	20	10/15/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Total Alkalinity		1	178			mg/L	2	20	10/15/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-4.8			%			12/16/21 0:00	calc
Sum of Anions			65			meq/L			12/16/21 0:00	calc
Sum of Cations			59			meq/L			12/16/21 0:00	calc
Chloride	SM4500Cl-E	1	59.4			mg/L	0.5	2	10/29/21 13:09	md
Fluoride	SM4500F-C	1	1.51			mg/L	0.15	0.35	10/26/21 21:38	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	0.084	B		mg/L	0.02	0.1	10/28/21 1:45	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.31	B	*	mg/L	0.2	0.5	10/23/21 1:59	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	4250			mg/L	40	80	10/11/21 11:38	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	125	2860		*	mg/L	125	625	10/28/21 14:56	wtc
TDS (calculated)	Calculation		4130			mg/L			12/16/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.03						12/16/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30W-VH-6_10052021

ACZ Sample ID: **L69101-06**

Date Sampled: 10/05/21 15:00

Date Received: 10/07/21

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								10/13/21 11:38	bls/md

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	<0.25	U		mg/L	0.25	1.25	10/19/21 16:52	kja
Arsenic, dissolved	M200.8 ICP-MS	5	<0.001	U		mg/L	0.001	0.005	10/27/21 15:56	mfm
Barium, dissolved	M200.7 ICP	5	<0.035	U		mg/L	0.035	0.175	10/19/21 16:52	kja
Cadmium, dissolved	M200.8 ICP-MS	5	<0.00025	U		mg/L	0.00025	0.00125	10/27/21 15:56	mfm
Calcium, dissolved	M200.7 ICP	5	519			mg/L	0.5	2.5	10/19/21 16:52	kja
Chromium, dissolved	M200.8 ICP-MS	5	<0.0025	U		mg/L	0.0025	0.01	10/27/21 15:56	mfm
Cobalt, dissolved	M200.8 ICP-MS	5	0.00120	B		mg/L	0.00025	0.00125	10/27/21 15:56	mfm
Copper, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	10/19/21 16:52	kja
Iron, dissolved	M200.7 ICP	5	<0.3	U		mg/L	0.3	0.75	10/19/21 16:52	kja
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/27/21 15:56	mfm
Magnesium, dissolved	M200.7 ICP	5	252			mg/L	1	5	10/19/21 16:52	kja
Manganese, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	10/19/21 16:52	kja
Molybdenum, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.5	10/19/21 16:52	kja
Nickel, dissolved	M200.7 ICP	5	<0.04	U		mg/L	0.04	0.2	10/19/21 16:52	kja
Potassium, dissolved	M200.7 ICP	5	24.2			mg/L	1	5	10/19/21 16:52	kja
Selenium, dissolved	M200.8 ICP-MS	5	0.00084	B		mg/L	0.0005	0.00125	10/27/21 15:56	mfm
Silver, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/29/21 14:46	mfm
Sodium, dissolved	M200.7 ICP	5	442			mg/L	1	5	10/19/21 16:52	kja
Uranium, dissolved	M200.8 ICP-MS	5	1.75			mg/L	0.0005	0.0025	10/27/21 15:56	mfm
Zinc, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	10/19/21 16:52	kja

Rio Algom Mining Company

Project ID: 4510319940
Sample ID: 30W-VH-6_10052021

ACZ Sample ID: **L69101-06**
Date Sampled: 10/05/21 15:00
Date Received: 10/07/21
Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	371			mg/L	2	20	10/15/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Total Alkalinity		1	371			mg/L	2	20	10/15/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-8.2			%			12/16/21 0:00	calc
Sum of Anions			79			meq/L			12/16/21 0:00	calc
Sum of Cations			67			meq/L			12/16/21 0:00	calc
Chloride	SM4500Cl-E	5	466			mg/L	2.5	10	10/29/21 13:46	md
Fluoride	SM4500F-C	1	0.16	B		mg/L	0.15	0.35	10/26/21 21:46	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	0.085	B		mg/L	0.02	0.1	10/28/21 1:47	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	<0.2	U	*	mg/L	0.2	0.5	10/23/21 2:00	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	4680	H	*	mg/L	40	80	10/20/21 19:10	jck
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	125	2780		*	mg/L	125	625	10/28/21 14:56	wtc
TDS (calculated)	Calculation		4710			mg/L			12/16/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.99						12/16/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-06-TRB_10052021

ACZ Sample ID: **L69101-07**

Date Sampled: 10/05/21 11:15

Date Received: 10/07/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	10	<0.5	U		mg/L	0.5	2.5	10/19/21 16:55	kja
Antimony, dissolved	M200.8 ICP-MS	5	<0.002	U		mg/L	0.002	0.01	10/27/21 15:58	mfm
Arsenic, dissolved	M200.8 ICP-MS	5	<0.001	U		mg/L	0.001	0.005	10/27/21 15:58	mfm
Barium, dissolved	M200.7 ICP	10	<0.07	U		mg/L	0.07	0.35	10/19/21 16:55	kja
Beryllium, dissolved	M200.8 ICP-MS	5	<0.0004	U		mg/L	0.0004	0.00125	10/27/21 15:58	mfm
Boron, dissolved	M200.7 ICP	10	0.320	B		mg/L	0.3	1	10/19/21 16:55	kja
Cadmium, dissolved	M200.8 ICP-MS	5	<0.00025	U		mg/L	0.00025	0.00125	10/27/21 15:58	mfm
Calcium, dissolved	M200.7 ICP	10	596			mg/L	1	5	10/19/21 16:55	kja
Chromium, dissolved	M200.8 ICP-MS	5	<0.0025	U		mg/L	0.0025	0.01	10/27/21 15:58	mfm
Cobalt, dissolved	M200.7 ICP	10	<0.2	U		mg/L	0.2	0.5	10/19/21 16:55	kja
Copper, dissolved	M200.7 ICP	10	<0.1	U		mg/L	0.1	0.5	10/19/21 16:55	kja
Iron, dissolved	M200.7 ICP	10	<0.6	U		mg/L	0.6	1.5	10/19/21 16:55	kja
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/27/21 15:58	mfm
Magnesium, dissolved	M200.7 ICP	10	489			mg/L	2	10	10/19/21 16:55	kja
Manganese, dissolved	M200.7 ICP	10	0.334	B		mg/L	0.1	0.5	10/19/21 16:55	kja
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	10/14/21 10:47	mlh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.00260			mg/L	0.001	0.0025	10/27/21 15:58	mfm
Nickel, dissolved	M200.8 ICP-MS	5	0.00686			mg/L	0.002	0.005	10/27/21 15:58	mfm
Potassium, dissolved	M200.7 ICP	10	14.9			mg/L	2	10	10/19/21 16:55	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	10/13/21 14:51	mlh
Selenium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.00125	10/27/21 15:58	mfm
Silver, dissolved	M200.7 ICP	10	<0.1	U	*	mg/L	0.1	0.25	10/19/21 16:55	kja
Sodium, dissolved	M200.7 ICP	10	540			mg/L	2	10	10/19/21 16:55	kja
Thallium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/27/21 15:58	mfm
Uranium, dissolved	M200.8 ICP-MS	5	0.0723			mg/L	0.0005	0.0025	10/27/21 15:58	mfm
Zinc, dissolved	M200.7 ICP	10	<0.2	U		mg/L	0.2	0.5	10/19/21 16:55	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-06-TRB_10052021

ACZ Sample ID: **L69101-07**

Date Sampled: 10/05/21 11:15

Date Received: 10/07/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	606			mg/L	2	20	10/15/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Total Alkalinity		1	606			mg/L	2	20	10/15/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-1.1			%			12/16/21 0:00	calc
Sum of Anions			96			meq/L			12/16/21 0:00	calc
Sum of Cations			94			meq/L			12/16/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	50	758		*	mg/L	20	100	10/26/21 20:16	krh
Cyanide, Total	D7511-09	1	<0.003	U	*	mg/L	0.003	0.01	10/11/21 14:37	md
Fluoride	M300.0 - Ion Chromatography	50	<2.5	U	*	mg/L	2.5	12.5	10/26/21 20:16	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U	*	mg/L	0.02	0.1	10/28/21 1:48	pjb
Residue, Filterable (TDS) @180C	SM2540C	5	6330	H	*	mg/L	100	200	10/20/21 19:13	jck
Sulfate	M300.0 - Ion Chromatography	50	3000			mg/L	20	100	10/26/21 20:16	krh
TDS (calculated)	Calculation		5770			mg/L			12/16/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.10						12/16/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: MW-35-10_10042021

ACZ Sample ID: **L69101-08**

Date Sampled: 10/04/21 17:15

Date Received: 10/07/21

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								10/13/21 11:57	bls/md

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	<0.1	U		mg/L	0.1	0.5	10/19/21 17:05	kja
Arsenic, dissolved	M200.8 ICP-MS	2	<0.0004	U		mg/L	0.0004	0.002	10/27/21 16:05	mfm
Barium, dissolved	M200.7 ICP	2	<0.014	U		mg/L	0.014	0.07	10/19/21 17:05	kja
Cadmium, dissolved	M200.8 ICP-MS	2	<0.0001	U		mg/L	0.0001	0.0005	10/27/21 16:05	mfm
Calcium, dissolved	M200.7 ICP	2	383			mg/L	0.2	1	10/19/21 17:05	kja
Chromium, dissolved	M200.8 ICP-MS	2	<0.001	U		mg/L	0.001	0.004	10/27/21 16:05	mfm
Cobalt, dissolved	M200.8 ICP-MS	2	0.00178			mg/L	0.0001	0.0005	10/27/21 16:05	mfm
Copper, dissolved	M200.7 ICP	2	<0.02	U		mg/L	0.02	0.1	10/19/21 17:05	kja
Iron, dissolved	M200.7 ICP	2	<0.12	U		mg/L	0.12	0.3	10/19/21 17:05	kja
Lead, dissolved	M200.8 ICP-MS	2	<0.0002	U		mg/L	0.0002	0.001	10/27/21 16:05	mfm
Magnesium, dissolved	M200.7 ICP	2	137			mg/L	0.4	2	10/19/21 17:05	kja
Manganese, dissolved	M200.7 ICP	2	0.435			mg/L	0.02	0.1	10/19/21 17:05	kja
Molybdenum, dissolved	M200.7 ICP	2	<0.04	U		mg/L	0.04	0.2	10/19/21 17:05	kja
Nickel, dissolved	M200.7 ICP	2	<0.016	U		mg/L	0.016	0.08	10/19/21 17:05	kja
Potassium, dissolved	M200.7 ICP	2	6.39			mg/L	0.4	2	10/19/21 17:05	kja
Selenium, dissolved	M200.8 ICP-MS	2	0.00027	B		mg/L	0.0002	0.0005	10/27/21 16:05	mfm
Silver, dissolved	M200.8 ICP-MS	2	<0.0002	U		mg/L	0.0002	0.001	10/29/21 14:48	mfm
Sodium, dissolved	M200.7 ICP	2	232			mg/L	0.4	2	10/19/21 17:05	kja
Uranium, dissolved	M200.8 ICP-MS	2	0.00417			mg/L	0.0002	0.001	10/27/21 16:05	mfm
Zinc, dissolved	M200.7 ICP	2	<0.04	U		mg/L	0.04	0.1	10/19/21 17:05	kja

Rio Algom Mining Company

Project ID: 4510319940
Sample ID: MW-35-10_10042021

ACZ Sample ID: **L69101-08**

Date Sampled: 10/04/21 17:15

Date Received: 10/07/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	325			mg/L	2	20	10/15/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Total Alkalinity		1	325			mg/L	2	20	10/15/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.4			%			12/16/21 0:00	calc
Sum of Anions			43			meq/L			12/16/21 0:00	calc
Sum of Cations			41			meq/L			12/16/21 0:00	calc
Chloride	SM4500Cl-E	1	46.1			mg/L	0.5	2	10/29/21 13:11	md
Fluoride	SM4500F-C	1	0.64			mg/L	0.15	0.35	10/26/21 21:54	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U	*	mg/L	0.02	0.1	10/28/21 1:50	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	<0.2	U	*	mg/L	0.2	0.5	10/23/21 2:02	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	2890			mg/L	20	40	10/11/21 11:49	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	80	1650		*	mg/L	80	400	10/28/21 15:21	wtc
TDS (calculated)	Calculation		2650			mg/L			12/16/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.09						12/16/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30W_VH2_10052021

ACZ Sample ID: **L69101-09**

Date Sampled: 10/05/21 13:00

Date Received: 10/07/21

Sample Matrix: Groundwater

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor								10/13/21 12:16	bls/md

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	<0.25	U		mg/L	0.25	1.25	10/19/21 17:08	kja
Arsenic, dissolved	M200.8 ICP-MS	5	<0.001	U		mg/L	0.001	0.005	10/27/21 16:07	mfm
Barium, dissolved	M200.7 ICP	5	<0.035	U		mg/L	0.035	0.175	10/19/21 17:08	kja
Cadmium, dissolved	M200.8 ICP-MS	5	<0.00025	U		mg/L	0.00025	0.00125	10/27/21 16:07	mfm
Calcium, dissolved	M200.7 ICP	5	545			mg/L	0.5	2.5	10/19/21 17:08	kja
Chromium, dissolved	M200.8 ICP-MS	5	<0.0025	U		mg/L	0.0025	0.01	10/27/21 16:07	mfm
Cobalt, dissolved	M200.8 ICP-MS	5	0.00153			mg/L	0.00025	0.00125	10/27/21 16:07	mfm
Copper, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	10/19/21 17:08	kja
Iron, dissolved	M200.7 ICP	5	2.03			mg/L	0.3	0.75	10/19/21 17:08	kja
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/27/21 16:07	mfm
Magnesium, dissolved	M200.7 ICP	5	207			mg/L	1	5	10/19/21 17:08	kja
Manganese, dissolved	M200.7 ICP	5	1.41			mg/L	0.05	0.25	10/19/21 17:08	kja
Molybdenum, dissolved	M200.7 ICP	5	0.213	B		mg/L	0.1	0.5	10/19/21 17:08	kja
Nickel, dissolved	M200.7 ICP	5	<0.04	U		mg/L	0.04	0.2	10/19/21 17:08	kja
Potassium, dissolved	M200.7 ICP	5	16.5			mg/L	1	5	10/19/21 17:08	kja
Selenium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.00125	10/27/21 16:07	mfm
Silver, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/29/21 14:49	mfm
Sodium, dissolved	M200.7 ICP	5	411			mg/L	1	5	10/19/21 17:08	kja
Uranium, dissolved	M200.8 ICP-MS	5	9.86			mg/L	0.0005	0.0025	10/27/21 16:07	mfm
Zinc, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	10/19/21 17:08	kja

Rio Algom Mining Company

Project ID: 4510319940
Sample ID: 30W_VH2_10052021

ACZ Sample ID: **L69101-09**
Date Sampled: 10/05/21 13:00
Date Received: 10/07/21
Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	441			mg/L	2	20	10/15/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Total Alkalinity		1	441			mg/L	2	20	10/15/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-5.3			%			12/16/21 0:00	calc
Sum of Anions			70			meq/L			12/16/21 0:00	calc
Sum of Cations			63			meq/L			12/16/21 0:00	calc
Chloride	SM4500Cl-E	5	359			mg/L	2.5	10	10/29/21 13:47	md
Fluoride	SM4500F-C	1	0.26	B		mg/L	0.15	0.35	10/26/21 22:02	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	0.058	B	*	mg/L	0.02	0.1	10/28/21 1:53	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1	0.46	B	*	mg/L	0.2	0.5	10/23/21 2:05	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	4210			mg/L	40	80	10/11/21 11:52	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	125	2440		*	mg/L	125	625	10/28/21 14:58	wtc
TDS (calculated)	Calculation		4250			mg/L			12/16/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.99						12/16/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-07-KD_10052021

ACZ Sample ID: **L69101-10**

Date Sampled: 10/05/21 15:25

Date Received: 10/07/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	<0.25	U		mg/L	0.25	1.25	10/19/21 17:11	kja
Antimony, dissolved	M200.8 ICP-MS	5	<0.002	U		mg/L	0.002	0.01	10/27/21 16:09	mfm
Arsenic, dissolved	M200.8 ICP-MS	5	0.00381	B		mg/L	0.001	0.005	10/27/21 16:09	mfm
Barium, dissolved	M200.7 ICP	5	<0.035	U		mg/L	0.035	0.175	10/19/21 17:11	kja
Beryllium, dissolved	M200.8 ICP-MS	5	<0.0004	U		mg/L	0.0004	0.00125	10/27/21 16:09	mfm
Boron, dissolved	M200.7 ICP	5	<0.15	U		mg/L	0.15	0.5	10/19/21 17:11	kja
Cadmium, dissolved	M200.8 ICP-MS	5	<0.00025	U		mg/L	0.00025	0.00125	10/27/21 16:09	mfm
Calcium, dissolved	M200.7 ICP	5	656			mg/L	0.5	2.5	10/19/21 17:11	kja
Chromium, dissolved	M200.8 ICP-MS	5	<0.0025	U		mg/L	0.0025	0.01	10/27/21 16:09	mfm
Cobalt, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	10/19/21 17:11	kja
Copper, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	10/19/21 17:11	kja
Iron, dissolved	M200.7 ICP	5	8.07			mg/L	0.3	0.75	10/19/21 17:11	kja
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/27/21 16:09	mfm
Magnesium, dissolved	M200.7 ICP	5	217			mg/L	1	5	10/19/21 17:11	kja
Manganese, dissolved	M200.7 ICP	5	12.8			mg/L	0.05	0.25	10/19/21 17:11	kja
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	10/14/21 10:50	mlh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.00499			mg/L	0.001	0.0025	10/27/21 16:09	mfm
Nickel, dissolved	M200.8 ICP-MS	5	0.0179			mg/L	0.002	0.005	10/27/21 16:09	mfm
Potassium, dissolved	M200.7 ICP	5	15.4			mg/L	1	5	10/19/21 17:11	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	10/13/21 14:57	mlh
Selenium, dissolved	M200.8 ICP-MS	5	0.00227			mg/L	0.0005	0.00125	10/27/21 16:09	mfm
Silver, dissolved	M200.7 ICP	5	<0.05	U	*	mg/L	0.05	0.125	10/19/21 17:11	kja
Sodium, dissolved	M200.7 ICP	5	352			mg/L	1	5	10/19/21 17:11	kja
Thallium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	10/27/21 16:09	mfm
Uranium, dissolved	M200.8 ICP-MS	5	0.0366			mg/L	0.0005	0.0025	10/27/21 16:09	mfm
Zinc, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	10/19/21 17:11	kja

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-07-KD_10052021

ACZ Sample ID: **L69101-10**

Date Sampled: 10/05/21 15:25

Date Received: 10/07/21

Sample Matrix: Groundwater

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	287			mg/L	2	20	10/15/21 0:00	jck
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	10/15/21 0:00	jck
Total Alkalinity		1	287			mg/L	2	20	10/15/21 0:00	jck
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-1.4			%			12/16/21 0:00	calc
Sum of Anions			70			meq/L			12/16/21 0:00	calc
Sum of Cations			68			meq/L			12/16/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	20	805		*	mg/L	8	40	10/27/21 22:04	krh
Cyanide, Total	D7511-09	1	0.010		*	mg/L	0.003	0.01	10/11/21 14:39	md
Fluoride	M300.0 - Ion Chromatography	20	<1	U	*	mg/L	1	5	10/27/21 22:04	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U	*	mg/L	0.02	0.1	10/28/21 1:54	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	4240			mg/L	40	80	10/11/21 11:56	anc
Sulfate	M300.0 - Ion Chromatography	20	1990			mg/L	8	40	10/27/21 22:04	krh
TDS (calculated)	Calculation		4230			mg/L			12/16/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.00						12/16/21 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: **L69101**

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
WG529511													
WG529511PBW1	PBW	10/14/21 18:36				7.9	mg/L		-20	20			
WG529511LCSW3	LCSW	10/14/21 18:55	WC210930-12	820.0001		807.1	mg/L	98	90	110			
WG529511LCSW6	LCSW	10/14/21 22:28	WC210930-12	820.0001		795.7	mg/L	97	90	110			
WG529511PBW2	PBW	10/14/21 22:36				2.1	mg/L		-20	20			
L69101-04DUP	DUP	10/15/21 2:03			230	229.1	mg/L				0	20	
WG529511LCSW9	LCSW	10/15/21 2:23	WC210930-12	820.0001		810	mg/L	99	90	110			
WG529511PBW3	PBW	10/15/21 2:30				U	mg/L		-20	20			
L69133-03DUP	DUP	10/15/21 4:09			499	520.5	mg/L				4	20	
WG529511LCSW12	LCSW	10/15/21 6:01	WC210930-12	820.0001		816.4	mg/L	100	90	110			
WG529511PBW4	PBW	10/15/21 6:09				2.7	mg/L		-20	20			
WG529511LCSW15	LCSW	10/15/21 9:41	WC210930-12	820.0001		823.9	mg/L	100	90	110			

Aluminum, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2		1.978	mg/L	99	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.15	0.15			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	1.0008		1.01	mg/L	101	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	1.0008	U	.994	mg/L	99	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	1.0008	U	1.014	mg/L	101	85	115	2	20	

Antimony, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.0201		.01903	mg/L	95	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00088	0.00088			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.01		.00987	mg/L	99	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.01	U	.00977	mg/L	98	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.01	U	.01026	mg/L	103	70	130	5	20	

Arsenic, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.04993	mg/L	100	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00044	0.00044			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05005		.04876	mg/L	97	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05005	.00027	.04828	mg/L	96	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05005	.00027	.05071	mg/L	101	70	130	5	20	

Barium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2		2.0385	mg/L	102	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.021	0.021			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	.5		.5105	mg/L	102	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	.5	.018	.5369	mg/L	104	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	.5	.018	.5376	mg/L	104	85	115	0	20	

QUIVIRA

ACZ Project ID: **L69101**

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
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.050395	mg/L	101	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.000176	0.000176			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05005		.049766	mg/L	99	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05005	U	.046388	mg/L	93	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05005	U	.047659	mg/L	95	70	130	3	20	

WG530760

WG530760ICV	ICV	11/01/21 21:01	MS211013-2	.05		.051014	mg/L	102	90	110			
WG530760ICB	ICB	11/01/21 21:02				.00014	mg/L		-0.000176	0.000176			
WG530760LFB	LFB	11/01/21 21:04	MS210927-3	.05005		.048748	mg/L	97	85	115			
L69190-02AS	AS	11/01/21 21:22	MS210927-3	.05005	U	.043062	mg/L	86	70	130			
L69190-02ASD	ASD	11/01/21 21:24	MS210927-3	.05005	U	.045985	mg/L	92	70	130	7	20	

Boron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2		2.029	mg/L	101	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.09	0.09			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	.5005		.516	mg/L	103	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	.5005	.039	.563	mg/L	105	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	.5005	.039	.573	mg/L	107	85	115	2	20	

Cadmium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.051188	mg/L	102	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00011	0.00011			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05005		.050356	mg/L	101	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05005	U	.052267	mg/L	104	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05005	U	.053115	mg/L	106	70	130	2	20	

Calcium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	100		100.85	mg/L	101	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.3	0.3			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	67.98972		70.12	mg/L	103	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	67.98972	55.3	123	mg/L	100	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	67.98972	55.3	124.8	mg/L	102	85	115	1	20	

QUIVIRA

ACZ Project ID: **L69101**

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.

Chloride

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528109													
WG528109ICV	ICV	09/24/21 18:47	WI210924-2	19.96		19.83	mg/L	99	90	110			
WG528109ICB	ICB	09/24/21 19:05				U	mg/L		-0.4	0.4			
WG530287													
WG530287LFB1	LFB	10/26/21 19:22	WI210907-6	30		30.11	mg/L	100	90	110			
L69101-01DUP	DUP	10/26/21 19:58			42.2	42.12	mg/L				0	20	RA
L69101-07AS	AS	10/26/21 20:34	WI210907-6	1500	758	2254.21	mg/L	100	90	110			
WG530287LFB2	LFB	10/27/21 4:02	WI210907-6	30		30.18	mg/L	101	90	110			

Chloride

SM4500CI-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530473													
WG530473ICV	ICV	10/29/21 13:06	WI210503-1	54.89		56.37	mg/L	103	90	110			
WG530473ICB	ICB	10/29/21 13:07				U	mg/L		-1.5	1.5			
WG530473LFB1	LFB	10/29/21 13:08	WI210908-11	29.97		30.35	mg/L	101	90	110			
L69101-04AS	AS	10/29/21 13:09	WI210908-11	29.97	11.3	41.65	mg/L	101	90	110			
L69101-05DUP	DUP	10/29/21 13:10			59.4	60.18	mg/L				1	20	
WG530473LFB2	LFB	10/29/21 13:23	WI210908-11	29.97		30.26	mg/L	101	90	110			

Chromium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.05094	mg/L	102	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.0011	0.0011			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05		.04856	mg/L	97	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05	U	.04633	mg/L	93	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05	U	.04814	mg/L	96	70	130	4	20	

Cobalt, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2.01		2	mg/L	100	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.06	0.06			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	.5005		.505	mg/L	101	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	.5005	.04	.533	mg/L	99	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	.5005	.04	.544	mg/L	101	85	115	2	20	

Cobalt, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.051646	mg/L	103	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00011	0.00011			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05005		.050687	mg/L	101	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05005	.000244	.052089	mg/L	104	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05005	.000244	.053581	mg/L	107	70	130	3	20	

QUIVIRA

ACZ Project ID: **L69101**

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.

