

Rio Algom Mining LLC

May 28, 2021

Mr. Thomas Lancaster
Nuclear Regulatory Commission
Mail Stop T-A10
Washington, DC 20555-0001

Re: **Ambrosia Lake Facility**
License SUA-1473, Docket No. 40-8905
License Condition #34
Quarterly Groundwater Monitoring Report, First Quarter 2021

Dear Mr. Lancaster:

Pursuant to Condition 34 for License SUA-1473, the attached report contains the first quarter 2021 analytical results of monthly sampling for wells that exceed their respective Groundwater Protection Standards.

A digital copy of the report is also included in the package.

If you have any questions or need additional information, please call me at (916) 947-7637.

Sincerely,
Rio Algom Mining LLC



Sandra L. Ross, P.G.
Site Manager

Attachment: As stated

cc: NRC – Document Control (certified mail)
NMED, Kurt Vollbrecht (email), Amber Rhuebottom (email)
DOE, Bernadette Tsosie (email), Dana Ravelojaona (contractor) (email)
Mike Schierman, H3 (email)



RIO ALGOM LLC

AMBROSIA LAKE WEST FACILITY

License SUA-1473 Docket 40-8905

Quarterly Groundwater Monitoring Report

First Quarter of 2021

May 28, 2021

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ACRONYMS AND ABBREVIATIONS

ACL	Alternate Concentration Limit
CFR	Code of Federal Regulations
GPS	Groundwater Protection Standard
H1	first half
KD	Dakota Sandstone
the License	Source Materials License SUA-1473
mg/L	milligrams per liter
NRC	Nuclear Regulatory Commission, United States
Q1	first quarter, January through March
QA/QC	quality assurance/quality control
RAML	Rio Algom Mining, LLC
TRB	Tres Hermanos B

RIO ALGOM MINING LLC **AMBROSIA LAKE WEST FACILITY** **QUARTERLY GROUNDWATER MONITORING REPORT –** **FIRST QUARTER OF 2021**

1.0 BACKGROUND

This deliverable represents reporting of the first quarter (Q1, January through March) 2021 analytical results from monthly sampling for the following constituents and wells that exceed their respective Groundwater Protection Standards (GPSs) (**Figure 1**) in accordance with Condition 34F of Source Materials License SUA-1473, Amendment 62 (the License) (NRC, 2020):

- Beryllium in Dakota Sandstone (KD) well 36-06 KD.
- Molybdenum in KD well 32-45 KD-R.

The proposed corrective actions for beryllium and cadmium have been described in detail in the following documents, cited below.

- Corrective actions submitted within the *Semiannual Groundwater Stability Monitoring Report for the 1st Half of 2016* on July 29, 2016 (RAML, 2016).
- Rio Algom Mining LLC (RAML)'s letter to the United States Nuclear Regulatory Commission (NRC), "Re: Status Update and Additional Alternate Concentration Limit Rationale," dated April 13, 2017 (RAML, 2017a).
- *Data Collection Work Plan in Support of Additional Alternate Concentration Limits*, submitted November 27, 2017 (RAML, 2017b).
- Responses to NRC Comments Ambrosia Lake Work Plans 2017 and 2018, submitted May 4, 2018 (INTERA, 2018).
- *Quarterly Groundwater Monitoring Report Third Quarter 2020*, December 1, 2020 (RAML, 2020)

This report also documents the detection of cyanide above the GPS in Tres Hermanos B (TRB) well 36-02 TRB during the semiannual monitoring event in February 2021. A second sample did not confirm this exceedance. Consistent with License Condition 34F, well 36-02 TRB is not subject to monthly sampling and quarterly reporting, and no corrective action for cyanide is necessary. Results from cyanide analysis in well 36-02 TRB are provided in this report as a courtesy to NRC in advance of the more comprehensive semiannual report.

Groundwater data collected from the groundwater monitoring network specified in SUA-1473 Condition 34 are reported semiannually. A semiannual report for the first half (H1) 2021 will be submitted to the NRC on or before August 1, 2021.

2.0 SITE ACTIVITIES DURING FIRST QUARTER 2021

2.1 Groundwater Monitoring Program

Groundwater monitoring activities performed in Q1 2021 included semiannual and monthly monitoring required by the License. The results of semiannual monitoring will be presented in the H1 2021 groundwater monitoring report, due no later than August 1, 2021.

An exceedance of the TRB GPS for cyanide was identified in a sample collected during the H1 2021 monitoring event which took place in February 2021. The results of exceedance monitoring for cyanide at 36-02 TRB and monthly monitoring activities for molybdenum at 32-45 KD-R and beryllium at 36-06 KD are presented in Section 3.0 below.