Copper, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2		1.989	mg/L	99	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.03	0.03			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	.5		.511	mg/L	102	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	.5	U	.516	mg/L	103	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	.5	U	.516	mg/L	103	85	115	0	20	

Cyanide, Total

D7511-09

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529095													
WG529095ICV	ICV	10/11/21 14:15	WI210928-5	.3		.3098	mg/L	103	90	110			
WG529095ICB	ICB	10/11/21 14:17				U	mg/L		-0.003	0.003			
WG529095LFB	LFB	10/11/21 14:23	WI210928-2	.1		.11	mg/L	110	84	116			
L68879-01AS	AS	10/11/21 14:27	WI210928-2	.1	.014	.0573	mg/L	43	84	116			MC
L68879-01ASD	ASD	10/11/21 14:29	WI210928-2	.1	.014	.0592	mg/L	45	84	116	3	20	MC

Fluoride

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528109													
WG528109ICV	ICV	09/24/21 18:47	WI210924-2	4.004		4.082	mg/L	102	90	110			
WG528109ICB	ICB	09/24/21 19:05				U	mg/L		-0.05	0.05			
WG530287													
WG530287LFB1	LFB	10/26/21 19:22	WI210907-6	1.5		1.456	mg/L	97	90	110			
L69101-01DUP	DUP	10/26/21 19:58			U	U	mg/L				0	20	RA
L69101-07AS	AS	10/26/21 20:34	WI210907-6	75	U	72.189	mg/L	96	90	110			
WG530287LFB2	LFB	10/27/21 4:02	WI210907-6	1.5		1.449	mg/L	97	90	110			

Fluoride

SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530309													
WG530309ICV	ICV	10/26/21 14:13	WC211019-3	2.002		2.17	mg/L	108	90	110			
WG530309ICB	ICB	10/26/21 14:18				U	mg/L		-0.3	0.3			
WG530342													
WG530342ICV	ICV	10/26/21 21:06	WC211019-3	2.002		2.21	mg/L	110	90	110			
WG530342ICB	ICB	10/26/21 21:14				U	mg/L		-0.3	0.3			
WG530342LFB1	LFB	10/26/21 21:22	WC210803-9	5.02		5.37	mg/L	107	90	110			
L69122-06AS	AS	10/26/21 23:02	WC210803-9	5.02	1.48	6.86	mg/L	107	90	110			
L69122-06ASD	ASD	10/26/21 23:10	WC210803-9	5.02	1.48	6.73	mg/L	105	90	110	2	20	
WG530342LFB2	LFB	10/27/21 1:01	WC210803-9	5.02		5.42	mg/L	108	90	110			

QUIVIRA

ACZ Project ID: **L69101**

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
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2		1.965	mg/L	98	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.18	0.18			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	1.0001		1.009	mg/L	101	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	1.0001	U	1.025	mg/L	102	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	1.0001	U	1.028	mg/L	103	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
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.0509	mg/L	102	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00022	0.00022			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05005		.05048	mg/L	101	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05005	U	.05521	mg/L	110	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05005	U	.05658	mg/L	113	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
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	100		97.32	mg/L	97	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.6	0.6			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	49.99828		48.4	mg/L	97	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	49.99828	60.9	108.9	mg/L	96	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	49.99828	60.9	110.1	mg/L	98	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
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2		1.958	mg/L	98	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.03	0.03			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	.5005		.504	mg/L	101	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	.5005	U	.519	mg/L	104	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	.5005	U	.517	mg/L	103	85	115	0	20	

Mercury, total

M245.1 CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529403													
WG529403ICV	ICV	10/14/21 10:37	HG211004-3	.00501		.00524	mg/L	105	95	105			
WG529403ICB	ICB	10/14/21 10:38				U	mg/L		-0.0002	0.0002			
WG529403LRB	LRB	10/14/21 10:39				U	mg/L		-0.00044	0.00044			
WG529403LFB	LFB	10/14/21 10:40	HG211004-6	.002002		.0021	mg/L	105	85	115			
L69037-01LFM	LFM	10/14/21 10:42	HG211004-6	.002002	U	.002	mg/L	100	85	115			
L69037-01LFMD	LFMD	10/14/21 10:43	HG211004-6	.002002	U	.00213	mg/L	106	85	115	6	20	

QUIVIRA

ACZ Project ID: **L69101**

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
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2		1.996	mg/L	100	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.06	0.06			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	.501		.5	mg/L	100	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	.501	U	.491	mg/L	98	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	.501	U	.507	mg/L	101	85	115	3	20	

Molybdenum, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.01992		.01939	mg/L	97	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00044	0.00044			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05005		.04786	mg/L	96	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05005	.0009	.05499	mg/L	108	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05005	.0009	.05616	mg/L	110	70	130	2	20	

Nickel, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2		2.0115	mg/L	101	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.024	0.024			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	.5		.5181	mg/L	104	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	.5	.137	.6446	mg/L	102	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	.5	.137	.6488	mg/L	102	85	115	1	20	

Nickel, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.05112	mg/L	102	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00088	0.00088			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05		.04793	mg/L	96	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05	U	.04285	mg/L	86	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05	U	.04492	mg/L	90	70	130	5	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
WG530441													
WG530441ICV	ICV	10/27/21 23:38	WI210904-1	2.4161		2.356	mg/L	98	90	110			
WG530441ICB	ICB	10/27/21 23:39				U	mg/L		-0.02	0.02			
WG530448													
WG530448LFB	LFB	10/28/21 1:27	WI211001-5	2		2.018	mg/L	101	90	110			
L69061-04AS	AS	10/28/21 1:30	WI211001-5	2	.922	2.966	mg/L	102	90	110			
L69061-05DUP	DUP	10/28/21 1:33			1.86	1.853	mg/L				0	20	
L69101-07AS	AS	10/28/21 1:49	WI211001-5	2	U	1.979	mg/L	99	90	110			
L69101-08DUP	DUP	10/28/21 1:52			U	U	mg/L				0	20	RA

QUIVIRA

ACZ Project ID: **L69101**

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.

Nitrogen, total Kjeldahl

M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530123													
WG530123ICV	ICV	10/23/21 1:49	WI211022-3	4		3.95	mg/L	99	90	110			
WG530123ICB	ICB	10/23/21 1:50				U	mg/L		-0.2	0.2			
WG529285LRB	LRB	10/23/21 1:51				U	mg/L		-0.2	0.2			
WG529285LFB	LFB	10/23/21 1:52	WI210714-5	2.5		2.53	mg/L	101	90	110			
L69011-01LFM	LFM	10/23/21 1:55	WI210714-5	2.5	U	2.5	mg/L	100	90	110			
L69011-02DUP	DUP	10/23/21 1:57			U	U	mg/L				0	20	RA

Potassium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	20		20.05	mg/L	100	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.6	0.6			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	99.96008		101.1	mg/L	101	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	99.96008	3.64	105.8	mg/L	102	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	99.96008	3.64	107.1	mg/L	104	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
WG529120													
WG529120PBW	PBW	10/11/21 10:38				U	mg/L		-20	20			
WG529120LCSW	LCSW	10/11/21 10:41	PCN64135	1000		978	mg/L	98	80	120			
L69101-10DUP	DUP	10/11/21 12:00			4240	4188	mg/L				1	10	
WG529968													
WG529968PBW	PBW	10/20/21 19:00				U	mg/L		-20	20			
WG529968LCSW	LCSW	10/20/21 19:02	PCN64121	1000		1004	mg/L	100	80	120			
L69154-03DUP	DUP	10/20/21 19:28			154	150	mg/L				3	10	RA

Selenium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.05079	mg/L	102	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00022	0.00022			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05		.04997	mg/L	100	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05	U	.05226	mg/L	105	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05	U	.05334	mg/L	107	70	130	2	20	

Selenium, dissolved

SM 3114 B, AA-Hydride

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529292													
WG529292ICV	ICV	10/13/21 13:03	SE211005-1	.025		.0265	mg/L	106	90	110			
WG529292ICB	ICB	10/13/21 13:05				U	mg/L		-0.006	0.006			
WG529294													
WG529294LRB	LRB	10/13/21 14:45				U	mg/L		-0.006	0.006			
WG529294LFB	LFB	10/13/21 14:47	SE210901-2	.0225		.0227	mg/L	101	85	115			
L69101-07LFM	LFM	10/13/21 14:53	SE210901-2	.0225	U	.0207	mg/L	92	85	115			
L69101-07LFMD	LFMD	10/13/21 14:55	SE210901-2	.0225	U	.0207	mg/L	92	85	115	0	20	

QUIVIRA

ACZ Project ID: **L69101**

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

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	1		1.01	mg/L	101	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.03	0.03			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	.5		.492	mg/L	98	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	.5	U	.409	mg/L	82	85	115			MA ZA
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	.5	U	.445	mg/L	89	85	115	8	20	

Silver, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530616													
WG530616ICV	ICV	10/29/21 14:35	MS211013-2	.02		.02149	mg/L	107	90	110			
WG530616ICB	ICB	10/29/21 14:37				U	mg/L		-0.00022	0.00022			
WG530616LFB	LFB	10/29/21 14:38	MS210927-3	.01		.00956	mg/L	96	85	115			
L69159-02AS	AS	10/29/21 15:02	MS210927-3	.1	U	.08735	mg/L	87	70	130			
L69159-02ASD	ASD	10/29/21 15:04	MS210927-3	.1	U	.08783	mg/L	88	70	130	1	20	

Sodium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	100		101.65	mg/L	102	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.6	0.6			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	100.007		102	mg/L	102	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	100.007	12.7	114.6	mg/L	102	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	100.007	12.7	116.4	mg/L	104	85	115	2	20	

Sulfate

D516-02/-07/-11 - TURBIDIMETRIC

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG530511													
WG530511ICB	ICB	10/28/21 9:40				U	mg/L		-3	3			
WG530511ICV	ICV	10/28/21 9:40	WI211027-1	20.46		19.4	mg/L	95	90	110			
WG530511LFB	LFB	10/28/21 14:05	WI210105-3	10		9.3	mg/L	93	90	110			
L69101-05AS	AS	10/28/21 14:56	SO4TURB25X	50	2860	2725.8	mg/L	-268	90	110			M3
L69101-04DUP	DUP	10/28/21 15:18			794	791.3	mg/L				0	20	

Sulfate

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528109													
WG528109ICV	ICV	09/24/21 18:47	WI210924-2	51.15		48.67	mg/L	95	90	110			
WG528109ICB	ICB	09/24/21 19:05				U	mg/L		-0.4	0.4			
WG530287													
WG530287LFB1	LFB	10/26/21 19:22	WI210907-6	30		29.56	mg/L	99	90	110			
L69101-01DUP	DUP	10/26/21 19:58			1260	1253.36	mg/L				1	20	
L69101-07AS	AS	10/26/21 20:34	WI210907-6	1500	3000	4402.77	mg/L	94	90	110			
WG530287LFB2	LFB	10/27/21 4:02	WI210907-6	30		28.98	mg/L	97	90	110			

QUIVIRA

ACZ Project ID: **L69101**

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
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.05235	mg/L	105	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00022	0.00022			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05		.05039	mg/L	101	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05	U	.05426	mg/L	109	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05	U	.05536	mg/L	111	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
WG530403													
WG530403ICV	ICV	10/27/21 15:33	MS211013-2	.05		.05072	mg/L	101	90	110			
WG530403ICB	ICB	10/27/21 15:35				U	mg/L		-0.00022	0.00022			
WG530403LFB	LFB	10/27/21 15:37	MS210927-3	.05		.04969	mg/L	99	85	115			
L69101-04AS	AS	10/27/21 15:49	MS210927-3	.05	.00015	.05894	mg/L	118	70	130			
L69101-04ASD	ASD	10/27/21 15:51	MS210927-3	.05	.00015	.06012	mg/L	120	70	130	2	20	

Zinc, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG529808													
WG529808ICV	ICV	10/19/21 16:10	II211014-1	2		1.999	mg/L	100	95	105			
WG529808ICB	ICB	10/19/21 16:15				U	mg/L		-0.06	0.06			
WG529808LFB	LFB	10/19/21 16:28	II211018-2	.50045		.519	mg/L	104	85	115			
L69046-01AS	AS	10/19/21 16:34	II211018-2	.50045	.183	.693	mg/L	102	85	115			
L69046-01ASD	ASD	10/19/21 16:37	II211018-2	.50045	.183	.713	mg/L	106	85	115	3	20	

Rio Algom Mining CompanyACZ Project ID: **L69101**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L69101-01	WG530287	Chloride	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).
	WG529095	Cyanide, Total	D7511-09	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
	WG530287	Fluoride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			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).
	WG529808	Silver, 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.
			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.
L69101-04	WG530123	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
	WG530511	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.
L69101-05	WG530123	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
	WG530511	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.
L69101-06	WG530123	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
	WG529968	Residue, Filterable (TDS) @180C	SM2540C	H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
			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).
	WG530511	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.

Rio Algom Mining Company

ACZ Project ID: **L69101**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L69101-07	WG530287	Chloride	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).
	WG529095	Cyanide, Total	D7511-09	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
	WG530287	Fluoride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			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).
	WG530448	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).
	WG529968	Residue, Filterable (TDS) @180C	SM2540C	H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
			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).
	WG529808	Silver, 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.
			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.
L69101-08	WG530448	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).
	WG530123	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
	WG530511	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.
L69101-09	WG530448	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).
	WG530123	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	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).
	WG530511	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.

Rio Algom Mining CompanyACZ Project ID: **L69101**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L69101-10	WG530287	Chloride	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).
	WG529095	Cyanide, Total	D7511-09	MC	Recovery for matrix spike and matrix spike duplicate are outside of acceptance limits; recovery for the method control sample was acceptable.
	WG530287	Fluoride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			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).
	WG530448	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).
	WG529808	Silver, 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.
			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: 4510319940

Sample ID: 30-05-TRA_10052021

Locator:

ACZ Sample ID: **L69101-01**

Date Sampled: 10/05/21 10:42

Date Received: 10/07/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	11/16/21 21:07		0.18	1	2.5	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	11/29/21 21:59		0.434	2.5	3.1	pCi/L	*	ess

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:05		0.64	0.1	0.33	pCi/L		fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 19:56		2.2	1.3	2.8	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	11/29/21 13:23		0.924	0.61	0.89	pCi/L	*	amk

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 17-VH-9_10042021

Locator:

ACZ Sample ID: **L69101-04**

Date Sampled: 10/04/21 14:39

Date Received: 10/07/21

Sample Matrix: Groundwater

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:07		1.2	0.13	0.37	pCi/L		fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 19:56		1.6	0.86	1.9	pCi/L	*	ess

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: MW-35-09_10042021

Locator:

ACZ Sample ID: **L69101-05**

Date Sampled: 10/04/21 17:07

Date Received: 10/07/21

Sample Matrix: Groundwater

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:10		0.29	0.08	0.29	pCi/L		fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 19:56		1.2	0.73	1.7	pCi/L	*	ess

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30W-VH-6_10052021

Locator:

ACZ Sample ID: **L69101-06**

Date Sampled: 10/05/21 15:00

Date Received: 10/07/21

Sample Matrix: Groundwater

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:11		1.3	0.16	0.48	pCi/L		fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 19:56		1.5	1	2.2	pCi/L	*	ess

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-06-TRB_10052021

Locator:

ACZ Sample ID: **L69101-07**

Date Sampled: 10/05/21 11:15

Date Received: 10/07/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	11/16/21 21:07		7.2	2	4.1	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	11/29/21 21:59		0.0	21	2.9	pCi/L	*	ess

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:14		1.5	0.22	0.52	pCi/L	*	fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 19:56		5.8	0.92	1.8	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	11/29/21 13:23		0.726	0.34	0.38	pCi/L	*	amk

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: MW-35-10_10042021

Locator:

ACZ Sample ID: **L69101-08**

Date Sampled: 10/04/21 17:15

Date Received: 10/07/21

Sample Matrix: Groundwater

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:15		0.95	0.11	0.31	pCi/L		fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 19:56		2.5	0.96	2.2	pCi/L	*	ess

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30W_VH2_10052021

Locator:

ACZ Sample ID: **L69101-09**

Date Sampled: 10/05/21 13:00

Date Received: 10/07/21

Sample Matrix: Groundwater

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:17		29	0.63	0.43	pCi/L		fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 19:56		3.1	1.5	3.6	pCi/L	*	ess

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-07-KD_10052021

Locator:

ACZ Sample ID: **L69101-10**

Date Sampled: 10/05/21 15:25

Date Received: 10/07/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	11/16/21 21:07		1.4	1.3	3	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	11/29/21 21:59		0.401	2.8	3.5	pCi/L	*	ess

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	12/06/21 0:18		2.2	0.24	0.4	pCi/L	*	fdw

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	10/24/21 19:56		4.2	1.6	3.3	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	12/14/21 17:29		0.564	1.7	3.1	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.
---	-------------------------------------

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>

QUIVIRA

ACZ Project ID: **L69101**

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
WG530302																
WG530302PBW	PBW	11/10/21						.83	1.6	3.9			7.8			
WG530302LCSW	LCSW	11/10/21	PCN64361	99.53				77	3.2	3.6	77	55	121			
L69101-07DUP	DUP-RER	11/16/21			7.2	2	4.1	4.1	1.2	2.5				1.33	2	
L69101-07DUP	DUP-RPD	11/16/21			7.2	2	4.1	4.1	1.2	2.5				55	20	RG
L68594-01DUP	DUP-RPD	11/16/21			-0.23	2.8	6.9	.23	2.4	5.9				92	20	RG
L68594-01DUP	DUP-RER	11/16/21			-0.23	2.8	6.9	.23	2.4	5.9				0.12	2	
L69122-02MS	MS	11/17/21	PCN64361	99.52	3.2	2.1	4.8	80	3	2.7	77	55	121			

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
WG532364																
WG532364LCSW	LCSW	11/29/21	PCN64360	500				510	110	2.8	102	51	128			
WG532364PBW	PBW	11/29/21						.362	1.7	2.2			4.4			
L69101-01DUP	DUP-RER	11/29/21			0.434	2.5	3.1	0	39	5.3				0.01	2	
L69101-01DUP	DUP-RPD	11/29/21			0.434	2.5	3.1	0	39	5.3				200	20	RG
L69122-09MS	MS	12/01/21	PCN64360	500	0.672	1.7	2	509	110	2	102	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
WG532082																
WG532082LCSW	LCSW	12/06/21	PCN64374	20				17	0.49	0.45	85	43	148			
WG532082PBW	PBW	12/06/21						.12	0.1	0.76			1.52			
L69101-04DUP	DUP-RPD	12/06/21			1.2	0.13	0.37	1.1	0.13	0.31				9	20	
L69101-06MS	MS	12/06/21	PCN64374	20	1.3	0.16	0.48	15	0.41	0.19	69	43	148			
L69349-02DUP	DUP-RPD	12/06/21			0.18	0.07	0.27	.12	0.08	0.1				40	20	RG
L69349-02DUP	DUP-RER	12/06/21			0.18	0.07	0.27	.12	0.08	0.1				0.56	2	

QUIVIRA

ACZ Project ID: **L69101**

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
WG529971																
WG529971LCSW	LCSW	10/24/21	PCN63356	9.33				8	1.2	2.1	86	47	123			
WG529971PBW	PBW	10/24/21						0	1.1	2.4				4.8		
L69101-04DUP	DUP-RPD	10/24/21			1.6	0.86	1.9	1.8	1	2.2				12	20	
L69122-12DUP	DUP-RER	10/24/21			2.8	1.4	3.3	3.8	1	2.2				0.58	2	
L69122-12DUP	DUP-RPD	10/24/21			2.8	1.4	3.3	3.8	1	2.2				30	20	M1 RG
L69122-01MS	MS	10/24/21	PCN63356	11.67	3.9	1.4	3.1	28	2.5	3.9	207	47	123			M1

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
WG531618																
L68426-05DUP	DUP-RPD	11/29/21			0.496	0.18	0.13	1.69	0.61	0.66				109	20	RG
L68426-05DUP	DUP-RER	11/29/21			0.496	0.18	0.13	1.69	0.61	0.66				1.88	2	
L68426-07MS	MS	11/29/21	PCN58726	200	0.341	0.24	0.33	208	26	0.4	104	91	126			
L69490-02DUP	DUP-RPD	11/30/21			0.618	0.35	0.43	.529	0.42	0.63				16	20	
WG531618LCSW	LCSW	12/01/21	PCN58726	200				208	26	0.41	104	91	126			
WG531618PBW	PBW	12/01/21						4999999999	0.22	0.26			0.5296			
WG533201																
WG533201LCSW	LCSW	12/14/21	PCN58726	200				223	28	0.54	112	91	126			
L69904-03DUP	DUP-RER	12/14/21			0.247	0.43	0.76	.596	0.57	0.9				0.49	2	
L69904-03DUP	DUP-RPD	12/14/21			0.247	0.43	0.76	.596	0.57	0.9				83	20	RG
WG533201PBW	PBW	12/15/21						1.96	0.88	1.1			2.2			
L70054-02MS	MS	12/15/21	PCN58726	200	0	1.8	1.8	218	28	0.62	109	91	126			

Rio Algom Mining Company

ACZ Project ID: **L69101**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L69101-01	WG530302	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.
	WG532364	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.
	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG531618	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.
L69101-04	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L69101-05	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L69101-06	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L69101-07	WG530302	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.
	WG532364	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.
	WG532082	Radium 226, dissolved	M903.1	DJ	Sample dilution required due to insufficient sample.
	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG531618	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.
L69101-08	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L69101-09	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L69101-10	WG530302	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.
	WG532364	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.
	WG532082	Radium 226, dissolved	M903.1	DJ	Sample dilution required due to insufficient sample.
	WG529971	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG533201	Thorium 230, dissolved	ESM 4506	DJ	Sample dilution required due to insufficient sample.
			ESM 4506	N1	See Case Narrative.
			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 CompanyACZ Project ID: **L69101**

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

December 02, 2021

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: 4510319940

ACZ Project ID: L69896

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on November 12, 2021. This project has been assigned to ACZ's project number, L69896. 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 L69896. 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 January 01, 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

Project ID: 4510319940

Sample ID: 36-06-KD-11102021

ACZ Sample ID: **L69896-01**

Date Sampled: 11/10/21 11:05

Date Received: 11/12/21

Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Beryllium, dissolved	M200.8 ICP-MS	5	0.0185			mg/L	0.0004	0.00125	11/29/21 20:58	scp

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-45 KD-R-11102021

ACZ Sample ID: **L69896-02**

Date Sampled: 11/10/21 12:50

Date Received: 11/12/21

Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Molybdenum, dissolved M200.8 ICP-MS		1	0.108			mg/L	0.0002	0.0005	11/29/21 21:00	scp

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: **L69896**

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
WG532536													
WG532536ICV	ICV	11/29/21 20:11	MS211013-2	.05		.052891	mg/L	106	90	110			
WG532536ICB	ICB	11/29/21 20:13				U	mg/L		-0.000176	0.000176			
WG532536LFB	LFB	11/29/21 20:16	MS211115-2	.05005		.046753	mg/L	93	85	115			
L69990-01AS	AS	11/29/21 21:09	MS211115-2	.05005	U	.039829	mg/L	80	70	130			E6
L69990-01ASD	ASD	11/29/21 21:11	MS211115-2	.05005	U	.038778	mg/L	77	70	130	3	20	E6

Molybdenum, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG532536													
WG532536ICV	ICV	11/29/21 20:11	MS211013-2	.01992		.02052	mg/L	103	90	110			
WG532536ICB	ICB	11/29/21 20:13				U	mg/L		-0.00044	0.00044			
WG532536LFB	LFB	11/29/21 20:16	MS211115-2	.05005		.04591	mg/L	92	85	115			
L69990-01AS	AS	11/29/21 21:09	MS211115-2	.05005	.0218	.08387	mg/L	124	70	130			
L69990-01ASD	ASD	11/29/21 21:11	MS211115-2	.05005	.0218	.08108	mg/L	118	70	130	3	20	

Rio Algom Mining Company

ACZ Project ID: **L69896**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
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No extended qualifiers associated with this analysis

Rio Algom Mining Company

ACZ Project ID: **L69896**

No certification qualifiers associated with this analysis

Rio Algom Mining Company
4510319940

ACZ Project ID: L69896
Date Received: 11/12/2021 12:00
Received By:
Date Printed: 11/15/2021

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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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?
-----	-----	-----	-----	-----
6759	1.7	NA	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.

Rio Algom Mining Company
4510319940

ACZ Project ID: L69896

Date Received: 11/12/2021 12:00

Received By:

Date Printed: 11/15/2021

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).



Laboratories, Inc. L 69896

CHAIN of CUSTODY

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

Report to:

Name: Kent Applegate Address: PO BOX 218
Company: Rio Algom Mining LLC Grants, NM 87020
E-mail: Kent.KC.Applegate@bhp.com Telephone: 505-287-8851

Copy of Report to:

Name: See Remarks E-mail: See Remarks
Company: Arcadis Telephone: 720-844-3500

Invoice to:

Name: Kent Applegate Address: PO BOX 218
Company: Rio Algom Mining LLC Grants, NM 87020
E-mail: Kent.KC.Applegate@bhp.com Telephone: 505-287-8851

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

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

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☐

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

Sampler's Name: Liam Mc Sampler's Site Information State NM Zip code 87020 Time Zone MST

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

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #:	PO#:	Reporting state for compliance testing:	Check box if samples include NRC licensed material?	SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	NRC-36-06-KD	NRC-32-45-KD-R										
	<u>4502696254</u>		<input type="checkbox"/>	<u>36-06-KD-1102021</u>	<u>11-10-21:1105</u>	<u>GW</u>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				<u>32-45-KD-R-1102021</u>	<u>11-10-21:1250</u>	<u>GW</u>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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

REMARKS

Please CC Report to: Michaela.Gerospe@bhpbilliton.com,
cshort@intera.com,
Liam.McNamara@arcadis.com Andrew.Wentz@arcadis.com,
Cassandra.Woodward@arcadis.com,

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

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
<u>[Signature]</u>	<u>11-11-21:1230</u>	<u>Fedex Trac, NM</u>	<u>11-11-21:1230</u>
		<u>[Signature]</u>	<u>11/12/21 12:00</u>

FRMAD050.06.14.14

White - Return with sample. Yellow - Retain for your records.



L69896-2112021125

December 07, 2021

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: Michaela 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: 4510319940
ACZ Project ID: L70092

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on November 23, 2021. This project has been assigned to ACZ's project number, L70092. 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 L70092. 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 January 06, 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.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.



Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 31-01 TRA-R-11192021

ACZ Sample ID: **L70092-01**

Date Sampled: 11/22/21 17:30

Date Received: 11/23/21

Sample Matrix: *Groundwater*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Manual Distillation								12/03/21 9:12	bls/mjj

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, total	M335.4 - Colorimetric w/ distillation	0.5	<0.003	U	*	mg/L	0.003	0.01	12/03/21 16:00	bls/mjj

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>

Rio Algom Mining CompanyACZ Project ID: **L70092**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70092-01	WG532911	Cyanide, total	M335.4 - 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).

Rio Algom Mining Company

ACZ Project ID: **L70092**

No certification qualifiers associated with this analysis

Rio Algom Mining Company
4510319940

ACZ Project ID: L70092
Date Received: 11/23/2021 12:47
Received By:
Date Printed: 11/24/2021

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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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?
-----	-----	-----	-----	-----
6929	2.5	<=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
4510319940

ACZ Project ID: L70092

Date Received: 11/23/2021 12:47

Received By:

Date Printed: 11/24/2021

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).



Laboratories, Inc.

L70092

CHAIN of CUSTODY

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

Report to:

Name: Kent Applegate

Company: Rio Algom Mining LLC

E-mail: Kent.KC.Applegate@bhpbilliton.com

Address: PO BOX 218

Grants, NM 87020

Telephone: 505-287-8851

Copy of Report to:

Name: See Remarks

Company: Arcadis

E-mail: See Remarks

Telephone: 720-344-3500

Invoice to:

Name: Kent Applegate

Company: Rio Algom Mining LLC

E-mail: Kent.KC.Applegate@bhpbilliton.com

Address: PO BOX 218

Grants, NM 87020

Telephone: 505-287-8851

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?

YES



NO



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

Are samples for SDWA Compliance Monitoring?

Yes



No



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

Sampler's Name: Liam Mc.

Sampler's Site Information

State NM

Zip code 87020

Time Zone MST

*Sampler's Signature:

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

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #:

PO#: 4502696254

Reporting state for compliance testing:

Check box if samples include NRC licensed material?



SAMPLE IDENTIFICATION

DATE:TIME

Matrix

of Containers

Cn. Total

31-01 TRA-R-11192021

11/19/2021 : 1730

GW

1



July 28, 2021

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: Michaela Gorospe, jcarroll, Jeremy Scott Collyard, Marcus Powell, Clark Short, Angela Persico

Project ID: 4510319940
ACZ Project ID: L67017

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 09, 2021. This project has been assigned to ACZ's project number, L67017. 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 L67017. 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 August 27, 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.



Scott Habermehl has reviewed
and approved this report.



Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-45 KD-R

ACZ Sample ID: **L67017-01**

Date Sampled: 07/08/21 11:20

Date Received: 07/09/21

Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Molybdenum, dissolved M200.8 ICP-MS		1	0.0955			mg/L	0.0002	0.0005	07/26/21 13:47	mfm

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-06 KD

ACZ Sample ID: **L67017-02**

Date Sampled: 07/08/21 13:20

Date Received: 07/09/21

Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Beryllium, dissolved	M200.8 ICP-MS	1	0.00922			mg/L	0.00008	0.00025	07/26/21 13:48	mfm



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>

Rio Algom Mining Company

ACZ Project ID: **L67017**

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
WG523986													
WG523986ICV	ICV	07/26/21 13:17	MS210630-2	.05		.048784	mg/L	98	90	110			
WG523986ICB	ICB	07/26/21 13:19				U	mg/L		-0.000176	0.000176			
WG523986LFB	LFB	07/26/21 13:20	MS210702-2	.05005		.049393	mg/L	99	85	115			
L66988-01AS	AS	07/26/21 13:35	MS210702-2	.1001	.0188	.104036	mg/L	85	70	130			
L66988-01ASD	ASD	07/26/21 13:37	MS210702-2	.1001	.0188	.102862	mg/L	84	70	130	1	20	
L67142-12AS	AS	07/26/21 14:06	MS210702-2	.05005	U	.050333	mg/L	101	70	130			
L67142-12ASD	ASD	07/26/21 14:08	MS210702-2	.05005	U	.050711	mg/L	101	70	130	1	20	

Molybdenum, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG523986													
WG523986ICV	ICV	07/26/21 13:17	MS210630-2	.01992		.01816	mg/L	91	90	110			
WG523986ICB	ICB	07/26/21 13:19				U	mg/L		-0.00044	0.00044			
WG523986LFB	LFB	07/26/21 13:20	MS210702-2	.0501		.04661	mg/L	93	85	115			
L66988-01AS	AS	07/26/21 13:35	MS210702-2	.1002	.00293	.10314	mg/L	100	70	130			
L66988-01ASD	ASD	07/26/21 13:37	MS210702-2	.1002	.00293	.10123	mg/L	98	70	130	2	20	
L67142-12AS	AS	07/26/21 14:06	MS210702-2	.0501	U	.04913	mg/L	98	70	130			
L67142-12ASD	ASD	07/26/21 14:08	MS210702-2	.0501	U	.04895	mg/L	98	70	130	0	20	

Rio Algom Mining Company

ACZ Project ID: **L67017**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
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No extended qualifiers associated with this analysis

Rio Algom Mining Company

ACZ Project ID: **L67017**

No certification qualifiers associated with this analysis

Rio Algom Mining Company
4510319940

ACZ Project ID: L67017
Date Received: 07/09/2021 11:16
Received By:
Date Printed: 7/12/2021

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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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?
NA35425	4.8	NA	15	N/A

Was ice present in the shipment container(s)?

Yes - Wet ice was present in the shipment container(s) but was thawed by receipt at ACZ.

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
4510319940

ACZ Project ID: L67017

Date Received: 07/09/2021 11:16

Received By:

Date Printed: 7/12/2021

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).



Notes:

Coolers with samples that need to be maintained at $<6^{\circ}\text{C}$ are marked with the sticker "**CHILL**"

Coolers with samples that do not need to be maintained at $<6^{\circ}\text{C}$ are marked with the sticker "**AMBIENT TEMP**"

Please CC reports to: cshort@intera.com, apersico@intera.com,
Michaela.Gorospe@bhpbilliton.com, jcarroll@intera.com

Please CC sample receipt documents to: cshort@intera.com,
Michaela.Gorospe@bhpbilliton.com, bwilliamson@intera.com,
jstakutis@intera.com

Return empty coolers to:

Bryce Williamson

7609 Euclid Ave NE,

Albuquerque, NM, 87110

If there are any issues with the samples or shipping please contact:

Clark Short

cshort@intera.com

412-304-5499

Bryce Williamson

bwilliamson@intera.com

385-722-6707

October 11, 2021

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: Michaela Gorospe, jcarroll, Jeremy Scott Collyard, Marcus Powell, Clark Short, Angela Persico

Project ID: 4510319940
ACZ Project ID: L67766

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 12, 2021. This project has been assigned to ACZ's project number, L67766. 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 L67766. 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 November 10, 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.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.



Rio Algom Mining Company

October 11, 2021

Project ID: 4510319940

ACZ Project ID: L67766

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 2 groundwater samples from Rio Algom Mining Company on August 12, 2021. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L67766. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic, 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: L67766-02/LEAD 210

Tracer recovery outside acceptance limits due to sample matrix, sample already run on a dilution, sample result <LLD.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-45KDR-20210811

ACZ Sample ID: **L67766-01**

Date Sampled: 08/11/21 12:07

Date Received: 08/12/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, dissolved	M200.8 ICP-MS	1	0.00068	B		mg/L	0.0004	0.002	08/23/21 17:07	mfm
Arsenic, dissolved	M200.8 ICP-MS	1	0.00043	B		mg/L	0.0002	0.001	08/23/21 17:07	mfm
Barium, dissolved	M200.7 ICP	1	0.0309	B		mg/L	0.007	0.035	08/24/21 14:51	jlw
Beryllium, dissolved	M200.8 ICP-MS	1	<0.00008	U		mg/L	0.00008	0.00025	08/23/21 17:07	mfm
Cadmium, dissolved	M200.8 ICP-MS	1	<0.00005	U		mg/L	0.00005	0.00025	08/23/21 17:07	mfm
Calcium, dissolved	M200.7 ICP	1	194			mg/L	0.1	0.5	08/24/21 14:51	jlw
Iron, dissolved	M200.7 ICP	1	<0.06	U		mg/L	0.06	0.15	08/24/21 14:51	jlw
Lead, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	08/23/21 17:07	mfm
Magnesium, dissolved	M200.7 ICP	1	45.0			mg/L	0.2	1	08/24/21 14:51	jlw
Molybdenum, dissolved	M200.8 ICP-MS	1	0.103			mg/L	0.0002	0.0005	08/23/21 17:07	mfm
Nickel, dissolved	M200.8 ICP-MS	1	0.00089	B		mg/L	0.0004	0.001	08/23/21 17:07	mfm
Potassium, dissolved	M200.7 ICP	1	6.53			mg/L	0.2	1	08/24/21 14:51	jlw
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	08/18/21 13:58	mlh
Sodium, dissolved	M200.7 ICP	1	150			mg/L	0.2	1	08/24/21 14:51	jlw
Uranium, dissolved	M200.8 ICP-MS	1	0.0386			mg/L	0.0001	0.0005	08/23/21 17:07	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	354			mg/L	2	20	08/21/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	08/21/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	08/21/21 0:00	eep
Total Alkalinity		1	354			mg/L	2	20	08/21/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.4			%			10/11/21 0:00	calc
Sum of Anions			21			meq/L			10/11/21 0:00	calc
Sum of Cations			20			meq/L			10/11/21 0:00	calc
Chloride	SM4500Cl-E	1	79.0		*	mg/L	0.5	2	09/01/21 9:31	md
Conductivity @25C	SM2510B	1	1790			umhos/cm	1	10	08/21/21 18:36	eep
Cyanide, Total	D7511-09	1	<0.003	U		mg/L	0.003	0.01	08/16/21 11:18	md
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	0.083	B		mg/L	0.02	0.1	08/27/21 1:46	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	1360			mg/L	20	40	08/18/21 12:30	emk
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	20	575			mg/L	20	100	09/01/21 13:43	wtc
TDS (calculated)	Calculation		1270			mg/L			10/11/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.07						10/11/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-06KD-20210811

ACZ Sample ID: **L67766-02**

Date Sampled: 08/11/21 10:10

Date Received: 08/12/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, dissolved	M200.8 ICP-MS	5	<0.002	U		mg/L	0.002	0.01	08/23/21 17:17	mfm
Arsenic, dissolved	M200.8 ICP-MS	5	0.0156			mg/L	0.001	0.005	08/23/21 17:17	mfm
Barium, dissolved	M200.7 ICP	5	<0.035	U		mg/L	0.035	0.175	08/24/21 15:00	jlw
Beryllium, dissolved	M200.8 ICP-MS	5	0.0133			mg/L	0.0004	0.00125	08/23/21 17:17	mfm
Cadmium, dissolved	M200.8 ICP-MS	5	0.00839			mg/L	0.00025	0.00125	08/23/21 17:17	mfm
Calcium, dissolved	M200.7 ICP	5	533			mg/L	0.5	2.5	10/06/21 15:21	kja
Iron, dissolved	M200.7 ICP	5	0.743	B		mg/L	0.3	0.75	08/24/21 15:00	jlw
Lead, dissolved	M200.8 ICP-MS	5	0.00120	B		mg/L	0.0005	0.0025	08/23/21 17:17	mfm
Magnesium, dissolved	M200.7 ICP	5	391			mg/L	1	5	10/06/21 15:21	kja
Molybdenum, dissolved	M200.8 ICP-MS	5	<0.001	U		mg/L	0.001	0.0025	08/23/21 17:17	mfm
Nickel, dissolved	M200.8 ICP-MS	5	0.162			mg/L	0.002	0.005	08/23/21 17:17	mfm
Potassium, dissolved	M200.7 ICP	5	12.1			mg/L	1	5	10/06/21 15:21	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	0.0028	B		mg/L	0.002	0.005	08/18/21 14:00	mlh
Sodium, dissolved	M200.7 ICP	5	619			mg/L	1	5	10/06/21 15:21	kja
Uranium, dissolved	M200.8 ICP-MS	5	0.605			mg/L	0.0005	0.0025	08/23/21 17:17	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	<2	U		mg/L	2	20	08/21/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	08/21/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	08/21/21 0:00	eep
Total Alkalinity		1	<2	U		mg/L	2	20	08/21/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-16.1			%			10/11/21 0:00	calc
Sum of Anions			119			meq/L			10/11/21 0:00	calc
Sum of Cations			86			meq/L			10/11/21 0:00	calc
Chloride	SM4500Cl-E	25	1260	H	*	mg/L	12.5	50	10/06/21 18:10	md
Conductivity @25C	SM2510B	1	7730			umhos/cm	1	10	08/21/21 18:42	eep
Cyanide, Total	D7511-09	1	<0.003	U		mg/L	0.003	0.01	08/16/21 11:24	md
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U		mg/L	0.02	0.1	08/27/21 1:48	pjb
Residue, Filterable (TDS) @180C	SM2540C	5	7240			mg/L	100	200	08/18/21 12:32	emk
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	200	3970	H	*	mg/L	200	1000	10/06/21 11:48	syw
TDS (calculated)	Calculation		6790			mg/L			10/11/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.07						10/11/21 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>

Rio Algom Mining Company

ACZ Project ID: **L67766**

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
WG525722													
WG525722PBW1	PBW	08/21/21 14:22				U	mg/L		-20	20			
WG525722LCSW2	LCSW	08/21/21 14:35	WC210806-1	820.0001		786.4	mg/L	96	90	110			
WG525722LCSW4	LCSW	08/21/21 17:54	WC210806-1	820.0001		791.7	mg/L	97	90	110			
WG525722PBW2	PBW	08/21/21 18:01				U	mg/L		-20	20			
L67815-02DUP	DUP	08/21/21 19:41			38.7	38.7	mg/L				0	20	
WG525722LCSW6	LCSW	08/21/21 21:43	WC210806-1	820.0001		811.7	mg/L	99	90	110			

Antimony, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525797													
WG525797ICV	ICV	08/23/21 16:50	MS210727-2	.0201		.01916	mg/L	95	90	110			
WG525797ICB	ICB	08/23/21 16:52				U	mg/L		-0.00088	0.00088			
WG525797LFB	LFB	08/23/21 16:54	MS210727-5	.01		.00966	mg/L	97	85	115			
L67766-01AS	AS	08/23/21 17:09	MS210727-5	.01	.00068	.00987	mg/L	92	70	130			
L67766-01ASD	ASD	08/23/21 17:11	MS210727-5	.01	.00068	.01015	mg/L	95	70	130	3	20	

Arsenic, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525797													
WG525797ICV	ICV	08/23/21 16:50	MS210727-2	.05		.0502	mg/L	100	90	110			
WG525797ICB	ICB	08/23/21 16:52				U	mg/L		-0.00044	0.00044			
WG525797LFB	LFB	08/23/21 16:54	MS210727-5	.05005		.04834	mg/L	97	85	115			
L67766-01AS	AS	08/23/21 17:09	MS210727-5	.05005	.00043	.04791	mg/L	95	70	130			
L67766-01ASD	ASD	08/23/21 17:11	MS210727-5	.05005	.00043	.0482	mg/L	95	70	130	1	20	

Barium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525830													
WG525830ICV	ICV	08/24/21 14:04	II210803-4	2		2.0265	mg/L	101	95	105			
WG525830ICB	ICB	08/24/21 14:10				U	mg/L		-0.021	0.021			
WG525830LFB	LFB	08/24/21 14:23	II210810-2	.5		.4781	mg/L	96	85	115			
L67765-05AS	AS	08/24/21 14:41	II210810-2	2.5	U	2.385	mg/L	95	85	115			
L67765-05ASD	ASD	08/24/21 14:44	II210810-2	2.5	U	2.42	mg/L	97	85	115	1	20	

Beryllium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525797													
WG525797ICV	ICV	08/23/21 16:50	MS210727-2	.05		.05023	mg/L	100	90	110			
WG525797ICB	ICB	08/23/21 16:52				U	mg/L		-0.000176	0.000176			
WG525797LFB	LFB	08/23/21 16:54	MS210727-5	.05005		.047586	mg/L	95	85	115			
L67766-01AS	AS	08/23/21 17:09	MS210727-5	.05005	U	.038555	mg/L	77	70	130			
L67766-01ASD	ASD	08/23/21 17:11	MS210727-5	.05005	U	.038585	mg/L	77	70	130	0	20	

Rio Algom Mining Company

ACZ Project ID: **L67766**

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.

Cadmium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525797													
WG525797ICV	ICV	08/23/21 16:50	MS210727-2	.05		.051298	mg/L	103	90	110			
WG525797ICB	ICB	08/23/21 16:52				U	mg/L		-0.00011	0.00011			
WG525797LFB	LFB	08/23/21 16:54	MS210727-5	.05005		.048759	mg/L	97	85	115			
L67766-01AS	AS	08/23/21 17:09	MS210727-5	.05005	U	.046668	mg/L	93	70	130			
L67766-01ASD	ASD	08/23/21 17:11	MS210727-5	.05005	U	.046618	mg/L	93	70	130	0	20	

Calcium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525830													
WG525830ICV	ICV	08/24/21 14:04	II210803-4	100		98.36	mg/L	98	95	105			
WG525830ICB	ICB	08/24/21 14:10				.12	mg/L		-0.3	0.3			
WG525830LFB	LFB	08/24/21 14:23	II210810-2	67.99734		64.84	mg/L	95	85	115			
L67765-05AS	AS	08/24/21 14:41	II210810-2	339.9867	406	718.5	mg/L	92	85	115			
L67765-05ASD	ASD	08/24/21 14:44	II210810-2	339.9867	406	723	mg/L	93	85	115	1	20	

Chloride

SM4500Cl-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526299													
WG526299ICV	ICV	09/01/21 9:21	WI210503-1	54.89		56.24	mg/L	102	90	110			
WG526299ICB	ICB	09/01/21 9:22				.76	mg/L		-1.5	1.5			
WG526299LFB1	LFB	09/01/21 9:22	WI200327-3	30.03		28.04	mg/L	93	90	110			
L67765-06AS	AS	09/01/21 9:30	WI200327-3	30.03	68.4	86.46	mg/L	60	90	110			M2
L67766-01DUP	DUP	09/01/21 9:32			79	76.63	mg/L				3	20	
WG526299LFB2	LFB	09/01/21 9:37	WI200327-3	30.03		28.09	mg/L	94	90	110			

Conductivity @25C

SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525722													
WG525722LCSW1	LCSW	08/21/21 14:24	PCN63140	1408		1355	umhos/cm	96	90	110			
WG525722LCSW3	LCSW	08/21/21 17:43	PCN63140	1408		1351	umhos/cm	96	90	110			
L67815-02DUP	DUP	08/21/21 19:41			114	114	umhos/cm				0	20	
WG525722LCSW5	LCSW	08/21/21 21:30	PCN63140	1408		1348	umhos/cm	96	90	110			

Cyanide, Total

D7511-09

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525306													
WG525306ICV	ICV	08/16/21 11:08	WI210803-6	.3		.3141	mg/L	105	90	110			
WG525306ICB	ICB	08/16/21 11:10				U	mg/L		-0.003	0.003			
WG525306LFB	LFB	08/16/21 11:16	WI210803-5	.1		.1089	mg/L	109	84	116			
L67766-01AS	AS	08/16/21 11:20	WI210803-5	.1	U	.1077	mg/L	108	84	116			
L67766-01ASD	ASD	08/16/21 11:22	WI210803-5	.1	U	.1036	mg/L	104	84	116	4	20	

Rio Algom Mining Company

ACZ Project ID: **L67766**

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
WG525830													
WG525830ICV	ICV	08/24/21 14:04	II210803-4	2		2.011	mg/L	101	95	105			
WG525830ICB	ICB	08/24/21 14:10				U	mg/L		-0.18	0.18			
WG525830LFB	LFB	08/24/21 14:23	II210810-2	1.0001		.975	mg/L	97	85	115			
L67765-05AS	AS	08/24/21 14:41	II210810-2	5.0005	U	4.703	mg/L	94	85	115			
L67765-05ASD	ASD	08/24/21 14:44	II210810-2	5.0005	U	4.731	mg/L	95	85	115	1	20	

Lead, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525797													
WG525797ICV	ICV	08/23/21 16:50	MS210727-2	.05		.04978	mg/L	100	90	110			
WG525797ICB	ICB	08/23/21 16:52				U	mg/L		-0.00022	0.00022			
WG525797LFB	LFB	08/23/21 16:54	MS210727-5	.05005		.04708	mg/L	94	85	115			
L67766-01AS	AS	08/23/21 17:09	MS210727-5	.05005	U	.04812	mg/L	96	70	130			
L67766-01ASD	ASD	08/23/21 17:11	MS210727-5	.05005	U	.04805	mg/L	96	70	130	0	20	

Magnesium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525830													
WG525830ICV	ICV	08/24/21 14:04	II210803-4	100		96.13	mg/L	96	95	105			
WG525830ICB	ICB	08/24/21 14:10				.22	mg/L		-0.6	0.6			
WG525830LFB	LFB	08/24/21 14:23	II210810-2	50.00074		45.82	mg/L	92	85	115			
L67765-05AS	AS	08/24/21 14:41	II210810-2	250.0037	212	434.4	mg/L	89	85	115			
L67765-05ASD	ASD	08/24/21 14:44	II210810-2	250.0037	212	437.35	mg/L	90	85	115	1	20	

Molybdenum, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525797													
WG525797ICV	ICV	08/23/21 16:50	MS210727-2	.01992		.01939	mg/L	97	90	110			
WG525797ICB	ICB	08/23/21 16:52				U	mg/L		-0.00044	0.00044			
WG525797LFB	LFB	08/23/21 16:54	MS210727-5	.0501		.04542	mg/L	91	85	115			
L67766-01AS	AS	08/23/21 17:09	MS210727-5	.0501	.103	.15307	mg/L	100	70	130			
L67766-01ASD	ASD	08/23/21 17:11	MS210727-5	.0501	.103	.15425	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
WG525797													
WG525797ICV	ICV	08/23/21 16:50	MS210727-2	.05		.05225	mg/L	105	90	110			
WG525797ICB	ICB	08/23/21 16:52				U	mg/L		-0.00088	0.00088			
WG525797LFB	LFB	08/23/21 16:54	MS210727-5	.05		.04904	mg/L	98	85	115			
L67766-01AS	AS	08/23/21 17:09	MS210727-5	.05	.00089	.04142	mg/L	81	70	130			
L67766-01ASD	ASD	08/23/21 17:11	MS210727-5	.05	.00089	.04165	mg/L	82	70	130	1	20	

Rio Algom Mining Company

ACZ Project ID: **L67766**

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
WG526044													
WG526044ICV	ICV	08/26/21 23:09	WI210603-7	2.416		2.216	mg/L	92	90	110			
WG526044ICB	ICB	08/26/21 23:10				U	mg/L		-0.02	0.02			
WG526049													
WG526049LFB	LFB	08/27/21 1:29	WI210331-13	2		1.95	mg/L	98	90	110			
L67747-01AS	AS	08/27/21 1:31	WI210331-13	2	.344	2.364	mg/L	101	90	110			
L67748-01DUP	DUP	08/27/21 1:34			.448	.451	mg/L				1	20	

Potassium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525830													
WG525830ICV	ICV	08/24/21 14:04	II210803-4	20		19.72	mg/L	99	95	105			
WG525830ICB	ICB	08/24/21 14:10				U	mg/L		-0.6	0.6			
WG525830LFB	LFB	08/24/21 14:23	II210810-2	99.99574		94.75	mg/L	95	85	115			
L67765-05AS	AS	08/24/21 14:41	II210810-2	499.9787	14.9	488.65	mg/L	95	85	115			
L67765-05ASD	ASD	08/24/21 14:44	II210810-2	499.9787	14.9	494.95	mg/L	96	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
WG525504													
WG525504PBW	PBW	08/18/21 12:15				U	mg/L		-20	20			
WG525504LCSW	LCSW	08/18/21 12:16	PCN63839	1000		998	mg/L	100	80	120			
L67767-02DUP	DUP	08/18/21 12:38			7000	7052	mg/L				1	10	

Selenium, dissolved

SM 3114 B, AA-Hydride

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525470													
WG525470ICV	ICV	08/18/21 11:01	SE210707-1	.025		.0263	mg/L	105	90	110			
WG525470ICB	ICB	08/18/21 11:03				U	mg/L		-0.006	0.006			
WG525495													
WG525495LRB	LRB	08/18/21 13:54				U	mg/L		-0.006	0.006			
WG525495LFB	LFB	08/18/21 13:56	SE210601-8	.0225		.0224	mg/L	100	85	115			
L67827-01LFM	LFM	08/18/21 14:04	SE210601-8	.0225	U	.0213	mg/L	95	85	115			
L67827-01LFMD	LFMD	08/18/21 14:06	SE210601-8	.0225	U	.0218	mg/L	97	85	115	2	20	

Sodium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525830													
WG525830ICV	ICV	08/24/21 14:04	II210803-4	100		100.28	mg/L	100	95	105			
WG525830ICB	ICB	08/24/21 14:10				U	mg/L		-0.6	0.6			
WG525830LFB	LFB	08/24/21 14:23	II210810-2	100.0109		95.26	mg/L	95	85	115			
L67765-05AS	AS	08/24/21 14:41	II210810-2	500.0545	1260	1704.5	mg/L	89	85	115			
L67765-05ASD	ASD	08/24/21 14:44	II210810-2	500.0545	1260	1699	mg/L	88	85	115	0	20	

Rio Algom Mining CompanyACZ Project ID: **L67766**

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.

Sulfate

D516-02/-07/-11 - TURBIDIMETRIC

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526335													
WG526335ICB	ICB	09/01/21 9:20				U	mg/L		-3	3			
WG526335ICV	ICV	09/01/21 9:20	WI210818-1	20.46		19.7	mg/L	96	90	110			
WG526335LFB	LFB	09/01/21 12:04	WI210105-3	10		9.3	mg/L	93	90	110			
L67834-01DUP	DUP	09/01/21 13:40			19400	19291.5	mg/L				1	20	
L67800-01AS	AS	09/01/21 13:43	SO4TURB5X	10	34	43.9	mg/L	99	90	110			

Uranium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525797													
WG525797ICV	ICV	08/23/21 16:50	MS210727-2	.05		.05064	mg/L	101	90	110			
WG525797ICB	ICB	08/23/21 16:52				U	mg/L		-0.00022	0.00022			
WG525797LFB	LFB	08/23/21 16:54	MS210727-5	.05		.04748	mg/L	95	85	115			
L67766-01AS	AS	08/23/21 17:09	MS210727-5	.05	.0386	.09176	mg/L	106	70	130			
L67766-01ASD	ASD	08/23/21 17:11	MS210727-5	.05	.0386	.09277	mg/L	108	70	130	1	20	

Rio Algom Mining Company

ACZ Project ID: **L67766**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67766-01	WG526299	Chloride	SM4500Cl-E	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L67766-02	WG528845	Chloride	SM4500Cl-E	C4	Confirmatory analysis was past holding time.
			SM4500Cl-E	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).
	WG528730	Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	C5	Confirmatory analysis was past holding time. Original result not confirmed.
			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.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-45KDR-20210811

Locator:

ACZ Sample ID: **L67766-01**

Date Sampled: 08/11/21 12:00

Date Received: 08/12/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	09/09/21 15:13		-2.6	2.8	6.7	pCi/L	*	cer

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	09/30/21 8:52		0.326	2.3	2.9	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/22/21 0:15		1.3	0.14	0.08	pCi/L		djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/13/21 17:43		1.1	1.2	2.9	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/12/21 16:26		0.744	0.33	0.35	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-06KD-20210811

Locator:

ACZ Sample ID: **L67766-02**

Date Sampled: 08/11/21 10:10

Date Received: 08/12/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	09/09/21 15:13		-1.1	8.8	21	pCi/L	*	cer

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	09/30/21 8:52		0.0	35	4.4	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/22/21 0:17		13	0.55	0.24	pCi/L		djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/13/21 17:43		16	1.6	2.6	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/12/21 16:26		8.41	1.4	0.34	pCi/L	*	djc

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>

QUIVIRA

ACZ Project ID: **L67766**

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
WG525663																
WG525663PBW	PBW	09/08/1921						2.3	1.4	3.3			6.6			
WG525663LCSW	LCSW	09/08/1921	PCN59614	93.77				88	3.1	2.9	94	55	121			
L67313-08DUP	DUP-RPD	09/09/21			5	3	6.5	4.2	4.5	10				17	20	
L67828-03MS	MS	09/09/21	PCN59614	187.53	3	3	6.7	170	6.4	5.8	89	55	121			
L67829-01DUP	DUP-RPD	09/09/21			3.4	3.1	6.8	4.8	2.4	5.1				34	20	RG
L67829-01DUP	DUP-RER	09/09/21			3.4	3.1	6.8	4.8	2.4	5.1				0.36	2	

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
WG528203																
WG528203LCSW	LCSW	09/30/21	PCN64361	500				511	110	3.7	102	51	128			
WG528203PBW	PBW	09/30/21						0	20	2.6			5.2			
L67766-01DUP	DUP-RPD	10/01/21			0.326	2.3	2.9	0	41	5.2				200	20	RG
L67766-01DUP	DUP-RER	10/01/21			0.326	2.3	2.9	0	41	5.2				0.01	2	
L67959-01DUP	DUP-RPD	10/01/21			0	23	3.2	0	24	3.5				0	20	
L67828-01MS	MS	10/01/21	PCN64361	500	0	22	3.2	512	110	3.3	102	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
WG527026																
WG527026PBW	PBW	09/22/21						.08	0.1	0.24			0.48			
WG527026LCSW	LCSW	09/22/21	PCN62879	20				18	0.59	0.13	90	43	148			
L67747-01DUP	DUP-RPD	09/22/21			0.25	0.08	0.1	.23	0.17	0.34				8	20	
L67765-02MS	MS	09/22/21	PCN62879	20	0.44	0.13	0.19	19	0.55	0.16	93	43	148			
L67918-04DUP	DUP-RPD	09/22/21			4.4	0.41	0.43	3.7	0.33	0.11				17	20	

QUIVIRA

ACZ Project ID: **L67766**

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
WG526233																
WG526233PBW	PBW	09/11/21						-.24	1.3	3.2			6.4			
WG526233LCSW	LCSW	09/11/21	PCN63356	9.47				7.6	1.2	2.3	80	47	123			
L67673-01DUP	DUP-RPD	09/11/21			1.7	0.85	1.9	2	1.5	3.7				16	20	
L67741-01MS	MS	09/11/21	PCN63356	9.47	0.92	0.71	1.7	7.7	1.1	1.8	72	47	123			
L67906-01DUP	DUP-RER	09/13/21			0.95	0.94	2.3	.18	0.88	2.1				0.6	2	
L67906-01DUP	DUP-RPD	09/13/21			0.95	0.94	2.3	.18	0.88	2.1				136	20	RG

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
WG526666																
WG526666LCSW	LCSW	09/12/21	PCN58726	200				211	26	0.44	106	91	126			
WG526666PBW	PBW	09/12/21						.301	0.23	0.33			0.66			
L67827-01MS	MS	09/12/21	PCN58726	200	0.576	0.33	0.43	224	28	0.47	112	91	126			
L67918-02DUP	DUP-RPD	09/13/21			0.24	0.31	0.51	.584	0.56	0.85				83	20	RG
L67918-02DUP	DUP-RER	09/13/21			0.24	0.31	0.51	.584	0.56	0.85				0.54	2	
L67766-01DUP	DUP-RPD	09/13/21			0.744	0.33	0.35	.741	0.38	0.49				0	20	

Rio Algom Mining Company

ACZ Project ID: **L67766**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67766-01	WG525663	Lead 210, dissolved	EICHROM, OTW01	D1	Sample required dilution due to matrix.
			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.
	WG528203	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.
	WG526233	Radium 228, dissolved	M9320	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.
L67766-02	WG525663	Lead 210, dissolved	EICHROM, OTW01	D1	Sample required dilution due to matrix.
			EICHROM, OTW01	N1	See Case Narrative.
			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.
	WG528203	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.
	WG526233	Radium 228, dissolved	M9320	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: **L67766**

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
4510319940

ACZ Project ID: L67766
Date Received: 08/12/2021 09:45
Received By:
Date Printed: 8/13/2021

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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A change was made in the two quotes were crossed out in the analyses requested section section prior to ACZ custody.			
A change was made in the two quotes were crossed out in the analyses requested section section prior to ACZ custody.			
A change was made in the two quotes were crossed out in the analyses requested section section prior to ACZ custody.			

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?
6303	17.8	NA	15	Yes
5178	2.2	<=6.0	15	Yes

Rio Algom Mining Company
4510319940

ACZ Project ID: L67766
Date Received: 08/12/2021 09:45
Received By:
Date Printed: 8/13/2021

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.

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).

CHAIN of CUSTODY

Report to:

Name: Kent Applegate	Address: PO Box 218
Company: Rio Algom Mining LLC	Grants, NM 87020
E-mail: Kent.KC.Applegate@bhpbilliton.com	Telephone: 1-505-287-8851

Copy of Report to:

Name: See Attached Note Sheet		E-mail: See Attached Note Sheet
Company: INTERA, INC.		Telephone: 505-246-1600 x1207

Invoice to:

Name: Kent Applegate	Address: PO Box 218
Company: Rio Algom Mining LLC	Grants, NM 87020
E-mail: Kent.KC.Applegate@bhpbilliton.com	Telephone: 1-505-287-8851

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?

YES	<input checked="" type="checkbox"/>
NO	<input type="checkbox"/>

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

Are samples for SDWA Compliance Monitoring?

Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
-----	--------------------------	----	-------------------------------------

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

Sampler's Name: RAM Sampler's Site Information State NM Zip code 87020 Time Zone MST

*Sampler's Signature:

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

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

[illegible]

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

REMARKS

RAML COC#: 21-48. Note different COC's may have different PO's. Shipment of 3 Coolers.

See Attached Note Sheet

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

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Brett Meyer <i>[Signature]</i>	8/12/21 1600	Alan <i>[Signature]</i>	8/12/21 9:47

FRMAD050.06.14.14

White - Return with sample.

Yellow - Retain for your records.



November 03, 2021

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: Michaela Gorospe, jcarroll, Jeremy Scott Collyard, Marcus Powell, Clark Short, Angela Persico

Project ID: 4510319940

ACZ Project ID: L67827

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 14, 2021. This project has been assigned to ACZ's project number, L67827. 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 L67827. 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 03, 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.



Scott Habermehl has reviewed
and approved this report.



Rio Algom Mining Company

November 03, 2021

Project ID: 4510319940

ACZ Project ID: L67827

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 1 groundwater sample from Rio Algom Mining Company on August 14, 2021. 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 L67827. 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) L67827-01/TOTAL DISSOLVED SOLIDS

ACZ SOP prescribes samples with >5 dry cycles to be sent to REDO on a dilution. The method does not require a limit on dry cycles to obtain a constant weight. The sample was dried greater than 5 dry cycles to obtain a constant weight.

2. (N1A) Applies to: L67827-01/LEAD 210

Matrix Spike carrier recovery outside of acceptance limits. This is attributable to matrix interference. MS exhibited abnormal precip during step 11.7 and was unable to reach a pH of 8 during step 11.11.1. Sample did not dissolve at step 11.13

3. (B1) Applies to: L67827-01/LEAD 210

Analyte detected in blank above acceptance limits. PBW fails high by ~0.8 pCi while having an error of 1.53 pCi.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-48KDR-20210812

ACZ Sample ID: **L67827-01**

Date Sampled: 08/12/21 14:32

Date Received: 08/14/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, dissolved	M200.8 ICP-MS	5	<0.002	U		mg/L	0.002	0.01	08/27/21 15:29	mfm
Arsenic, dissolved	M200.8 ICP-MS	5	<0.001	U		mg/L	0.001	0.005	08/27/21 15:29	mfm
Barium, dissolved	M200.7 ICP	5	<0.035	U		mg/L	0.035	0.175	08/25/21 17:13	jlw
Beryllium, dissolved	M200.8 ICP-MS	5	<0.0004	U		mg/L	0.0004	0.00125	08/27/21 15:29	mfm
Cadmium, dissolved	M200.8 ICP-MS	5	<0.00025	U		mg/L	0.00025	0.00125	08/27/21 15:29	mfm
Calcium, dissolved	M200.7 ICP	5	572			mg/L	0.5	2.5	08/25/21 17:13	jlw
Iron, dissolved	M200.7 ICP	5	3.06			mg/L	0.3	0.75	08/25/21 17:13	jlw
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	08/27/21 15:29	mfm
Magnesium, dissolved	M200.7 ICP	5	214			mg/L	1	5	08/25/21 17:13	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.0199			mg/L	0.001	0.0025	08/27/21 15:29	mfm
Nickel, dissolved	M200.8 ICP-MS	5	<0.002	U		mg/L	0.002	0.005	08/27/21 15:29	mfm
Potassium, dissolved	M200.7 ICP	5	8.97			mg/L	1	5	08/26/21 11:05	jlw
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	08/18/21 14:02	mlh
Sodium, dissolved	M200.7 ICP	5	398			mg/L	1	5	08/25/21 17:13	jlw
Uranium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	08/27/21 15:29	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	272			mg/L	2	20	08/21/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	08/21/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	08/21/21 0:00	eep
Total Alkalinity		1	272			mg/L	2	20	08/21/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-3.8			%			11/03/21 0:00	calc
Sum of Anions			69			meq/L			11/03/21 0:00	calc
Sum of Cations			64			meq/L			11/03/21 0:00	calc
Chloride	SM4500Cl-E	25	552		*	mg/L	12.5	50	09/02/21 13:29	md
Conductivity @25C	SM2510B	1	4810			umhos/cm	1	10	08/21/21 20:39	eep
Cyanide, Total	D7511-09	1	<0.003	U		mg/L	0.003	0.01	08/16/21 11:28	md
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	0.028	B		mg/L	0.02	0.1	09/01/21 3:11	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	4200	H	*	mg/L	40	80	08/25/21 13:04	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	100	2300		*	mg/L	100	500	09/02/21 13:50	wtc
TDS (calculated)	Calculation		4210			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.00						11/03/21 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: **L67827**

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
WG525722													
WG525722PBW1	PBW	08/21/21 14:22				U	mg/L		-20	20			
WG525722LCSW2	LCSW	08/21/21 14:35	WC210806-1	820.0001		786.4	mg/L	96	90	110			
WG525722LCSW4	LCSW	08/21/21 17:54	WC210806-1	820.0001		791.7	mg/L	97	90	110			
WG525722PBW2	PBW	08/21/21 18:01				U	mg/L		-20	20			
L67829-01DUP	DUP	08/21/21 21:28			302	303.6	mg/L				1	20	
WG525722LCSW6	LCSW	08/21/21 21:43	WC210806-1	820.0001		811.7	mg/L	99	90	110			

Antimony, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.0201		.02099	mg/L	104	90	110			
WG526107ICB	ICB	08/27/21 15:25				.00058	mg/L		-0.00088	0.00088			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.01		.00954	mg/L	95	85	115			
L67929-02AS	AS	08/27/21 15:38	MS210827-2	.01	U	.00843	mg/L	84	70	130			
L67929-02ASD	ASD	08/27/21 15:40	MS210827-2	.01	U	.00865	mg/L	87	70	130	3	20	

Arsenic, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.05		.05179	mg/L	104	90	110			
WG526107ICB	ICB	08/27/21 15:25				.00036	mg/L		-0.00044	0.00044			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05005		.05233	mg/L	105	85	115			
L67929-02AS	AS	08/27/21 15:38	MS210827-2	.05005	U	.05482	mg/L	110	70	130			
L67929-02ASD	ASD	08/27/21 15:40	MS210827-2	.05005	U	.05416	mg/L	108	70	130	1	20	

Barium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525932													
WG525932ICV	ICV	08/25/21 16:50	II210803-4	2		1.9798	mg/L	99	95	105			
WG525932ICB	ICB	08/25/21 16:57				U	mg/L		-0.021	0.021			
WG525932LFB	LFB	08/25/21 17:10	II210810-2	.5		.4887	mg/L	98	85	115			
L67827-01AS	AS	08/25/21 17:16	II210810-2	2.5	U	2.499	mg/L	100	85	115			
L67827-01ASD	ASD	08/25/21 17:19	II210810-2	2.5	U	2.4985	mg/L	100	85	115	0	20	

Beryllium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.05		.053279	mg/L	107	90	110			
WG526107ICB	ICB	08/27/21 15:25				.000108	mg/L		-0.000176	0.000176			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05005		.052655	mg/L	105	85	115			
L67929-02AS	AS	08/27/21 15:38	MS210827-2	.05005	U	.057938	mg/L	116	70	130			
L67929-02ASD	ASD	08/27/21 15:40	MS210827-2	.05005	U	.057651	mg/L	115	70	130	0	20	

QUIVIRA

ACZ Project ID: **L67827**

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.

Cadmium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.05		.052141	mg/L	104	90	110			
WG526107ICB	ICB	08/27/21 15:25				.000083	mg/L		-0.00011	0.00011			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05005		.050945	mg/L	102	85	115			
L67929-02AS	AS	08/27/21 15:38	MS210827-2	.05005	U	.052664	mg/L	105	70	130			
L67929-02ASD	ASD	08/27/21 15:40	MS210827-2	.05005	U	.05253	mg/L	105	70	130	0	20	

Calcium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525932													
WG525932ICV	ICV	08/25/21 16:50	II210803-4	100		97.95	mg/L	98	95	105			
WG525932ICB	ICB	08/25/21 16:57				.11	mg/L		-0.3	0.3			
WG525932LFB	LFB	08/25/21 17:10	II210810-2	67.99734		67.64	mg/L	99	85	115			
L67827-01AS	AS	08/25/21 17:16	II210810-2	339.9867	572	912	mg/L	100	85	115			
L67827-01ASD	ASD	08/25/21 17:19	II210810-2	339.9867	572	912.5	mg/L	100	85	115	0	20	

Chloride

SM4500Cl-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526452													
WG526452ICV	ICV	09/02/21 11:50	WI210503-1	54.89		54.32	mg/L	99	90	110			
WG526452ICB	ICB	09/02/21 11:51				U	mg/L		-1.5	1.5			
L67842-01DUP	DUP	09/02/21 11:54			49	44.55	mg/L				10	20	
WG526452LFB2	LFB	09/02/21 12:07	WI200327-3	30.03		30.77	mg/L	102	90	110			
L67827-01AS	AS	09/02/21 13:30	25XCL	30	552	557.49	mg/L	18	90	110			M3
WG526452LFB1	LFB	09/02/21 13:48	WI200327-3	30.03		32.47	mg/L	108	90	110			

Conductivity @25C

SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525722													
WG525722LCSW1	LCSW	08/21/21 14:24	PCN63140	1408		1355	umhos/cm	96	90	110			
WG525722LCSW3	LCSW	08/21/21 17:43	PCN63140	1408		1351	umhos/cm	96	90	110			
L67829-01DUP	DUP	08/21/21 21:28			5530	5540	umhos/cm				0	20	
WG525722LCSW5	LCSW	08/21/21 21:30	PCN63140	1408		1348	umhos/cm	96	90	110			

Cyanide, Total

D7511-09

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525306													
WG525306ICV	ICV	08/16/21 11:08	WI210803-6	.3		.3141	mg/L	105	90	110			
WG525306ICB	ICB	08/16/21 11:10				U	mg/L		-0.003	0.003			
WG525306LFB	LFB	08/16/21 11:16	WI210803-5	.1		.1089	mg/L	109	84	116			
L67766-01AS	AS	08/16/21 11:20	WI210803-5	.1	U	.1077	mg/L	108	84	116			
L67766-01ASD	ASD	08/16/21 11:22	WI210803-5	.1	U	.1036	mg/L	104	84	116	4	20	

QUIVIRA

ACZ Project ID: **L67827**

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
WG525932													
WG525932ICV	ICV	08/25/21 16:50	II210803-4	2		1.94	mg/L	97	95	105			
WG525932ICB	ICB	08/25/21 16:57				U	mg/L		-0.18	0.18			
WG525932LFB	LFB	08/25/21 17:10	II210810-2	1.0001		.998	mg/L	100	85	115			
L67827-01AS	AS	08/25/21 17:16	II210810-2	5.0005	3.06	8.11	mg/L	101	85	115			
L67827-01ASD	ASD	08/25/21 17:19	II210810-2	5.0005	3.06	8.07	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
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.05		.05254	mg/L	105	90	110			
WG526107ICB	ICB	08/27/21 15:25				.00019	mg/L		-0.00022	0.00022			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05005		.05185	mg/L	104	85	115			
L67929-02AS	AS	08/27/21 15:38	MS210827-2	.05005	U	.0502	mg/L	100	70	130			
L67929-02ASD	ASD	08/27/21 15:40	MS210827-2	.05005	U	.04966	mg/L	99	70	130	1	20	

Magnesium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525932													
WG525932ICV	ICV	08/25/21 16:50	II210803-4	100		95.76	mg/L	96	95	105			
WG525932ICB	ICB	08/25/21 16:57				U	mg/L		-0.6	0.6			
WG525932LFB	LFB	08/25/21 17:10	II210810-2	50.00074		48.32	mg/L	97	85	115			
L67827-01AS	AS	08/25/21 17:16	II210810-2	250.0037	214	458.35	mg/L	98	85	115			
L67827-01ASD	ASD	08/25/21 17:19	II210810-2	250.0037	214	458.6	mg/L	98	85	115	0	20	

Molybdenum, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.01992		.0201	mg/L	101	90	110			
WG526107ICB	ICB	08/27/21 15:25				U	mg/L		-0.00044	0.00044			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05005		.04983	mg/L	100	85	115			
L67929-02AS	AS	08/27/21 15:38	MS210827-2	.05005	.00715	.0571	mg/L	100	70	130			
L67929-02ASD	ASD	08/27/21 15:40	MS210827-2	.05005	.00715	.05755	mg/L	101	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
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.05		.05387	mg/L	108	90	110			
WG526107ICB	ICB	08/27/21 15:25				.00079	mg/L		-0.00088	0.00088			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05		.05292	mg/L	106	85	115			
L67929-02AS	AS	08/27/21 15:38	MS210827-2	.05	U	.05207	mg/L	104	70	130			
L67929-02ASD	ASD	08/27/21 15:40	MS210827-2	.05	U	.05148	mg/L	103	70	130	1	20	

QUIVIRA

ACZ Project ID: **L67827**

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
WG526323													
WG526323ICV	ICV	08/31/21 23:19	WI210603-7	2.416		2.372	mg/L	98	90	110			
WG526323ICB	ICB	08/31/21 23:21				U	mg/L		-0.02	0.02			
WG526328													
WG526328ICV	ICV	09/01/21 2:51	WI210603-7	2.416		2.36	mg/L	98	90	110			
WG526328ICB	ICB	09/01/21 2:52				U	mg/L		-0.02	0.02			
WG526328LFB	LFB	09/01/21 2:56	WI210331-13	2		1.98	mg/L	99	90	110			
L67800-01AS	AS	09/01/21 2:58	WI210331-13	2	.83	2.859	mg/L	101	90	110			
L67801-01DUP	DUP	09/01/21 3:01			1.96	1.965	mg/L				0	20	

Potassium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525982													
WG525982ICV	ICV	08/26/21 10:42	II210803-4	20		19.55	mg/L	98	95	105			
WG525982ICB	ICB	08/26/21 10:48				U	mg/L		-0.6	0.6			
WG525982LFB	LFB	08/26/21 11:01	II210810-2	99.99574		99.23	mg/L	99	85	115			
L67827-01AS	AS	08/26/21 11:08	II210810-2	499.9787	8.97	505	mg/L	99	85	115			
L67827-01ASD	ASD	08/26/21 11:11	II210810-2	499.9787	8.97	508.5	mg/L	100	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
WG525920													
WG525920PBW	PBW	08/25/21 11:50				U	mg/L		-20	20			
WG525920LCSW	LCSW	08/25/21 11:53	PCN64124	1000		998	mg/L	100	80	120			
L67830-04DUP	DUP	08/25/21 13:20			7780	7656	mg/L				2	10	

Selenium, dissolved

SM 3114 B, AA-Hydride

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525470													
WG525470ICV	ICV	08/18/21 11:01	SE210707-1	.025		.0263	mg/L	105	90	110			
WG525470ICB	ICB	08/18/21 11:03				U	mg/L		-0.006	0.006			
WG525495													
WG525495LRB	LRB	08/18/21 13:54				U	mg/L		-0.006	0.006			
WG525495LFB	LFB	08/18/21 13:56	SE210601-8	.0225		.0224	mg/L	100	85	115			
L67827-01LFM	LFM	08/18/21 14:04	SE210601-8	.0225	U	.0213	mg/L	95	85	115			
L67827-01LFMD	LFMD	08/18/21 14:06	SE210601-8	.0225	U	.0218	mg/L	97	85	115	2	20	

Sodium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525932													
WG525932ICV	ICV	08/25/21 16:50	II210803-4	100		99.62	mg/L	100	95	105			
WG525932ICB	ICB	08/25/21 16:57				U	mg/L		-0.6	0.6			
WG525932LFB	LFB	08/25/21 17:10	II210810-2	100.0109		99.78	mg/L	100	85	115			
L67827-01AS	AS	08/25/21 17:16	II210810-2	500.0545	398	906.5	mg/L	102	85	115			
L67827-01ASD	ASD	08/25/21 17:19	II210810-2	500.0545	398	906	mg/L	102	85	115	0	20	

QUIVIRA

ACZ Project ID: **L67827**

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.

Sulfate

D516-02/-07/-11 - TURBIDIMETRIC

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526438													
WG526438ICB	ICB	09/02/21 7:36				U	mg/L		-3	3			
WG526438ICV	ICV	09/02/21 7:36	WI210818-1	20.46		19.7	mg/L	96	90	110			
WG526438LFB	LFB	09/02/21 13:00	WI210105-3	10		10.1	mg/L	101	90	110			
L67801-01DUP	DUP	09/02/21 13:14			73.4	74.6	mg/L				2	20	
L67802-01AS	AS	09/02/21 13:41	SO4TURB60X	9.99	218	226.7	mg/L	87	90	110			M3

Uranium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.05		.05264	mg/L	105	90	110			
WG526107ICB	ICB	08/27/21 15:25				U	mg/L		-0.00022	0.00022			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05		.05188	mg/L	104	85	115			
L67929-02AS	AS	08/27/21 15:38	MS210827-2	.05	.00101	.05219	mg/L	102	70	130			
L67929-02ASD	ASD	08/27/21 15:40	MS210827-2	.05	.00101	.05203	mg/L	102	70	130	0	20	

Rio Algom Mining Company

ACZ Project ID: **L67827**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67827-01	WG526452	Chloride	SM4500CI-E	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.
	WG525920	Residue, Filterable (TDS) @180C	SM2540C	H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
			SM2540C	N1	See Case Narrative.
	WG526438	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.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 30-48KDR-20210812

Locator:

ACZ Sample ID: **L67827-01**

Date Sampled: 08/12/21 14:32

Date Received: 08/14/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/28/1921 14:40		2.2	1.4	2.3	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	09/30/21 8:53		0.0	32	4.4	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/22/21 0:18		1.9	0.31	0.31	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/22/21 16:21		1.9	0.93	2	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/12/21 16:26		0.576	0.33	0.43	pCi/L	*	djc

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>

QUIVIRA

ACZ Project ID: **L67827**

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
WG528510																
WG528510LCSW	LCSW	10/28/1921	PCN64361	99.69				89	4.2	3	89	55	121			
WG528510PBW	PBW	10/28/1921						5.2	1.5	2.2			4.4			B1
L67827-01DUP	DUP-RPD	10/28/1921			2.2	1.4	2.3	.65	1.7	2.9				109	20	N1A RG
L67827-01DUP	DUP-RER	10/28/1921			2.2	1.4	2.3	.65	1.7	2.9				0.7	2	
L67960-02MS	MS	10/28/21	PCN64361	99.69	110	47	73	44	13	19	-66	55	121			M2 N1A
L68078-03DUP	DUP-RPD	10/29/21			2.2	1.5	2.4	2.1	1.5	2.5				5	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
WG528203																
WG528203LCSW	LCSW	09/30/21	PCN64361	500				511	110	3.7	102	51	128			
WG528203PBW	PBW	09/30/21						0	20	2.6			5.2			
L67766-01DUP	DUP-RPD	10/01/21			0.326	2.3	2.9	0	41	5.2				200	20	RG
L67766-01DUP	DUP-RER	10/01/21			0.326	2.3	2.9	0	41	5.2				0.01	2	
L67959-01DUP	DUP-RPD	10/01/21			0	23	3.2	0	24	3.5				0	20	
L67828-01MS	MS	10/01/21	PCN64361	500	0	22	3.2	512	110	3.3	102	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
WG527026																
WG527026PBW	PBW	09/22/21						.08	0.1	0.24			0.48			
WG527026LCSW	LCSW	09/22/21	PCN62879	20				18	0.59	0.13	90	43	148			
L67747-01DUP	DUP-RPD	09/22/21			0.25	0.08	0.1	.23	0.17	0.34				8	20	
L67765-02MS	MS	09/22/21	PCN62879	20	0.44	0.13	0.19	19	0.55	0.16	93	43	148			
L67918-04DUP	DUP-RPD	09/22/21			4.4	0.41	0.43	3.7	0.33	0.11				17	20	

QUIVIRA

ACZ Project ID: **L67827**

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
WG526900																
WG526900LCSW	LCSW	09/22/21	PCN63356	9.43				8.2	1.1	0.83	87	47	123			
WG526900PBW	PBW	09/22/21						-.01	0.46	0.48			0.96			
L67561-01DUP	DUP-RPD	09/22/21			0.34	0.45	0.46	.39	0.35	0.35				14	20	
L67834-01MS	MS	09/22/21	PCN63356	9.43	10	1.3	2.2	6.3	0.88	1.5	-39	47	123			M2
L67960-02DUP	DUP-RPD	09/23/21			6.4	0.97	1.6	6.5	0.89	1.5				2	20	

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
WG526666																
WG526666LCSW	LCSW	09/12/21	PCN58726	200				211	26	0.44	106	91	126			
WG526666PBW	PBW	09/12/21						.301	0.23	0.33			0.66			
L67827-01MS	MS	09/12/21	PCN58726	200	0.576	0.33	0.43	224	28	0.47	112	91	126			
L67918-02DUP	DUP-RPD	09/13/21			0.24	0.31	0.51	.584	0.56	0.85				83	20	RG
L67918-02DUP	DUP-RER	09/13/21			0.24	0.31	0.51	.584	0.56	0.85				0.54	2	
L67766-01DUP	DUP-RPD	09/13/21			0.744	0.33	0.35	.741	0.38	0.49				0	20	

Rio Algom Mining Company

ACZ Project ID: **L67827**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67827-01	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1A	See Case Narrative.
			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.
	WG528203	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.
	WG527026	Radium 226, dissolved	M903.1	DJ	Sample dilution required due to insufficient sample.
	WG526900	Radium 228, dissolved	M9320	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

Rio Algom Mining Company

ACZ Project ID: **L67827**

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
4510319940

ACZ Project ID: L67827
Date Received: 08/14/2021 10:10
Received By:
Date Printed: 8/17/2021

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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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?
6554	22.7	NA	15	Yes
6579	1.2	<=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
4510319940

ACZ Project ID: L67827

Date Received: 08/14/2021 10:10

Received By:

Date Printed: 8/17/2021

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).

October 05, 2021

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: Michaela Gorospe, jcarroll, Jeremy Scott Collyard, Marcus Powell, Clark Short, Angela Persico

Project ID: 4510319940
ACZ Project ID: L67829

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 14, 2021. This project has been assigned to ACZ's project number, L67829. 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 L67829. 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 November 04, 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.



Sue Webber has reviewed and
approved this report.



Rio Algom Mining Company

October 05, 2021

Project ID: 4510319940

ACZ Project ID: L67829

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 1 groundwater sample from Rio Algom Mining Company on August 14, 2021. 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 L67829. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with an "H2" requiring re-analysis after the hold time had expired.

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 following required further explanation not provided by the Extended Qualifier Report:

1. Gross Alpha/Beta (N1A) - The sample ran in detector with failed Beta performance check. Detector passed Beta performance check the following day. No further action was taken.
2. TDS (N1) - ACZ SOP prescribes samples with >5 dry cycles to be sent to re-analysis on a dilution. The method does not require a limit on dry cycles to obtain a constant weight. The sample was dried greater than 5 dry cycles to obtain a constant weight.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 5-03ALLR-20210813

ACZ Sample ID: **L67829-01**

Date Sampled: 08/13/21 12:25

Date Received: 08/14/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	1	582		*	mg/L	0.1	0.5	08/18/21 16:52	kja
Iron, dissolved	M200.7 ICP	1	<0.06	U		mg/L	0.06	0.15	08/18/21 16:52	kja
Magnesium, dissolved	M200.7 ICP	1	313		*	mg/L	0.2	1	08/18/21 16:52	kja
Molybdenum, dissolved	M200.8 ICP-MS	1	0.00089			mg/L	0.0002	0.0005	08/23/21 14:33	bsu
Nickel, dissolved	M200.8 ICP-MS	1	0.00211			mg/L	0.0004	0.001	08/23/21 14:33	bsu
Potassium, dissolved	M200.7 ICP	1	4.20			mg/L	0.2	1	08/18/21 16:52	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	0.0032	B		mg/L	0.002	0.005	08/18/21 14:19	mlh
Sodium, dissolved	M200.7 ICP	1	471		*	mg/L	0.2	1	08/18/21 16:52	kja
Uranium, dissolved	M200.8 ICP-MS	1	0.104			mg/L	0.0001	0.0005	08/23/21 14:33	bsu

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	302			mg/L	2	20	08/21/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	08/21/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	08/21/21 0:00	eep
Total Alkalinity		1	302			mg/L	2	20	08/21/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-0.7			%			10/05/21 0:00	calc
Sum of Anions			77.0			meq/L			10/05/21 0:00	calc
Sum of Cations			76			meq/L			10/05/21 0:00	calc
Chloride	SM4500Cl-E	25	728		*	mg/L	12.5	50	08/30/21 10:29	md
Conductivity @25C	SM2510B	1	5530			umhos/cm	1	10	08/21/21 21:18	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	0.686		*	mg/L	0.02	0.1	08/25/21 1:21	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	4760	H	*	mg/L	40	80	08/25/21 13:12	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	100	2410		*	mg/L	100	500	09/01/21 10:06	syw
TDS (calculated)	Calculation		4690			mg/L			10/05/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.01						10/05/21 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>

Rio Algom Mining Company

ACZ Project ID: **L67829**

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
WG525722													
WG525722PBW1	PBW	08/21/21 14:22				U	mg/L		-20	20			
WG525722LCSW2	LCSW	08/21/21 14:35	WC210806-1	820.0001		786.4	mg/L	96	90	110			
WG525722LCSW4	LCSW	08/21/21 17:54	WC210806-1	820.0001		791.7	mg/L	97	90	110			
WG525722PBW2	PBW	08/21/21 18:01				U	mg/L		-20	20			
L67829-01DUP	DUP	08/21/21 21:28			302	303.6	mg/L				1	20	
WG525722LCSW6	LCSW	08/21/21 21:43	WC210806-1	820.0001		811.7	mg/L	99	90	110			

Calcium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525491													
WG525491ICV	ICV	08/18/21 15:29	II210803-4	100		97.75	mg/L	98	95	105			
WG525491ICB	ICB	08/18/21 15:35				U	mg/L		-0.3	0.3			
WG525491LFB	LFB	08/18/21 15:47	II210810-2	67.99734		68.34	mg/L	101	85	115			
L67829-01AS	AS	08/18/21 16:56	II210810-2	67.99734	582	597.8	mg/L	23	85	115			M3
L67829-01ASD	ASD	08/18/21 17:05	II210810-2	67.99734	582	648.6	mg/L	98	85	115	8	20	

Chloride

SM4500Cl-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526142													
WG526142ICV	ICV	08/30/21 9:28	WI210503-1	54.89		52.66	mg/L	96	90	110			
WG526142ICB	ICB	08/30/21 9:28				.96	mg/L		-1.5	1.5			
WG526142LFB1	LFB	08/30/21 9:29	WI200327-3	30.03		28.67	mg/L	95	90	110			
WG526142LFB2	LFB	08/30/21 9:44	WI200327-3	30.03		29.02	mg/L	97	90	110			
WG526142ICV1	ICV	08/30/21 12:08	WI210503-1	54.89		55.48	mg/L	101	90	110			
WG526142ICB1	ICB	08/30/21 12:08				1.16	mg/L		-1.5	1.5			
L67826-02DUP	DUP	08/30/21 12:27			159	144.93	mg/L				9	20	
L67826-01AS	AS	08/30/21 12:42	WI200327-3	750.75	673	696.21	mg/L	3	90	110			M2

Conductivity @25C

SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525722													
WG525722LCSW1	LCSW	08/21/21 14:24	PCN63140	1408		1355	umhos/cm	96	90	110			
WG525722LCSW3	LCSW	08/21/21 17:43	PCN63140	1408		1351	umhos/cm	96	90	110			
L67829-01DUP	DUP	08/21/21 21:28			5530	5540	umhos/cm				0	20	
WG525722LCSW5	LCSW	08/21/21 21:30	PCN63140	1408		1348	umhos/cm	96	90	110			

Iron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525491													
WG525491ICV	ICV	08/18/21 15:29	II210803-4	2		1.999	mg/L	100	95	105			
WG525491ICB	ICB	08/18/21 15:35				U	mg/L		-0.18	0.18			
WG525491LFB	LFB	08/18/21 15:47	II210810-2	1.0001		1.027	mg/L	103	85	115			
L67829-01AS	AS	08/18/21 16:56	II210810-2	1.0001	U	1.037	mg/L	104	85	115			
L67829-01ASD	ASD	08/18/21 17:05	II210810-2	1.0001	U	1.09	mg/L	109	85	115	5	20	

Rio Algom Mining Company

ACZ Project ID: **L67829**

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.

Magnesium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525491													
WG525491ICV	ICV	08/18/21 15:29	II210803-4	100		95.77	mg/L	96	95	105			
WG525491ICB	ICB	08/18/21 15:35				U	mg/L		-0.6	0.6			
WG525491LFB	LFB	08/18/21 15:47	II210810-2	50.00074		48.49	mg/L	97	85	115			
L67829-01AS	AS	08/18/21 16:56	II210810-2	50.00074	313	349.1	mg/L	72	85	115			M3
L67829-01ASD	ASD	08/18/21 17:05	II210810-2	50.00074	313	371.8	mg/L	118	85	115	6	20	M3

Molybdenum, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525768													
WG525768ICV	ICV	08/23/21 13:15	MS210727-2	.01992		.01977	mg/L	99	90	110			
WG525768ICB	ICB	08/23/21 13:17				U	mg/L		-0.00044	0.00044			
WG525768LFB	LFB	08/23/21 13:47	MS210727-5	.0501		.04751	mg/L	95	85	115			
L67761-04AS	AS	08/23/21 14:16	MS210727-5	.0501	.00962	.05981	mg/L	100	70	130			
L67761-04ASD	ASD	08/23/21 14:18	MS210727-5	.0501	.00962	.05974	mg/L	100	70	130	0	20	

Nickel, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525768													
WG525768ICV	ICV	08/23/21 13:15	MS210727-2	.05		.05224	mg/L	104	90	110			
WG525768ICB	ICB	08/23/21 13:17				U	mg/L		-0.00088	0.00088			
WG525768LFB	LFB	08/23/21 13:47	MS210727-5	.05		.04671	mg/L	93	85	115			
L67761-04AS	AS	08/23/21 14:16	MS210727-5	.05	U	.05165	mg/L	103	70	130			
L67761-04ASD	ASD	08/23/21 14:18	MS210727-5	.05	U	.051	mg/L	102	70	130	1	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
WG525873													
WG525873ICV	ICV	08/24/21 23:25	WI210603-7	2.416		2.269	mg/L	94	90	110			
WG525873ICB	ICB	08/24/21 23:27				U	mg/L		-0.02	0.02			
WG525876													
WG525876LFB	LFB	08/25/21 0:44	WI210331-13	2		1.908	mg/L	95	90	110			
L67826-03DUP	DUP	08/25/21 1:09			.077	.07	mg/L				10	20	RA
L67826-02AS	AS	08/25/21 1:24	WI210331-13	2	U	2.09	mg/L	105	90	110			

Potassium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525491													
WG525491ICV	ICV	08/18/21 15:29	II210803-4	20		19.79	mg/L	99	95	105			
WG525491ICB	ICB	08/18/21 15:35				U	mg/L		-0.6	0.6			
WG525491LFB	LFB	08/18/21 15:47	II210810-2	99.99574		100.6	mg/L	101	85	115			
L67829-01AS	AS	08/18/21 16:56	II210810-2	99.99574	4.2	112.9	mg/L	109	85	115			
L67829-01ASD	ASD	08/18/21 17:05	II210810-2	99.99574	4.2	118.5	mg/L	114	85	115	5	20	

Rio Algom Mining Company

ACZ Project ID: **L67829**

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.

Residue, Filterable (TDS) @180C

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525920													
WG525920PBW	PBW	08/25/21 11:50				U	mg/L		-20	20			
WG525920LCSW	LCSW	08/25/21 11:53	PCN64124	1000		998	mg/L	100	80	120			
L67830-04DUP	DUP	08/25/21 13:20			7780	7656	mg/L				2	10	

Selenium, dissolved

SM 3114 B, AA-Hydride

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525470													
WG525470ICV	ICV	08/18/21 11:01	SE210707-1	.025		.0263	mg/L	105	90	110			
WG525470ICB	ICB	08/18/21 11:03				U	mg/L		-0.006	0.006			
WG525495													
WG525495LRB	LRB	08/18/21 13:54				U	mg/L		-0.006	0.006			
WG525495LFB	LFB	08/18/21 13:56	SE210601-8	.0225		.0224	mg/L	100	85	115			
L67827-01LFM	LFM	08/18/21 14:04	SE210601-8	.0225	U	.0213	mg/L	95	85	115			
L67827-01LFMD	LFMD	08/18/21 14:06	SE210601-8	.0225	U	.0218	mg/L	97	85	115	2	20	

Sodium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525491													
WG525491ICV	ICV	08/18/21 15:29	II210803-4	100		100.1	mg/L	100	95	105			
WG525491ICB	ICB	08/18/21 15:35				U	mg/L		-0.6	0.6			
WG525491LFB	LFB	08/18/21 15:47	II210810-2	100.0109		101.1	mg/L	101	85	115			
L67829-01AS	AS	08/18/21 16:56	II210810-2	100.0109	471	540.4	mg/L	69	85	115			M3
L67829-01ASD	ASD	08/18/21 17:05	II210810-2	100.0109	471	570.2	mg/L	99	85	115	5	20	

Sulfate

D516-02/-07/-11 - TURBIDIMETRIC

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526221													
WG526221ICB	ICB	09/01/21 9:20				U	mg/L		-3	3			
WG526221ICV	ICV	09/01/21 9:20	WI210818-1	20.46		19.7	mg/L	96	90	110			
WG526221LFB	LFB	09/01/21 9:31	WI210105-3	10		9.6	mg/L	96	90	110			
L67825-06DUP	DUP	09/01/21 9:54			106	106.5	mg/L				0	20	
L67825-07AS	AS	09/01/21 9:54	SO4TURB5X	10	109	116.3	mg/L	73	90	110			M3

Uranium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525768													
WG525768ICV	ICV	08/23/21 13:15	MS210727-2	.05		.0517	mg/L	103	90	110			
WG525768ICB	ICB	08/23/21 13:17				U	mg/L		-0.00022	0.00022			
WG525768LFB	LFB	08/23/21 13:47	MS210727-5	.05		.04735	mg/L	95	85	115			
L67761-04AS	AS	08/23/21 14:16	MS210727-5	.05	.00103	.05472	mg/L	107	70	130			
L67761-04ASD	ASD	08/23/21 14:18	MS210727-5	.05	.00103	.05407	mg/L	106	70	130	1	20	

Rio Algom Mining Company

ACZ Project ID: **L67829**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67829-01	WG525491	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.
	WG526142	Chloride	SM4500CI-E	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG525491	Magnesium, 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.
	WG525876	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).
	WG525920	Residue, Filterable (TDS) @180C	SM2540C	H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
			SM2540C	N1	See Case Narrative.
	WG525491	Sodium, 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.
	WG526221	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.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 5-03ALLR-20210813

Locator:

ACZ Sample ID: **L67829-01**

Date Sampled: 08/13/21 12:25

Date Received: 08/14/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	09/09/21 15:13		3.4	3.1	6.8	pCi/L	*	cer

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	09/30/21 8:53		0.0	23	3.4	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/17/21 0:31		0.14	0.07	0.14	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/13/21 17:43		0.77	1.3	3.1	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/12/21 16:26		0.47	0.32	0.45	pCi/L	*	djc

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>

QUIVIRA

ACZ Project ID: **L67829**

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
WG525663																
WG525663PBW	PBW	09/08/1921						2.3	1.4	3.3			6.6			
WG525663LCSW	LCSW	09/08/1921	PCN59614	93.77				88	3.1	2.9	94	55	121			
L67313-08DUP	DUP-RPD	09/09/21			5	3	6.5	4.2	4.5	10				17	20	
L67828-03MS	MS	09/09/21	PCN59614	187.53	3	3	6.7	170	6.4	5.8	89	55	121			
L67829-01DUP	DUP-RER	09/09/21			3.4	3.1	6.8	4.8	2.4	5.1				0.36	2	
L67829-01DUP	DUP-RPD	09/09/21			3.4	3.1	6.8	4.8	2.4	5.1				34	20	RG

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
WG528203																
WG528203LCSW	LCSW	09/30/21	PCN64361	500				511	110	3.7	102	51	128			
WG528203PBW	PBW	09/30/21						0	20	2.6			5.2			
L67766-01DUP	DUP-RPD	10/01/21			0.326	2.3	2.9	0	41	5.2				200	20	RG
L67766-01DUP	DUP-RER	10/01/21			0.326	2.3	2.9	0	41	5.2				0.01	2	
L67959-01DUP	DUP-RPD	10/01/21			0	23	3.2	0	24	3.5				0	20	
L67828-01MS	MS	10/01/21	PCN64361	500	0	22	3.2	512	110	3.3	102	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
WG526665																
WG526665PBW	PBW	09/17/21						.12	0.08	0.08			0.16			
WG526665LCSW	LCSW	09/17/21	PCN62879	20				19	0.52	0.09	95	43	148			
L67644-01DUP1	DUP-RPD	09/17/21			2	0.17	0.02	2.2	0.22	0.12				10	20	
L67644-02MS	MS	09/17/21	PCN62879	20	2.5	0.21	0.08	19	0.58	0.11	83	43	148			
L67756-01DUP2	DUP-RER	09/17/21			-0.01	0.06	0.08	.3	0.16	0.21				1.81	2	
L67756-01DUP2	DUP-RPD	09/17/21			-0.01	0.06	0.08	.3	0.16	0.21				214	20	RG

QUIVIRA

ACZ Project ID: **L67829**

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
WG526233																
WG526233PBW	PBW	09/11/21						-.24	1.3	3.2			6.4			
WG526233LCSW	LCSW	09/11/21	PCN63356	9.47				7.6	1.2	2.3	80	47	123			
L67673-01DUP	DUP-RPD	09/11/21			1.7	0.85	1.9	2	1.5	3.7				16	20	
L67741-01MS	MS	09/11/21	PCN63356	9.47	0.92	0.71	1.7	7.7	1.1	1.8	72	47	123			
L67906-01DUP	DUP-RER	09/13/21			0.95	0.94	2.3	.18	0.88	2.1				0.6	2	
L67906-01DUP	DUP-RPD	09/13/21			0.95	0.94	2.3	.18	0.88	2.1				136	20	RG

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
WG526666																
WG526666LCSW	LCSW	09/12/21	PCN58726	200				211	26	0.44	106	91	126			
WG526666PBW	PBW	09/12/21						.301	0.23	0.33			0.66			
L67827-01MS	MS	09/12/21	PCN58726	200	0.576	0.33	0.43	224	28	0.47	112	91	126			
L67918-02DUP	DUP-RER	09/13/21			0.24	0.31	0.51	.584	0.56	0.85				0.54	2	
L67918-02DUP	DUP-RPD	09/13/21			0.24	0.31	0.51	.584	0.56	0.85				83	20	RG
L67766-01DUP	DUP-RPD	09/13/21			0.744	0.33	0.35	.741	0.38	0.49				0	20	

Rio Algom Mining Company

ACZ Project ID: **L67829**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67829-01	WG525663	Lead 210, dissolved	EICHROM, OTW01	D1	Sample required dilution due to matrix.
			EICHROM, OTW01	N1A	See Case Narrative.
			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.
	WG528203	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.
	WG526665	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.
	WG526233	Radium 228, dissolved	M9320	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: **L67829**

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
4510319940

ACZ Project ID: L67829
Date Received: 08/14/2021 10:10
Received By:
Date Printed: 8/17/2021

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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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?
6554	22.7	NA	15	Yes
6579	1.2	<=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
4510319940

ACZ Project ID: L67829

Date Received: 08/14/2021 10:10

Received By:

Date Printed: 8/17/2021

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).

November 03, 2021

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: Michaela Gorospe, jcarroll, Jeremy Scott Collyard, Marcus Powell, Clark Short, Angela Persico

Project ID: 4510319940
ACZ Project ID: L67918

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 19, 2021. This project has been assigned to ACZ's project number, L67918. 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 L67918. 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 03, 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.



Scott Habermehl has reviewed
and approved this report.



Rio Algom Mining Company

November 03, 2021

Project ID: 4510319940

ACZ Project ID: L67918

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 6 groundwater samples from Rio Algom Mining Company on August 19, 2021. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L67918. 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

These samples were 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. (N1A) Applies to: /LEAD 210

Matrix Spike carrier recovery outside of acceptance limits. This is attributable to matrix interference. MS exhibited abnormal precip during step 11.7 and was unable to reach a pH of 8 during step 11.11.1. Sample did not dissolve at step 11.13

2. (B1) Applies to: /LEAD 210

Analyte detected in blank above acceptance limits. PBW fails high by ~0.8 pCi while having an error of 1.53 pCi.

3. (N1) Applies to: L67918-04/LEAD 210

L67918-05/LEAD 210

L67918-06/LEAD 210

Lead carrier recovery outside of acceptance limits. This is attributable to matrix interference.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 31-01 TRA-R

ACZ Sample ID: **L67918-01**

Date Sampled: 08/16/21 17:00

Date Received: 08/19/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	1	191			mg/L	0.1	0.5	08/24/21 17:31	kja
Iron, dissolved	M200.7 ICP	1	0.287			mg/L	0.06	0.15	08/25/21 11:48	kja
Magnesium, dissolved	M200.7 ICP	1	79.3			mg/L	0.2	1	08/24/21 17:31	kja
Molybdenum, dissolved	M200.8 ICP-MS	1	0.00632			mg/L	0.0002	0.0005	08/25/21 18:01	mfm
Nickel, dissolved	M200.8 ICP-MS	1	0.00536			mg/L	0.0004	0.001	08/25/21 18:01	mfm
Potassium, dissolved	M200.7 ICP	1	5.97			mg/L	0.2	1	08/24/21 17:31	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	08/23/21 15:42	mlh
Sodium, dissolved	M200.7 ICP	1	137		*	mg/L	0.2	1	08/24/21 17:31	kja
Uranium, dissolved	M200.8 ICP-MS	1	0.00083			mg/L	0.0001	0.0005	08/25/21 18:01	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	147			mg/L	2	20	08/25/21 0:00	eep
Carbonate as CaCO3		1	<2	U		mg/L	2	20	08/25/21 0:00	eep
Hydroxide as CaCO3		1	<2	U		mg/L	2	20	08/25/21 0:00	eep
Total Alkalinity		1	147			mg/L	2	20	08/25/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-8.3			%			11/03/21 0:00	calc
Sum of Anions			26			meq/L			11/03/21 0:00	calc
Sum of Cations			22			meq/L			11/03/21 0:00	calc
Chloride	SM4500Cl-E	1	47.5		*	mg/L	0.5	2	09/01/21 15:09	md
Conductivity @25C	SM2510B	1	1910			umhos/cm	1	10	08/24/21 1:30	emk
Cyanide, Total	D7511-09	1	0.015			mg/L	0.003	0.01	08/23/21 15:39	md
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	<0.02	U	*	mg/L	0.02	0.1	08/28/21 2:25	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	1670			mg/L	20	40	08/23/21 13:18	scd
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	60	1030		*	mg/L	60	300	09/02/21 12:18	wtc
TDS (calculated)	Calculation		1580			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.06						11/03/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 17-01 KD

ACZ Sample ID: **L67918-02**

Date Sampled: 08/17/21 09:28

Date Received: 08/19/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	1	43.2			mg/L	0.1	0.5	08/24/21 17:34	kja
Iron, dissolved	M200.7 ICP	1	<0.06	U		mg/L	0.06	0.15	08/25/21 11:51	kja
Magnesium, dissolved	M200.7 ICP	1	24.1			mg/L	0.2	1	08/24/21 17:34	kja
Molybdenum, dissolved	M200.8 ICP-MS	1	0.00198			mg/L	0.0002	0.0005	08/25/21 18:10	mfm
Nickel, dissolved	M200.8 ICP-MS	1	<0.0004	U		mg/L	0.0004	0.001	08/25/21 18:10	mfm
Potassium, dissolved	M200.7 ICP	1	6.22			mg/L	0.2	1	08/24/21 17:34	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	08/23/21 15:44	mlh
Sodium, dissolved	M200.7 ICP	1	217		*	mg/L	0.2	1	08/24/21 17:34	kja
Uranium, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	08/25/21 18:10	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	21.7		*	mg/L	2	20	08/25/21 0:00	eep
Carbonate as CaCO3		1	3.2	B	*	mg/L	2	20	08/25/21 0:00	eep
Hydroxide as CaCO3		1	<2	U	*	mg/L	2	20	08/25/21 0:00	eep
Total Alkalinity		1	24.9		*	mg/L	2	20	08/25/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-3.4			%			11/03/21 0:00	calc
Sum of Anions			15			meq/L			11/03/21 0:00	calc
Sum of Cations			14			meq/L			11/03/21 0:00	calc
Chloride	SM4500Cl-E	1	20.3		*	mg/L	0.5	2	09/01/21 15:10	md
Conductivity @25C	SM2510B	1	1460		*	umhos/cm	1	10	08/24/21 1:39	emk
Cyanide, Total	D7511-09	1	0.015		*	mg/L	0.003	0.01	08/23/21 12:44	md
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	<0.02	U	*	mg/L	0.02	0.1	08/28/21 2:26	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	1040		*	mg/L	20	40	08/24/21 11:20	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	20	678		*	mg/L	20	100	09/02/21 10:38	wtc
TDS (calculated)	Calculation		1000			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.04						11/03/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 19-77 TRB

ACZ Sample ID: **L67918-03**

Date Sampled: 08/17/21 10:17

Date Received: 08/19/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	2	112			mg/L	0.2	1	08/24/21 17:49	kja
Iron, dissolved	M200.7 ICP	2	<0.12	U		mg/L	0.12	0.3	08/25/21 12:01	kja
Magnesium, dissolved	M200.7 ICP	2	54.2			mg/L	0.4	2	08/24/21 17:49	kja
Molybdenum, dissolved	M200.8 ICP-MS	2	0.00377			mg/L	0.0004	0.001	08/25/21 18:12	mfm
Nickel, dissolved	M200.8 ICP-MS	2	0.00096	B		mg/L	0.0008	0.002	08/25/21 18:12	mfm
Potassium, dissolved	M200.7 ICP	2	7.26			mg/L	0.4	2	08/24/21 17:49	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	08/23/21 15:46	mlh
Sodium, dissolved	M200.7 ICP	2	851		*	mg/L	0.4	2	08/24/21 17:49	kja
Uranium, dissolved	M200.8 ICP-MS	2	0.00894			mg/L	0.0002	0.001	08/25/21 18:12	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	500		*	mg/L	2	20	08/25/21 0:00	eep
Carbonate as CaCO3		1	<2	U	*	mg/L	2	20	08/25/21 0:00	eep
Hydroxide as CaCO3		1	<2	U	*	mg/L	2	20	08/25/21 0:00	eep
Total Alkalinity		1	500		*	mg/L	2	20	08/25/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-8.6			%			11/03/21 0:00	calc
Sum of Anions			57			meq/L			11/03/21 0:00	calc
Sum of Cations			48			meq/L			11/03/21 0:00	calc
Chloride	SM4500Cl-E	1	15.8		*	mg/L	0.5	2	09/01/21 15:11	md
Conductivity @25C	SM2510B	1	4440		*	umhos/cm	1	10	08/24/21 1:50	emk
Cyanide, Total	D7511-09	1	0.011		*	mg/L	0.003	0.01	08/23/21 12:46	md
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.359		*	mg/L	0.02	0.1	08/28/21 2:29	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	3530		*	mg/L	20	40	08/24/21 11:25	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	100	2200		*	mg/L	100	500	09/02/21 12:19	wtc
TDS (calculated)	Calculation		3550			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.99						11/03/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 31-02 TRB-R-20210701

ACZ Sample ID: **L67918-04**

Date Sampled: 08/17/21 11:45

Date Received: 08/19/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	5	619			mg/L	0.5	2.5	08/24/21 17:53	kja
Iron, dissolved	M200.7 ICP	5	5.92			mg/L	0.3	0.75	08/25/21 12:05	kja
Magnesium, dissolved	M200.7 ICP	5	716			mg/L	1	5	08/24/21 17:53	kja
Molybdenum, dissolved	M200.8 ICP-MS	5	<0.001	U		mg/L	0.001	0.0025	08/25/21 18:13	mfm
Nickel, dissolved	M200.8 ICP-MS	5	<0.002	U		mg/L	0.002	0.005	08/25/21 18:13	mfm
Potassium, dissolved	M200.7 ICP	5	18.6			mg/L	1	5	08/24/21 17:53	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	08/23/21 15:52	mlh
Sodium, dissolved	M200.7 ICP	5	606		*	mg/L	1	5	08/24/21 17:53	kja
Uranium, dissolved	M200.8 ICP-MS	5	0.00451			mg/L	0.0005	0.0025	08/25/21 18:13	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	1080		*	mg/L	2	20	08/25/21 0:00	eep
Carbonate as CaCO3		1	<2	U	*	mg/L	2	20	08/25/21 0:00	eep
Hydroxide as CaCO3		1	<2	U	*	mg/L	2	20	08/25/21 0:00	eep
Total Alkalinity		1	1080		*	mg/L	2	20	08/25/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-6.8			%			11/03/21 0:00	calc
Sum of Anions			134			meq/L			11/03/21 0:00	calc
Sum of Cations			117			meq/L			11/03/21 0:00	calc
Chloride	SM4500Cl-E	25	1120		*	mg/L	12.5	50	09/01/21 16:02	md
Conductivity @25C	SM2510B	1	8530		*	umhos/cm	1	10	08/24/21 2:06	emk
Cyanide, Total	D7511-09	1	<0.003	U	*	mg/L	0.003	0.01	08/23/21 12:48	md
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	<0.02	U	*	mg/L	0.02	0.1	08/28/21 2:31	pjb
Residue, Filterable (TDS) @180C	SM2540C	5	7920	H	*	mg/L	100	200	09/08/21 16:48	emk
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	150	3850		*	mg/L	150	750	09/02/21 10:31	wtc
TDS (calculated)	Calculation		7590			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.04						11/03/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940
Sample ID: 31-67 TRB-20210701

ACZ Sample ID: **L67918-05**

Date Sampled: 08/17/21 16:12

Date Received: 08/19/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	5	646			mg/L	0.5	2.5	08/24/21 17:56	kja
Iron, dissolved	M200.7 ICP	5	2.89			mg/L	0.3	0.75	08/25/21 12:14	kja
Magnesium, dissolved	M200.7 ICP	5	618			mg/L	1	5	08/24/21 17:56	kja
Molybdenum, dissolved	M200.8 ICP-MS	5	<0.001	U		mg/L	0.001	0.0025	08/25/21 18:15	mfm
Nickel, dissolved	M200.8 ICP-MS	5	0.00445	B		mg/L	0.002	0.005	08/25/21 18:15	mfm
Potassium, dissolved	M200.7 ICP	5	15.1			mg/L	1	5	08/24/21 17:56	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	08/23/21 15:54	mlh
Sodium, dissolved	M200.7 ICP	5	614		*	mg/L	1	5	08/24/21 17:56	kja
Uranium, dissolved	M200.8 ICP-MS	5	0.0122			mg/L	0.0005	0.0025	08/25/21 18:15	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	925		*	mg/L	2	20	08/25/21 0:00	eep
Carbonate as CaCO3		1	<2	U	*	mg/L	2	20	08/25/21 0:00	eep
Hydroxide as CaCO3		1	<2	U	*	mg/L	2	20	08/25/21 0:00	eep
Total Alkalinity		1	925		*	mg/L	2	20	08/25/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-6.7			%			11/03/21 0:00	calc
Sum of Anions			127			meq/L			11/03/21 0:00	calc
Sum of Cations			111			meq/L			11/03/21 0:00	calc
Chloride	SM4500Cl-E	25	992		*	mg/L	12.5	50	09/01/21 16:03	md
Conductivity @25C	SM2510B	1	8070		*	umhos/cm	1	10	08/24/21 3:04	emk
Cyanide, Total	D7511-09	1	<0.003	U	*	mg/L	0.003	0.01	08/23/21 12:50	md
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	<0.02	U	*	mg/L	0.02	0.1	08/28/21 2:32	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	7620	H	*	mg/L	40	80	08/30/21 16:06	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	150	3830		*	mg/L	150	750	09/02/21 10:31	wtc
TDS (calculated)	Calculation		7280			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.05						11/03/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940
Sample ID: 31-61 ALL-20210701

ACZ Sample ID: **L67918-06**

Date Sampled: 08/18/21 10:55

Date Received: 08/19/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	10	529			mg/L	1	5	08/24/21 17:59	kja
Iron, dissolved	M200.7 ICP	10	<0.6	U		mg/L	0.6	1.5	08/25/21 12:18	kja
Magnesium, dissolved	M200.7 ICP	10	1260			mg/L	2	10	08/24/21 17:59	kja
Molybdenum, dissolved	M200.8 ICP-MS	10	<0.002	U		mg/L	0.002	0.005	08/25/21 18:17	mfm
Nickel, dissolved	M200.8 ICP-MS	10	0.0511			mg/L	0.004	0.01	08/25/21 18:17	mfm
Potassium, dissolved	M200.7 ICP	10	28.5			mg/L	2	10	08/24/21 17:59	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	0.0052			mg/L	0.002	0.005	08/23/21 15:56	mlh
Sodium, dissolved	M200.7 ICP	10	1640		*	mg/L	2	10	08/24/21 17:59	kja
Uranium, dissolved	M200.8 ICP-MS	10	0.725			mg/L	0.001	0.005	08/25/21 18:17	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	1840		*	mg/L	2	20	08/25/21 0:00	eep
Carbonate as CaCO3		1	<2	U	*	mg/L	2	20	08/25/21 0:00	eep
Hydroxide as CaCO3		1	<2	U	*	mg/L	2	20	08/25/21 0:00	eep
Total Alkalinity		1	1840		*	mg/L	2	20	08/25/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-8.8			%			11/03/21 0:00	calc
Sum of Anions			242			meq/L			11/03/21 0:00	calc
Sum of Cations			203			meq/L			11/03/21 0:00	calc
Chloride	SM4500Cl-E	25	2240		*	mg/L	12.5	50	09/01/21 16:03	md
Conductivity @25C	SM2510B	1	15200		*	umhos/cm	1	10	08/24/21 3:24	emk
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	5	11.2		*	mg/L	0.1	0.5	08/28/21 2:42	pjb
Residue, Filterable (TDS) @180C	SM2540C	5	13700	H	*	mg/L	100	200	08/30/21 16:08	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	200	6780		*	mg/L	200	1000	09/02/21 10:38	wtc
TDS (calculated)	Calculation		13600			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.01						11/03/21 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: **L67918**

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
WG525870													
WG525870PBW1	PBW	08/24/21 19:46				4.1	mg/L		-20	20			
WG525870LCSW3	LCSW	08/24/21 20:05	WC210821-1	820.0001		803.9	mg/L	98	90	110			
WG525870LCSW6	LCSW	08/24/21 23:07	WC210821-1	820.0001		795.8	mg/L	97	90	110			
WG525870PBW2	PBW	08/24/21 23:16				2.2	mg/L		-20	20			
L67929-01DUP	DUP	08/25/21 2:54			23.7	24.1	mg/L				2	20	
WG525870LCSW9	LCSW	08/25/21 3:12	WC210821-1	820.0001		799.7	mg/L	98	90	110			
WG525870PBW3	PBW	08/25/21 3:19				U	mg/L		-20	20			
WG525870LCSW12	LCSW	08/25/21 5:50	WC210821-1	820.0001		816.4	mg/L	100	90	110			
WG525870PBW4	PBW	08/25/21 5:57				2.4	mg/L		-20	20			
WG525870LCSW15	LCSW	08/25/21 10:53	WC210821-1	820.0001		824.6	mg/L	101	90	110			

Calcium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525843													
WG525843ICV	ICV	08/24/21 16:12	II210803-4	100		98.82	mg/L	99	95	105			
WG525843ICB	ICB	08/24/21 16:18				U	mg/L		-0.3	0.3			
WG525843LFB	LFB	08/24/21 16:31	II210810-2	67.99734		63.73	mg/L	94	85	115			
L67918-02AS	AS	08/24/21 17:37	II210810-2	67.99734	43.2	106.2	mg/L	93	85	115			
L67918-02ASD	ASD	08/24/21 17:46	II210810-2	67.99734	43.2	106.3	mg/L	93	85	115	0	20	

Chloride

SM4500Cl-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526344													
WG526344ICV	ICV	09/01/21 15:06	WI210503-1	54.89		56.04	mg/L	102	90	110			
WG526344ICB	ICB	09/01/21 15:07				.73	mg/L		-1.5	1.5			
L67918-01DUP	DUP	09/01/21 15:10			47.5	40.83	mg/L				15	20	
WG526344LFB2	LFB	09/01/21 15:23	WI200327-3	30.03		27.23	mg/L	91	90	110			
L67800-01AS	AS	09/01/21 16:02	25XCL	30	487	456.76	mg/L	-101	90	110			M3
WG526344LFB1	LFB	09/02/21 8:54	WI200327-3	30.03		27.66	mg/L	92	90	110			

Conductivity @25C

SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525779													
WG525779LCSW2	LCSW	08/23/21 15:31	PCN63140	1408		1389	umhos/cm	99	90	110			
WG525779LCSW5	LCSW	08/23/21 18:34	PCN63140	1408		1372	umhos/cm	97	90	110			
WG525779LCSW8	LCSW	08/23/21 22:28	PCN63140	1408		1366	umhos/cm	97	90	110			
L67918-04DUP	DUP	08/24/21 2:22			8530	8520	umhos/cm				0	20	
WG525779LCSW11	LCSW	08/24/21 2:29	PCN63140	1408		1352	umhos/cm	96	90	110			
L67935-01DUP	DUP	08/24/21 4:22			5680	5700	umhos/cm				0	20	
WG525779LCSW14	LCSW	08/24/21 5:30	PCN63140	1408		1344	umhos/cm	95	90	110			

QUIVIRA

ACZ Project ID: **L67918**

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, Total

D7511-09

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525747													
WG525747ICV	ICV	08/23/21 12:28	WI210823-4	.3		.3271	mg/L	109	90	110			
WG525747ICB	ICB	08/23/21 12:30				U	mg/L		-0.003	0.003			
WG525747LFB	LFB	08/23/21 12:36	WI210823-7	.1		.0976	mg/L	98	84	116			
WG525747ICV1	ICV	08/23/21 15:33	WI210823-4	.3		.3214	mg/L	107	90	110			
WG525747ICB1	ICB	08/23/21 15:35				U	mg/L		-0.003	0.003			
L67918-01AS	AS	08/23/21 15:41	WI210823-7	.1	.015	.1044	mg/L	89	84	116			
L67918-01ASD	ASD	08/23/21 15:43	WI210823-7	.1	.015	.1042	mg/L	89	84	116	0	20	

Iron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525903													
WG525903ICV	ICV	08/25/21 11:16	II210803-4	2		1.974	mg/L	99	95	105			
WG525903ICB	ICB	08/25/21 11:22				U	mg/L		-0.18	0.18			
WG525903LFB	LFB	08/25/21 11:35	II210810-2	1.0001		1.038	mg/L	104	85	115			
L67918-02AS	AS	08/25/21 11:55	II210810-2	1.0001	U	1.04	mg/L	104	85	115			
L67918-02ASD	ASD	08/25/21 11:58	II210810-2	1.0001	U	1.035	mg/L	103	85	115	0	20	

Magnesium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525843													
WG525843ICV	ICV	08/24/21 16:12	II210803-4	100		96.39	mg/L	96	95	105			
WG525843ICB	ICB	08/24/21 16:18				U	mg/L		-0.6	0.6			
WG525843LFB	LFB	08/24/21 16:31	II210810-2	50.00074		45.16	mg/L	90	85	115			
L67918-02AS	AS	08/24/21 17:37	II210810-2	50.00074	24.1	69.57	mg/L	91	85	115			
L67918-02ASD	ASD	08/24/21 17:46	II210810-2	50.00074	24.1	69.47	mg/L	91	85	115	0	20	

Molybdenum, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525955													
WG525955ICV	ICV	08/25/21 17:23	MS210727-2	.01992		.0185	mg/L	93	90	110			
WG525955ICB	ICB	08/25/21 17:25				U	mg/L		-0.00044	0.00044			
WG525955LFB	LFB	08/25/21 17:27	MS210727-5	.0501		.04465	mg/L	89	85	115			
L67918-01AS	AS	08/25/21 18:03	MS210727-5	.0501	.00632	.05617	mg/L	100	70	130			
L67918-01ASD	ASD	08/25/21 18:04	MS210727-5	.0501	.00632	.05571	mg/L	99	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
WG525955													
WG525955ICV	ICV	08/25/21 17:23	MS210727-2	.05		.04851	mg/L	97	90	110			
WG525955ICB	ICB	08/25/21 17:25				U	mg/L		-0.00088	0.00088			
WG525955LFB	LFB	08/25/21 17:27	MS210727-5	.05		.04588	mg/L	92	85	115			
L67918-01AS	AS	08/25/21 18:03	MS210727-5	.05	.00536	.04803	mg/L	85	70	130			
L67918-01ASD	ASD	08/25/21 18:04	MS210727-5	.05	.00536	.04606	mg/L	81	70	130	4	20	

QUIVIRA

ACZ Project ID: **L67918**

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
WG526116													
WG526116ICV	ICV	08/27/21 23:47	WI210603-7	2.416		2.381	mg/L	99	90	110			
WG526116ICB	ICB	08/27/21 23:48				U	mg/L		-0.02	0.02			
WG526120													
WG526120LFB	LFB	08/28/21 2:04	WI210331-13	2		2.026	mg/L	101	90	110			
L67895-02DUP	DUP	08/28/21 2:10			.046	.045	mg/L				2	20	RA
L67918-02AS	AS	08/28/21 2:27	WI210331-13	2	U	2.11	mg/L	106	90	110			
L67918-03DUP	DUP	08/28/21 2:30			.359	.36	mg/L				0	20	
L67895-01AS	AS	08/28/21 2:41	WI210331-13	20	15.5	35.865	mg/L	102	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525843													
WG525843ICV	ICV	08/24/21 16:12	II210803-4	20		19.81	mg/L	99	95	105			
WG525843ICB	ICB	08/24/21 16:18				U	mg/L		-0.6	0.6			
WG525843LFB	LFB	08/24/21 16:31	II210810-2	99.99574		92.77	mg/L	93	85	115			
L67918-02AS	AS	08/24/21 17:37	II210810-2	99.99574	6.22	100.4	mg/L	94	85	115			
L67918-02ASD	ASD	08/24/21 17:46	II210810-2	99.99574	6.22	100.5	mg/L	94	85	115	0	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525771													
WG525771PBW	PBW	08/23/21 12:40				U	mg/L		-20	20			
WG525771LCSW	LCSW	08/23/21 12:41	PCN64126	1000		1000	mg/L	100	80	120			
L67918-01DUP	DUP	08/23/21 13:19			1670	1666	mg/L				0	10	
WG525839													
WG525839PBW	PBW	08/24/21 11:10				U	mg/L		-20	20			
WG525839LCSW	LCSW	08/24/21 11:15	PCN64126	1000		994	mg/L	99	80	120			
L67935-04DUP	DUP	08/24/21 12:07			2850	2698	mg/L				5	10	
WG526227													
WG526227PBW	PBW	08/30/21 15:58				U	mg/L		-20	20			
WG526227LCSW	LCSW	08/30/21 16:00	PCN64125	1000		978	mg/L	98	80	120			
L67935-11DUP	DUP	08/30/21 16:30			15100	15020	mg/L				1	10	
WG526791													
WG526791PBW	PBW	09/08/21 16:45				U	mg/L		-20	20			
WG526791LCSW	LCSW	09/08/21 16:46	PCN64129	1000		994	mg/L	99	80	120			
L68267-01DUP	DUP	09/08/21 17:08			118	118	mg/L				0	10	RA

QUIVIRA

ACZ Project ID: **L67918**

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

SM 3114 B, AA-Hydride

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525738													
WG525738ICV	ICV	08/23/21 13:58	SE210707-1	.025		.0271	mg/L	108	90	110			
WG525738ICB	ICB	08/23/21 14:00				U	mg/L		-0.006	0.006			
WG525753													
WG525753LRB	LRB	08/23/21 15:29				U	mg/L		-0.006	0.006			
WG525753LFB	LFB	08/23/21 15:31	SE210601-8	.0225		.0219	mg/L	97	85	115			
L67915-01LFM	LFM	08/23/21 15:38	SE210601-8	.0225	.0029	.0239	mg/L	93	85	115			
L67915-01LFMD	LFMD	08/23/21 15:40	SE210601-8	.0225	.0029	.0239	mg/L	93	85	115	0	20	

Sodium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525843													
WG525843ICV	ICV	08/24/21 16:12	II210803-4	100		100.7	mg/L	101	95	105			
WG525843ICB	ICB	08/24/21 16:18				U	mg/L		-0.6	0.6			
WG525843LFB	LFB	08/24/21 16:31	II210810-2	100.0109		93.71	mg/L	94	85	115			
L67918-02AS	AS	08/24/21 17:37	II210810-2	100.0109	217	300.2	mg/L	83	85	115			M2
L67918-02ASD	ASD	08/24/21 17:46	II210810-2	100.0109	217	298.3	mg/L	81	85	115	1	20	M2

Sulfate

D516-02/-07/-11 - TURBIDIMETRIC

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526437													
WG526437ICB	ICB	09/02/21 7:36				U	mg/L		-3	3			
WG526437ICV	ICV	09/02/21 7:36	WI210818-1	20.46		19.7	mg/L	96	90	110			
WG526437LFB	LFB	09/02/21 9:47	WI210105-3	10		10.2	mg/L	102	90	110			
L67926-01DUP	DUP	09/02/21 10:29			48.6	48.5	mg/L				0	20	RA
L67918-06AS	AS	09/02/21 10:38	SO4TURB60X	33.3	6780	7025.2	mg/L	736	90	110			M3

Uranium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525955													
WG525955ICV	ICV	08/25/21 17:23	MS210727-2	.05		.04878	mg/L	98	90	110			
WG525955ICB	ICB	08/25/21 17:25				U	mg/L		-0.00022	0.00022			
WG525955LFB	LFB	08/25/21 17:27	MS210727-5	.05		.04627	mg/L	93	85	115			
L67918-01AS	AS	08/25/21 18:03	MS210727-5	.05	.00083	.05271	mg/L	104	70	130			
L67918-01ASD	ASD	08/25/21 18:04	MS210727-5	.05	.00083	.05203	mg/L	102	70	130	1	20	

Rio Algom Mining Company

ACZ Project ID: **L67918**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67918-01	WG526344	Chloride	SM4500CI-E	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.
	WG526120	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).
	WG525843	Sodium, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG526437	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).
L67918-02	WG525870	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG526344	Chloride	SM4500CI-E	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.
	WG525779	Conductivity @25C	SM4500CI-E	Q6	Sample was received above recommended temperature.
			SM2510B	Q6	Sample was received above recommended temperature.
			D7511-09	Q6	Sample was received above recommended temperature.
			SM2320B - Titration	Q6	Sample was received above recommended temperature.
			M353.2 - H2SO4 preserved	Q6	Sample was received above recommended temperature.
	WG525839	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG525843	Sodium, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG526437	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	Q6	Sample was received above recommended temperature.
			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).
	WG525870	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

Rio Algom Mining CompanyACZ Project ID: **L67918**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67918-03	WG525870	Bicarbonate as CaCO ₃	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO ₃	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG526344	Chloride	SM4500CI-E	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.
			SM4500CI-E	Q6	Sample was received above recommended temperature.
	WG525779	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG525747	Cyanide, Total	D7511-09	Q6	Sample was received above recommended temperature.
	WG525870	Hydroxide as CaCO ₃	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG526120	Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	Q6	Sample was received above recommended temperature.
	WG525839	Residue, Filterable (TDS) @180C	SM2540C	Q6	Sample was received above recommended temperature.
	WG525843	Sodium, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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	Q6	Sample was received above recommended temperature.
			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).
				Q6	Sample was received above recommended temperature.
	WG525870	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.
L67918-04	WG525870	Bicarbonate as CaCO ₃	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO ₃	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG526344	Chloride	SM4500CI-E	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.
			SM4500CI-E	Q6	Sample was received above recommended temperature.
	WG525779	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG525747	Cyanide, Total	D7511-09	Q3	Sample received with improper or inadequate chemical preservation.
			D7511-09	Q6	Sample was received above recommended temperature.
	WG525870	Hydroxide as CaCO ₃	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG526120	Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	Q6	Sample was received above recommended temperature.
	WG526791	Residue, Filterable (TDS) @180C	SM2540C	H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
			SM2540C	Q6	Sample was received above recommended temperature.
			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).
				M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG525843	Sodium, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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	Q6	Sample was received above recommended temperature.
			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).
				Q6	Sample was received above recommended temperature.
	WG525870	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

Rio Algom Mining CompanyACZ Project ID: **L67918**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67918-05	WG525870	Bicarbonate as CaCO ₃	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO ₃	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG526344	Chloride	SM4500CI-E	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.
			SM4500CI-E	Q6	Sample was received above recommended temperature.
	WG525779	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG525747	Cyanide, Total	D7511-09	Q3	Sample received with improper or inadequate chemical preservation.
			D7511-09	Q6	Sample was received above recommended temperature.
	WG525870	Hydroxide as CaCO ₃	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG526120	Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	Q6	Sample was received above recommended temperature.
	WG526227	Residue, Filterable (TDS) @180C	SM2540C	H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
			SM2540C	Q6	Sample was received above recommended temperature.
	WG525843	Sodium, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
	WG526437	Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	Q6	Sample was received above recommended temperature.
			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).
			D516-02/-07/-11 - TURBIDIMETRIC	Q6	Sample was received above recommended temperature.
L67918-06	WG525870	Bicarbonate as CaCO ₃	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO ₃	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG526344	Chloride	SM4500CI-E	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.
			SM4500CI-E	Q6	Sample was received above recommended temperature.
	WG525779	Conductivity @25C	SM2510B	Q6	Sample was received above recommended temperature.
	WG525870	Hydroxide as CaCO ₃	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG526120	Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	Q6	Sample was received above recommended temperature.
	WG526227	Residue, Filterable (TDS) @180C	SM2540C	H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
			SM2540C	Q6	Sample was received above recommended temperature.
	WG525843	Sodium, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
	WG526437	Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	Q6	Sample was received above recommended temperature.
			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).
			D516-02/-07/-11 - TURBIDIMETRIC	Q6	Sample was received above recommended temperature.
	WG525870	Total Alkalinity	SM2320B - Titration	Q6	Sample was received above recommended temperature.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 31-01 TRA-R

Locator:

ACZ Sample ID: **L67918-01**

Date Sampled: 08/16/21 17:00

Date Received: 08/19/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/28/1921 14:40		5.3	1.7	2.5	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	09/30/21 14:49		0.0	31	4.4	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/22/21 0:21		0.33	0.18	0.16	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/23/21 16:44		0.16	0.71	1.6	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/13/21 8:00		0.294	0.27	0.42	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 17-01 KD

Locator:

ACZ Sample ID: **L67918-02**

Date Sampled: 08/17/21 9:28

Date Received: 08/19/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/28/1921 14:40		4.2	1.8	2.7	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	09/30/21 14:49		0.0	28	3.9	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/22/21 0:23		0.82	0.21	0.2	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/23/21 16:44		0.46	0.72	1.7	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/13/21 8:00		0.24	0.31	0.51	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 19-77 TRB

Locator:

ACZ Sample ID: **L67918-03**

Date Sampled: 08/17/21 10:17

Date Received: 08/19/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/28/1921 14:40		1.1	1.5	2.6	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	09/30/21 14:49		1.31	4.3	4.9	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/22/21 0:24		0.76	0.2	0.19	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/23/21 16:44		1	1.1	2.7	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/13/21 8:00		0.435	0.27	0.36	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 31-02 TRB-R-20210701

Locator:

ACZ Sample ID: **L67918-04**

Date Sampled: 08/17/21 11:45

Date Received: 08/19/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/28/1921 14:40		19	22	36	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	09/30/21 14:49		0.0	34	4.4	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/22/21 0:25		4.4	0.41	0.43	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/23/21 16:44		12	1.9	3.4	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/13/21 8:00		0.539	0.28	0.33	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 31-67 TRB-20210701

Locator:

ACZ Sample ID: **L67918-05**

Date Sampled: 08/17/21 16:12

Date Received: 08/19/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/28/1921 14:40		5.5	6.8	12	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	09/30/21 14:49		0.0	20	2.7	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/22/21 0:28		34	0.97	0.21	pCi/L		djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/23/21 16:44		16	1.9	2.9	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/13/21 8:00		0.398	0.26	0.34	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 31-61 ALL-20210701

Locator:

ACZ Sample ID: **L67918-06**

Date Sampled: 08/18/21 10:55

Date Received: 08/19/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/28/21 16:24		49	81	140	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	09/30/21 14:49		0.348	1.5	1.9	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/22/21 0:30		0.19	0.12	0.24	pCi/L		djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/23/21 16:44		0.8	1.4	3.2	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/13/21 8:00		0.429	0.57	0.96	pCi/L	*	djc

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>

QUIVIRA

ACZ Project ID: **L67918**

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
WG528510																
WG528510LCSW	LCSW	10/28/1921	PCN64361	99.69				89	4.2	3	89	55	121			
WG528510PBW	PBW	10/28/1921						5.2	1.5	2.2			4.4			B1
L67827-01DUP	DUP-RPD	10/28/1921			2.2	1.4	2.3	.65	1.7	2.9				109	20	N1A RG
L67827-01DUP	DUP-RER	10/28/1921			2.2	1.4	2.3	.65	1.7	2.9				0.7	2	
L67960-02MS	MS	10/28/21	PCN64361	99.69	110	47	73	44	13	19	-66	55	121			M2 N1A
L68078-03DUP	DUP-RPD	10/29/21			2.2	1.5	2.4	2.1	1.5	2.5				5	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
WG528203																
WG528203LCSW	LCSW	09/30/21	PCN64361	500				511	110	3.7	102	51	128			
WG528203PBW	PBW	09/30/21						0	20	2.6			5.2			
L67766-01DUP	DUP-RPD	10/01/21			0.326	2.3	2.9	0	41	5.2				200	20	RG
L67766-01DUP	DUP-RER	10/01/21			0.326	2.3	2.9	0	41	5.2				0.01	2	
L67959-01DUP	DUP-RPD	10/01/21			0	23	3.2	0	24	3.5				0	20	
L67828-01MS	MS	10/01/21	PCN64361	500	0	22	3.2	512	110	3.3	102	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
WG527026																
WG527026PBW	PBW	09/22/21						.08	0.1	0.24			0.48			
WG527026LCSW	LCSW	09/22/21	PCN62879	20				18	0.59	0.13	90	43	148			
L67747-01DUP	DUP-RPD	09/22/21			0.25	0.08	0.1	.23	0.17	0.34				8	20	
L67765-02MS	MS	09/22/21	PCN62879	20	0.44	0.13	0.19	19	0.55	0.16	93	43	148			
L67918-04DUP	DUP-RPD	09/22/21			4.4	0.41	0.43	3.7	0.33	0.11				17	20	

QUIVIRA

ACZ Project ID: **L67918**

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
WG526900																
WG526900LCSW	LCSW	09/22/21	PCN63356	9.43				8.2	1.1	0.83	87	47	123			
WG526900PBW	PBW	09/22/21						-.01	0.46	0.48			0.96			
L67561-01DUP	DUP-RPD	09/22/21			0.34	0.45	0.46	.39	0.35	0.35				14	20	
L67834-01MS	MS	09/22/21	PCN63356	9.43	10	1.3	2.2	6.3	0.88	1.5	-39	47	123			M2
L67960-02DUP	DUP-RPD	09/23/21			6.4	0.97	1.6	6.5	0.89	1.5				2	20	

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
WG526666																
WG526666LCSW	LCSW	09/12/21	PCN58726	200				211	26	0.44	106	91	126			
WG526666PBW	PBW	09/12/21						.301	0.23	0.33			0.66			
L67827-01MS	MS	09/12/21	PCN58726	200	0.576	0.33	0.43	224	28	0.47	112	91	126			
L67918-02DUP	DUP-RPD	09/13/21			0.24	0.31	0.51	.584	0.56	0.85				83	20	RG
L67918-02DUP	DUP-RER	09/13/21			0.24	0.31	0.51	.584	0.56	0.85				0.54	2	
L67766-01DUP	DUP-RPD	09/13/21			0.744	0.33	0.35	.741	0.38	0.49				0	20	

Rio Algom Mining Company

ACZ Project ID: **L67918**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67918-01	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1A	See Case Narrative.
			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.
	WG528203	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.
	WG527026	Radium 226, dissolved	M903.1	DJ	Sample dilution required due to insufficient sample.
	WG526900	Radium 228, dissolved	M9320	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG526666	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.
	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1A	See Case Narrative.
			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.
L67918-02	WG528203	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.
	WG527026	Radium 226, dissolved	M903.1	DJ	Sample dilution required due to insufficient sample.
	WG526900	Radium 228, dissolved	M9320	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG526666	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.
	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1A	See Case Narrative.
			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.
	WG528203	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.
	WG527026	Radium 226, dissolved	M903.1	DJ	Sample dilution required due to insufficient sample.
	WG526900	Radium 228, dissolved	M9320	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG526666	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.
L67918-03	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1A	See Case Narrative.
			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.
	WG528203	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.
	WG527026	Radium 226, dissolved	M903.1	DJ	Sample dilution required due to insufficient sample.
	WG526900	Radium 228, dissolved	M9320	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG526666	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: **L67918**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67918-04	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1	See Case Narrative.
			EICHROM, OTW01	N1A	See Case Narrative.
			EICHROM, OTW01	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
			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.
	WG527026	Radium 226, dissolved	M903.1	DJ	Sample dilution required due to insufficient sample.
	WG526900	Radium 228, dissolved	M9320	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M9320	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
	WG526666	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.
L67918-05	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1	See Case Narrative.
			EICHROM, OTW01	N1A	See Case Narrative.
			EICHROM, OTW01	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
			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.
	WG526900	Radium 228, dissolved	M9320	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M9320	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
	WG526666	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.
L67918-06	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1	See Case Narrative.
			EICHROM, OTW01	N1A	See Case Narrative.
			EICHROM, OTW01	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
			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.
	WG526900	Radium 228, dissolved	M9320	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M9320	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
	WG526666	Thorium 230, dissolved	ESM 4506	D1	Sample required dilution due to matrix.
			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 CompanyACZ Project ID: **L67918**

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
4510319940

ACZ Project ID: L67918

Date Received: 08/19/2021 11:50

Received By:

Date Printed: 8/20/2021

Receipt Verification

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

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? ¹		X	
L67918-04 Container B2441524 (GREEN CUBE): Added 10 mls nitric acid to the sub-sample to adjust the pH to the appropriate range.			
L67918-06 Container B2441540 (GREEN CUBE): Added 10 mls nitric acid to the sub-sample to adjust the pH to the appropriate range.			
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		

Rio Algom Mining Company
4510319940

ACZ Project ID: L67918

Date Received: 08/19/2021 11:50

Received By:

Date Printed: 8/20/2021

16) Is there an Hg-1631 trip blank present?

		X
--	--	---

17) Is there a VOA trip blank present?

		X
--	--	---

18) Were all samples received within hold time?

X		
---	--	--

NA indicates Not Applicable

Chain of Custody Related Remarks

Quote for SX #5 changed to "NRC-TRB" to match sample bag and ID. Quote for SX #6 changed to "NRC-ALL" to match sample bag and ID as well.

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Temp Criteria (°C)	Rad (µR/Hr)	Custody Seal Intact?
-----	-----	-----	-----	-----
6575	14	NA	17	Yes
6030	5.7	<=6.0	15	Yes
5227	8.9	<=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.

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).

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

Report to:

Name: Kent Applegate	Address: PO Box 218
Company: Rio Algom Mining LLC	Grants, NM 87020
E-mail: Kent.KC.Applegate@bhpbilliton.com	Telephone: 1-505-287-8851

Copy of Report to:

Name: See Attached Note Sheet	E-mail: See Attached Note Sheet
Company: INTERA, INC.	Telephone: 505-246-1600 x1207

Invoice to:

Name: Kent Applegate	<div> <div>Address: PO Box 218</div> <div>Grants, NM 87020</div> <div>Telephone: 1-505-287-8851</div> </div>
Company: Rio Algom Mining LLC	
E-mail: Kent.KC.Applegate@bhpbilliton.com	

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?

YES	<input checked="" type="checkbox"/>
NO	<input type="checkbox"/>

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

Are samples for SDWA Compliance Monitoring?

Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
-----	--------------------------	----	-------------------------------------

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

Sampler's Name: D. Williamson Sampler's Site Information State NM Zip code 87020 Time Zone MST

*Sampler's Signature: *[Signature]*

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

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

[illegible]

REMARKS

RAML COC#: 21-57. Note different COC's may have different PO's. Shipment of 3 Coolers.

See Attached Note Sheet

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

RELINQUISHED BY:		DATE:TIME	RECEIVED BY:		DATE:TIME
P. Williams <i>B. Miller</i>		8/18/21 6:30	<i>[Signature]</i>		8/19/21 11:50

FRMAD050.06.14.14

White - Return with sample. Yellow - Retain for your records.



67918 Chain of Custody

November 03, 2021

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: Michaela Gorospe, jcarroll, Jeremy Scott Collyard, Marcus Powell, Clark Short, Angela Persico

Project ID: 4510319940
ACZ Project ID: L67959

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 21, 2021. This project has been assigned to ACZ's project number, L67959. 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 L67959. 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 03, 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.



Scott Habermehl has reviewed
and approved this report.



Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 5-08 ALL-R-20210819

ACZ Sample ID: **L67959-01**

Date Sampled: 08/19/21 16:55

Date Received: 08/21/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	1	513		*	mg/L	0.1	0.5	08/25/21 16:43	kja
Iron, dissolved	M200.7 ICP	1	<0.06	U	*	mg/L	0.06	0.15	08/25/21 16:43	kja
Magnesium, dissolved	M200.7 ICP	1	183		*	mg/L	0.2	1	08/25/21 16:43	kja
Molybdenum, dissolved	M200.8 ICP-MS	2	0.00484			mg/L	0.0004	0.001	08/27/21 15:59	mfm
Nickel, dissolved	M200.8 ICP-MS	2	0.00174	B		mg/L	0.0008	0.002	08/27/21 15:59	mfm
Potassium, dissolved	M200.7 ICP	1	3.99			mg/L	0.2	1	08/25/21 16:43	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	0.0123			mg/L	0.002	0.005	08/25/21 12:30	mlh
Sodium, dissolved	M200.7 ICP	1	313		*	mg/L	0.2	1	08/25/21 16:43	kja
Uranium, dissolved	M200.8 ICP-MS	2	0.0225			mg/L	0.0002	0.001	08/27/21 15:59	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	226			mg/L	2	20	08/25/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	08/25/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	08/25/21 0:00	eep
Total Alkalinity		1	226			mg/L	2	20	08/25/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.0			%			11/03/21 0:00	calc
Sum of Anions			55			meq/L			11/03/21 0:00	calc
Sum of Cations			55			meq/L			11/03/21 0:00	calc
Chloride	SM4500Cl-E	1	93.6			mg/L	0.5	2	09/02/21 12:00	md
Conductivity @25C	SM2510B	1	3960			umhos/cm	1	10	08/25/21 5:21	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	20	30.2			mg/L	0.4	2	09/01/21 3:32	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	3950		*	mg/L	20	40	08/25/21 9:25	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	100	2300		*	mg/L	100	500	09/02/21 13:39	wtc
TDS (calculated)	Calculation		3540			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.12						11/03/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 31-65 ALL-20210820

ACZ Sample ID: **L67959-02**

Date Sampled: 08/20/21 09:20

Date Received: 08/21/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	1	545		*	mg/L	0.1	0.5	08/25/21 16:46	kja
Iron, dissolved	M200.7 ICP	1	176		*	mg/L	0.06	0.15	08/25/21 16:46	kja
Magnesium, dissolved	M200.7 ICP	10	1540			mg/L	2	10	08/26/21 19:48	kja
Molybdenum, dissolved	M200.8 ICP-MS	10	<0.002	U		mg/L	0.002	0.005	08/27/21 16:01	mfm
Nickel, dissolved	M200.8 ICP-MS	10	0.108			mg/L	0.004	0.01	08/27/21 16:01	mfm
Potassium, dissolved	M200.7 ICP	1	51.2		*	mg/L	0.2	1	08/25/21 16:46	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	0.0043	B	*	mg/L	0.002	0.005	08/25/21 12:32	mlh
Sodium, dissolved	M200.7 ICP	10	1930			mg/L	2	10	08/26/21 19:48	kja
Uranium, dissolved	M200.8 ICP-MS	10	0.0665			mg/L	0.001	0.005	08/27/21 16:01	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	1610			mg/L	2	20	08/30/21 0:00	emk
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	08/30/21 0:00	emk
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	08/30/21 0:00	emk
Total Alkalinity		1	1610		*	mg/L	2	20	08/30/21 0:00	emk
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-3.3			%			11/03/21 0:00	calc
Sum of Anions			266			meq/L			11/03/21 0:00	calc
Sum of Cations			249			meq/L			11/03/21 0:00	calc
Chloride	SM4500Cl-E	50	2750			mg/L	25	100	09/02/21 13:49	md
Conductivity @25C	SM2510B	1	16500		*	umhos/cm	1	10	08/25/21 6:17	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U		mg/L	0.02	0.1	09/01/21 3:28	pjb
Residue, Filterable (TDS) @180C	SM2540C	10	14400		*	mg/L	200	400	08/27/21 15:19	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	200	7480		*	mg/L	200	1000	09/02/21 13:50	wtc
TDS (calculated)	Calculation		15500			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.93						11/03/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 13-56 ALL-20210820

ACZ Sample ID: **L67959-03**

Date Sampled: 08/20/21 08:45

Date Received: 08/21/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	1	556		*	mg/L	0.1	0.5	08/25/21 16:49	kja
Iron, dissolved	M200.7 ICP	1	182		*	mg/L	0.06	0.15	08/25/21 16:49	kja
Magnesium, dissolved	M200.7 ICP	10	1570			mg/L	2	10	08/26/21 19:51	kja
Molybdenum, dissolved	M200.8 ICP-MS	10	<0.002	U		mg/L	0.002	0.005	08/27/21 16:03	mfm
Nickel, dissolved	M200.8 ICP-MS	10	0.119			mg/L	0.004	0.01	08/27/21 16:03	mfm
Potassium, dissolved	M200.7 ICP	1	52.1			mg/L	0.2	1	08/25/21 16:49	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	0.0035	B		mg/L	0.002	0.005	08/25/21 12:34	mlh
Sodium, dissolved	M200.7 ICP	10	1920			mg/L	2	10	08/26/21 19:51	kja
Uranium, dissolved	M200.8 ICP-MS	10	0.0691			mg/L	0.001	0.005	08/27/21 16:03	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO ₃	SM2320B - Titration									
Bicarbonate as CaCO ₃		1	1600			mg/L	2	20	08/30/21 0:00	emk
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	08/30/21 0:00	emk
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	08/30/21 0:00	emk
Total Alkalinity		1	1600		*	mg/L	2	20	08/30/21 0:00	emk
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-3.3			%			11/03/21 0:00	calc
Sum of Anions			269			meq/L			11/03/21 0:00	calc
Sum of Cations			252			meq/L			11/03/21 0:00	calc
Chloride	SM4500Cl-E	50	2770			mg/L	25	100	09/02/21 13:49	md
Conductivity @25C	SM2510B	1	16200		*	umhos/cm	1	10	08/25/21 6:38	eep
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U		mg/L	0.02	0.1	09/01/21 3:29	pjb
Residue, Filterable (TDS) @180C	SM2540C	10	12300		*	mg/L	200	400	08/27/21 15:24	anc
Sulfate	D516-02/-07/-11 - TURBIDIMETRIC	200	7610		*	mg/L	200	1000	09/02/21 13:50	wtc
TDS (calculated)	Calculation		15600			mg/L			11/03/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.79						11/03/21 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: **L67959**

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
WG525870													
WG525870PBW1	PBW	08/24/21 19:46				4.1	mg/L		-20	20			
WG525870LCSW3	LCSW	08/24/21 20:05	WC210821-1	820.0001		803.9	mg/L	98	90	110			
WG525870LCSW6	LCSW	08/24/21 23:07	WC210821-1	820.0001		795.8	mg/L	97	90	110			
WG525870PBW2	PBW	08/24/21 23:16				2.2	mg/L		-20	20			
WG525870LCSW9	LCSW	08/25/21 3:12	WC210821-1	820.0001		799.7	mg/L	98	90	110			
WG525870PBW3	PBW	08/25/21 3:19				U	mg/L		-20	20			
L67959-01DUP	DUP	08/25/21 5:30			226	235.7	mg/L				4	20	
WG525870LCSW12	LCSW	08/25/21 5:50	WC210821-1	820.0001		816.4	mg/L	100	90	110			
WG525870PBW4	PBW	08/25/21 5:57				2.4	mg/L		-20	20			
WG525870LCSW15	LCSW	08/25/21 10:53	WC210821-1	820.0001		824.6	mg/L	101	90	110			
WG526219													
WG526219PBW1	PBW	08/30/21 17:04				U	mg/L		-20	20			
WG526219LCSW3	LCSW	08/30/21 17:24	WC210821-1	820.0001		803.3	mg/L	98	90	110			
L67959-02DUP	DUP	08/30/21 20:20			1610	1597.7	mg/L				1	20	
WG526219LCSW6	LCSW	08/30/21 20:38	WC210821-1	820.0001		791	mg/L	96	90	110			
WG526219PBW2	PBW	08/30/21 20:46				2.3	mg/L		-20	20			
L67963-01DUP	DUP	08/30/21 23:23			211	208.7	mg/L				1	20	
WG526219LCSW9	LCSW	08/31/21 1:02	WC210821-1	820.0001		811.9	mg/L	99	90	110			
WG526219PBW3	PBW	08/31/21 1:09				3	mg/L		-20	20			
WG526219LCSW12	LCSW	08/31/21 4:19	WC210821-1	820.0001		813.3	mg/L	99	90	110			
WG526219PBW4	PBW	08/31/21 4:27				2.2	mg/L		-20	20			
WG526219LCSW15	LCSW	08/31/21 7:21	WC210821-1	820.0001		801.6	mg/L	98	90	110			

Calcium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525911													
WG525911ICV	ICV	08/25/21 16:05	II210803-4	100		97.86	mg/L	98	95	105			
WG525911ICB	ICB	08/25/21 16:11				.11	mg/L		-0.3	0.3			
WG525911LFB	LFB	08/25/21 16:24	II210810-2	67.99734		68.63	mg/L	101	85	115			
L67959-03AS	AS	08/25/21 16:53	II210810-2	67.99734	556	589.5	mg/L	49	85	115			M3
L67959-03ASD	ASD	08/25/21 17:02	II210810-2	67.99734	556	591.8	mg/L	53	85	115	0	20	M3

Chloride

SM4500CI-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526452													
WG526452ICV	ICV	09/02/21 11:50	WI210503-1	54.89		54.32	mg/L	99	90	110			
WG526452ICB	ICB	09/02/21 11:51				U	mg/L		-1.5	1.5			
L67929-06AS	AS	09/02/21 12:00	WI200327-3	30.03	2.81	33.3	mg/L	102	90	110			
L67959-01DUP	DUP	09/02/21 12:01			93.6	94.36	mg/L				1	20	
WG526452LFB2	LFB	09/02/21 12:07	WI200327-3	30.03		30.77	mg/L	102	90	110			
WG526452LFB1	LFB	09/02/21 13:48	WI200327-3	30.03		32.47	mg/L	108	90	110			

QUIVIRA

ACZ Project ID: **L67959**

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.

Conductivity @25C

SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525870													
WG525870LCSW2	LCSW	08/24/21 19:52	PCN63140	1408		1403	umhos/cm	100	90	110			
WG525870LCSW5	LCSW	08/24/21 22:56	PCN63140	1408		1390	umhos/cm	99	90	110			
WG525870LCSW8	LCSW	08/25/21 3:00	PCN63140	1408		1378	umhos/cm	98	90	110			
L67959-01DUP	DUP	08/25/21 5:30			3960	3950	umhos/cm				0	20	
WG525870LCSW11	LCSW	08/25/21 5:37	PCN63140	1408		1363	umhos/cm	97	90	110			
L67961-04DUP	DUP	08/25/21 8:59			12300	12260	umhos/cm				0	20	
WG525870LCSW14	LCSW	08/25/21 10:40	PCN63140	1408		1345	umhos/cm	96	90	110			

Iron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525911													
WG525911ICV	ICV	08/25/21 16:05	II210803-4	2		1.977	mg/L	99	95	105			
WG525911ICB	ICB	08/25/21 16:11				U	mg/L		-0.18	0.18			
WG525911LFB	LFB	08/25/21 16:24	II210810-2	1.0001		1.081	mg/L	108	85	115			
L67959-03AS	AS	08/25/21 16:53	II210810-2	1.0001	182	173.8	mg/L	-820	85	115			M3
L67959-03ASD	ASD	08/25/21 17:02	II210810-2	1.0001	182	174.4	mg/L	-760	85	115	0	20	M3

Magnesium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525911													
WG525911ICV	ICV	08/25/21 16:05	II210803-4	100		95.9	mg/L	96	95	105			
WG525911ICB	ICB	08/25/21 16:11				U	mg/L		-0.6	0.6			
WG525911LFB	LFB	08/25/21 16:24	II210810-2	50.00074		48.86	mg/L	98	85	115			
L67959-03AS	AS	08/25/21 16:53	II210810-2	50.00074	1510	1477	mg/L	-66	85	115			M3
L67959-03ASD	ASD	08/25/21 17:02	II210810-2	50.00074	1510	1489	mg/L	-42	85	115	1	20	M3

WG525985

WG525985ICV	ICV	08/26/21 19:12	II210803-4	100		97.55	mg/L	98	95	105			
WG525985ICB	ICB	08/26/21 19:19				U	mg/L		-0.6	0.6			
WG525985LFB	LFB	08/26/21 19:32	II210810-2	50.00074		50.8	mg/L	102	85	115			
L67927-04AS	AS	08/26/21 19:38	II210810-2	50.00074	7.98	57.4	mg/L	99	85	115			
L67927-04ASD	ASD	08/26/21 19:41	II210810-2	50.00074	7.98	57.05	mg/L	98	85	115	1	20	

Molybdenum, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.01992		.0201	mg/L	101	90	110			
WG526107ICB	ICB	08/27/21 15:25				U	mg/L		-0.00044	0.00044			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05005		.04983	mg/L	100	85	115			
L67960-03AS	AS	08/27/21 16:14	MS210827-2	.05005	.00203	.05771	mg/L	111	70	130			
L67960-03ASD	ASD	08/27/21 16:16	MS210827-2	.05005	.00203	.05558	mg/L	107	70	130	4	20	

QUIVIRA

ACZ Project ID: **L67959**

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.

Nickel, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.05		.05387	mg/L	108	90	110			
WG526107ICB	ICB	08/27/21 15:25				.00079	mg/L		-0.00088	0.00088			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05		.05292	mg/L	106	85	115			
L67960-03AS	AS	08/27/21 16:14	MS210827-2	.05	.01	.04969	mg/L	79	70	130			
L67960-03ASD	ASD	08/27/21 16:16	MS210827-2	.05	.01	.04892	mg/L	78	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
WG526323													
WG526323ICV	ICV	08/31/21 23:19	WI210603-7	2.416		2.372	mg/L	98	90	110			
WG526323ICB	ICB	08/31/21 23:21				U	mg/L		-0.02	0.02			
WG526328													
WG526328ICV	ICV	09/01/21 2:51	WI210603-7	2.416		2.36	mg/L	98	90	110			
WG526328ICB	ICB	09/01/21 2:52				U	mg/L		-0.02	0.02			
WG526328LFB	LFB	09/01/21 2:56	WI210331-13	2		1.98	mg/L	99	90	110			
L67929-05AS	AS	09/01/21 3:18	WI210331-13	2	U	2.027	mg/L	101	90	110			
L67929-06DUP	DUP	09/01/21 3:21			.361	.37	mg/L				2	20	

Potassium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525911													
WG525911ICV	ICV	08/25/21 16:05	II210803-4	20		19.62	mg/L	98	95	105			
WG525911ICB	ICB	08/25/21 16:11				U	mg/L		-0.6	0.6			
WG525911LFB	LFB	08/25/21 16:24	II210810-2	99.99574		100.1	mg/L	100	85	115			
L67959-03AS	AS	08/25/21 16:53	II210810-2	99.99574	52.1	154.4	mg/L	102	85	115			
L67959-03ASD	ASD	08/25/21 17:02	II210810-2	99.99574	52.1	154.4	mg/L	102	85	115	0	20	

Residue, Filterable (TDS) @180C

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525889													
WG525889PBW	PBW	08/25/21 9:05				U	mg/L		-20	20			
WG525889LCSW	LCSW	08/25/21 9:10	PCN64124	1000		992	mg/L	99	80	120			
L67985-01DUP	DUP	08/25/21 10:07			82	72	mg/L				13	10	RA
WG526109													
WG526109PBW	PBW	08/27/21 15:04				U	mg/L		-20	20			
WG526109LCSW	LCSW	08/27/21 15:09	PCN64125	1000		970	mg/L	97	80	120			
L68106-07DUP	DUP	08/27/21 16:06			172	176	mg/L				2	10	RA

QUIVIRA

ACZ Project ID: **L67959**

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

SM 3114 B, AA-Hydride

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525888													
WG525888ICV	ICV	08/25/21 12:22	SE210707-1	.025		.0251	mg/L	100	90	110			
WG525888ICB	ICB	08/25/21 12:24				U	mg/L		-0.006	0.006			
WG525888LRB	LRB	08/25/21 12:26				U	mg/L		-0.006	0.006			
WG525888LFB	LFB	08/25/21 12:28	SE210601-8	.0225		.0219	mg/L	97	85	115			
L67959-03LFM	LFM	08/25/21 12:36	SE210601-8	.0225	.0035	.023	mg/L	87	85	115			
L67959-03LFMD	LFMD	08/25/21 12:38	SE210601-8	.0225	.0035	.0232	mg/L	88	85	115	1	20	

Sodium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG525911													
WG525911ICV	ICV	08/25/21 16:05	II210803-4	100		99.72	mg/L	100	95	105			
WG525911ICB	ICB	08/25/21 16:11				U	mg/L		-0.6	0.6			
WG525911LFB	LFB	08/25/21 16:24	II210810-2	100.0109		101	mg/L	101	85	115			
L67959-03AS	AS	08/25/21 16:53	II210810-2	100.0109	1580	1592	mg/L	12	85	115			M3
L67959-03ASD	ASD	08/25/21 17:02	II210810-2	100.0109	1580	1604	mg/L	24	85	115	1	20	M3

WG525985

WG525985ICV	ICV	08/26/21 19:12	II210803-4	100		101.16	mg/L	101	95	105			
WG525985ICB	ICB	08/26/21 19:19				U	mg/L		-0.6	0.6			
WG525985LFB	LFB	08/26/21 19:32	II210810-2	100.0109		103.4	mg/L	103	85	115			
L67927-04AS	AS	08/26/21 19:38	II210810-2	100.0109	280	364.7	mg/L	85	85	115			
L67927-04ASD	ASD	08/26/21 19:41	II210810-2	100.0109	280	367.4	mg/L	87	85	115	1	20	

Sulfate

D516-02/-07/-11 - TURBIDIMETRIC

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526438													
WG526438ICB	ICB	09/02/21 7:36				U	mg/L		-3	3			
WG526438ICV	ICV	09/02/21 7:36	WI210818-1	20.46		19.7	mg/L	96	90	110			
WG526438LFB	LFB	09/02/21 13:00	WI210105-3	10		10.1	mg/L	101	90	110			
L68003-02AS	AS	09/02/21 13:39	SO4TURB	10	1990	1965.2	mg/L	-248	90	110			M3
L68003-03DUP	DUP	09/02/21 13:41			987	1062.6	mg/L				7	20	

Uranium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG526107													
WG526107ICV	ICV	08/27/21 15:24	MS210727-2	.05		.05264	mg/L	105	90	110			
WG526107ICB	ICB	08/27/21 15:25				U	mg/L		-0.00022	0.00022			
WG526107LFB	LFB	08/27/21 15:27	MS210827-2	.05		.05188	mg/L	104	85	115			
L67960-03AS	AS	08/27/21 16:14	MS210827-2	.05	.0296	.07491	mg/L	91	70	130			
L67960-03ASD	ASD	08/27/21 16:16	MS210827-2	.05	.0296	.07275	mg/L	86	70	130	3	20	

Rio Algom Mining Company

ACZ Project ID: **L67959**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67959-01	WG525911	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.
		Iron, 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.
		Magnesium, 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.
	WG525889	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).
	WG525911	Sodium, 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.
	WG526438	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.
L67959-02	WG525911	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.
			M200.7 ICP	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
	WG525870	Conductivity @25C	SM2510B	ZW	Method deviation. The sample was centrifuged prior to analysis due to high solid content.
	WG525911	Iron, 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.
			M200.7 ICP	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
		Potassium, dissolved	M200.7 ICP	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
			M200.7 ICP	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
	WG526109	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).
	WG525888	Selenium, dissolved	SM 3114 B, AA-Hydride	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
	WG526438	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.
	WG526219	Total Alkalinity	SM2320B - Titration	ZW	Method deviation. The sample was centrifuged prior to analysis due to high solid content.

Rio Algom Mining Company

ACZ Project ID: **L67959**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67959-03	WG525911	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.
	WG525870	Conductivity @25C	SM2510B	ZW	Method deviation. The sample was centrifuged prior to analysis due to high solid content.
	WG525911	Iron, 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.
	WG526109	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).
	WG526438	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.
	WG526219	Total Alkalinity	SM2320B - Titration	ZW	Method deviation. The sample was centrifuged prior to analysis due to high solid content.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 5-08 ALL-R-20210819

Locator:

ACZ Sample ID: **L67959-01**

Date Sampled: 08/19/21 16:55

Date Received: 08/21/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/28/21 16:24		4.7	2	3.1	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	09/30/21 14:49		0.0	23	3.2	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/22/21 0:31		0.14	0.07	0.11	pCi/L		djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/22/21 16:21		0.75	0.6	1.5	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/13/21 8:00		0.352	0.24	0.3	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 31-65 ALL-20210820

Locator:

ACZ Sample ID: **L67959-02**

Date Sampled: 08/20/21 9:20

Date Received: 08/21/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/28/21 16:24		21	11	17	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	09/30/21 14:49		0.0	32	4.2	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/22/21 0:33		0.15	0.19	0.19	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/22/21 16:21		0.55	1.1	2.6	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/13/21 8:00		43	6.7	1.7	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 13-56 ALL-20210820

Locator:

ACZ Sample ID: **L67959-03**

Date Sampled: 08/20/21 8:45

Date Received: 08/21/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	10/28/21 16:24		61	55	91	pCi/L	*	amk

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	10/01/21 8:10		0.0	23	3.2	pCi/L	*	djc

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	09/22/21 0:34		1.2	0.41	0.47	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	09/22/21 16:21		1.2	0.79	1.8	pCi/L	*	ess

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	09/13/21 8:00		1.25	0.75	1	pCi/L	*	djc

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: **L67959**

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
WG528510																
WG528510LCSW	LCSW	10/28/1921	PCN64361	99.69				89	4.2	3	89	55	121			
WG528510PBW	PBW	10/28/1921						5.2	1.5	2.2			4.4			B1
L67827-01DUP	DUP-RPD	10/28/1921			2.2	1.4	2.3	.65	1.7	2.9				109	20	N1A RG
L67827-01DUP	DUP-RER	10/28/1921			2.2	1.4	2.3	.65	1.7	2.9				0.7	2	
L67960-02MS	MS	10/28/21	PCN64361	99.69	110	47	73	44	13	19	-66	55	121			M2 N1A
L68078-03DUP	DUP-RPD	10/29/21			2.2	1.5	2.4	2.1	1.5	2.5				5	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
WG528203																
WG528203LCSW	LCSW	09/30/21	PCN64361	500				511	110	3.7	102	51	128			
WG528203PBW	PBW	09/30/21						0	20	2.6			5.2			
L67766-01DUP	DUP-RPD	10/01/21			0.326	2.3	2.9	0	41	5.2				200	20	RG
L67766-01DUP	DUP-RER	10/01/21			0.326	2.3	2.9	0	41	5.2				0.01	2	
L67959-01DUP	DUP-RPD	10/01/21			0	23	3.2	0	24	3.5				0	20	
L67828-01MS	MS	10/01/21	PCN64361	500	0	22	3.2	512	110	3.3	102	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
WG527026																
WG527026PBW	PBW	09/22/21						.08	0.1	0.24			0.48			
WG527026LCSW	LCSW	09/22/21	PCN62879	20				18	0.59	0.13	90	43	148			
L67747-01DUP	DUP-RPD	09/22/21			0.25	0.08	0.1	.23	0.17	0.34				8	20	
L67765-02MS	MS	09/22/21	PCN62879	20	0.44	0.13	0.19	19	0.55	0.16	93	43	148			
L67918-04DUP	DUP-RPD	09/22/21			4.4	0.41	0.43	3.7	0.33	0.11				17	20	

QUIVIRA

ACZ Project ID: **L67959**

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
WG526900																
WG526900LCSW	LCSW	09/22/21	PCN63356	9.43				8.2	1.1	0.83	87	47	123			
WG526900PBW	PBW	09/22/21						-.01	0.46	0.48			0.96			
L67561-01DUP	DUP-RPD	09/22/21			0.34	0.45	0.46	.39	0.35	0.35				14	20	
L67834-01MS	MS	09/22/21	PCN63356	9.43	10	1.3	2.2	6.3	0.88	1.5	-39	47	123			M2
L67960-02DUP	DUP-RPD	09/23/21			6.4	0.97	1.6	6.5	0.89	1.5				2	20	

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
WG526666																
WG526666LCSW	LCSW	09/12/21	PCN58726	200				211	26	0.44	106	91	126			
WG526666PBW	PBW	09/12/21						.301	0.23	0.33			0.66			
L67827-01MS	MS	09/12/21	PCN58726	200	0.576	0.33	0.43	224	28	0.47	112	91	126			
L67918-02DUP	DUP-RPD	09/13/21			0.24	0.31	0.51	.584	0.56	0.85				83	20	RG
L67918-02DUP	DUP-RER	09/13/21			0.24	0.31	0.51	.584	0.56	0.85				0.54	2	
L67766-01DUP	DUP-RPD	09/13/21			0.744	0.33	0.35	.741	0.38	0.49				0	20	

Rio Algom Mining Company

ACZ Project ID: **L67959**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67959-01	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1A	See Case Narrative.
			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.
	WG526900	Radium 228, dissolved	M9320	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M9320	N1	See Case Narrative.
	WG526666	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.
	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1	See Case Narrative.
			EICHROM, OTW01	N1A	See Case Narrative.
			EICHROM, OTW01	QB	Method-specified preservation criteria cannot be met due to sample matrix.
			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.
		Radium 226, dissolved	M903.1	D1	Sample required dilution due to matrix.
			M9320	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Radium 228, dissolved	M9320	QB	Method-specified preservation criteria cannot be met due to sample matrix.
				D1	Sample required dilution due to matrix.
		WG526666	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.
			ESM 4506		
L67959-03	WG528510	Lead 210, dissolved	EICHROM, OTW01	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			EICHROM, OTW01	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			EICHROM, OTW01	N1	See Case Narrative.
			EICHROM, OTW01	N1A	See Case Narrative.
			EICHROM, OTW01	QB	Method-specified preservation criteria cannot be met due to sample matrix.
			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.
	WG527026	Radium 226, dissolved	M903.1	D1	Sample required dilution due to matrix.
			M9320	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG526900	Radium 228, dissolved	M9320	QB	Method-specified preservation criteria cannot be met due to sample matrix.
				D1	Sample required dilution due to matrix.
	WG526666	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.
			ESM 4506		

Rio Algom Mining Company

ACZ Project ID: **L67959**

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
4510319940

ACZ Project ID: L67959
Date Received: 08/21/2021 10:30
Received By:
Date Printed: 8/23/2021

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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A change was made in the sample #1 ID line has a crossout section prior to ACZ custody.			
A change was made in the sample #1 ID line has a crossout section prior to ACZ custody.			
A change was made in the sample #1 ID line has a crossout section prior to ACZ custody.			
A change was made in the sample #1 ID line has a crossout section prior to ACZ custody.			

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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
L67959-02 Container B2442015 (GREEN CUBE): Added 10 mls nitric acid to the sub-sample. The pH is 6.			
L67959-02 Container B2442018 (GREEN PC): Added 1 mls nitric acid to the sub-sample to adjust the pH to the appropriate range.			
L67959-03 Container B2442020 (GREEN CUBE): Added 10 mls nitric acid to the sub-sample. The pH is 4.			
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

Rio Algom Mining Company
4510319940

ACZ Project ID: L67959
Date Received: 08/21/2021 10:30
Received By:
Date Printed: 8/23/2021

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Temp Criteria (°C)	Rad (µR/Hr)	Custody Seal Intact?
6750	3.4	<=6.0	15	Yes
6017	4.2	<=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.

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).