2.2 Corrective Actions in Response to Beryllium Exceedances

As described in the *Quarterly Groundwater Monitoring Report for Third Quarter 2020* (RAML 2020) and in accordance with License Condition 34F, monthly monitoring was triggered due to consecutive exceedances of beryllium in 36-06 KD during the second half of 2020. In addition to the ongoing Alternate Concentration Limit (ACL) program (RAML, 2017b), RAML proposed a corrective action of six months of monthly monitoring followed by a data evaluation that also considers nearby well 36-07 KD.

Collection and evaluation of data from wells 36-06 KD and 36-07 KD is ongoing and will be presented in an upcoming semiannual report. Data collected from monthly monitoring of 36-06 KD is presented below.

3.0 DATA EVALUATION

Monthly sampling results from Q1 2021 are summarized in **Table 1** and **Table 2**. Bolded results indicate exceedances of GPSs. Laboratory analytical reports¹ for the groundwater samples collected during Q1 2021 are provided as **Appendix 1**.

3.1 Dakota Sandstone Well 36-06 KD: Beryllium

Beryllium exceeded the GPS of 0.01 milligrams per liter (mg/L) in all samples from Q1 2021 (**Table 1**). Pursuant to Condition 34F and Criterion 5D of 10 Code of Federal Regulations [CFR] Part 40, RAML proposed corrective actions to address the exceedances of beryllium in well 36-06

¹ Laboratory reports in Appendix 1 include samples and analyses not discussed in this report but will be evaluated in the H1 2021 semiannual groundwater monitoring report, which will be submitted by August 1, 2021.

KD, as presented in the *Data Collection Work Plan in Support of Additional Alternate Concentration Limits* (RAML, 2017b).

Table 1. Beryllium in 36-06 KD

Date	Well 36-06 KD
	Beryllium (mg/L)
GPS	0.01
1/12/21	0.0125
2/4/21	0.0123
3/11/21	0.0107

Note: Exceedances are bolded.

Observed beryllium concentrations and water levels increased in 36-06 KD (**Figure 2**) after the well was redeveloped in August of 2020. Monitoring will continue until a beryllium ACL is approved or beryllium concentrations decrease below the GPS.

3.2 Dakota Sandstone Well 32-45 KD-R: Molybdenum

Results for molybdenum in samples from well 32-45 KD-R during Q1 2021 are presented in **Table 2**. Concentrations of molybdenum in well 32-45 KD-R continue to exceed the GPS of 0.06 mg/L (**Figure 3**). Pursuant to Condition 34F and Criterion 5D of 10 CFR Part 40, RAML proposed corrective actions to address the exceedances of molybdenum in well 32-45 KD-R, as presented in the *Data Collection Work Plan in Support of Additional Alternate Concentration Limits* (RAML, 2017b).

Table 2. Molybdenum in 32-45 KD-R

Date	Well 32-45 KD-R
	Molybdenum (mg/L)
GPS	0.06
1/12/21	0.0846
2/18/21	0.0885
3/11/21	0.112

Note: Exceedances are bolded.

3.3 Tres Hermanos B Sandstone Well 36-02 TRB: Cyanide

Cyanide exceeded the GPS of 0.01 mg/L in February 2021 during semiannual monitoring (**Figure 4; Table 3**). This exceedance was identified during routine data quality assurance/quality control (QA/QC) on May 10, 2021. As required by License Condition 34F, a second sample was collected and analyzed within 7 calendar days on May 17, 2021. The initial cyanide result was not reproduced or confirmed by the second sample, indicating that the initial exceedance was most likely erroneous.

The initial sample is an order of magnitude greater than previous results and appears as an outlier when viewed in the cyanide time series (**Figure 4**). Cyanide concentrations were not detected in the re-sample, which is consistent with the previous 5 years of cyanide results in 36-02 TRB. Cyanide monitoring at 36-02 TRB will continue semiannually.

Table 3. Cyanide in 36-02 TRB

Date	Well 36-02 TRB
	Cyanide (mg/L)
GPS	0.01
2/10/21 (initial sample)	0.03
5/17/21 (re-sample)	<0.003

Note: Exceedances are bolded.

4.0 FIRST QUARTER 2021 MONITORING PROGRAM SUMMARY

RAML will continue semiannual groundwater monitoring as specified in License Condition 34, Amendment 62, and monthly monitoring for (1) molybdenum from well 32-45 KD-R and (2) beryllium from well 36-06 KD, until such a time when the wells are consistently less than the GPS or ACL for the respective constituents.

Ongoing data collection and evaluation associated with conditions in 36-06 KD will be presented in the *Groundwater Stability Monitoring Report First Half of 2021*, which will be submitted by August 1, 2021.

The cyanide concentration at 36-02 TRB exceeded the GPS during the February sampling event. The cyanide exceedance was not confirmed by a second sample; therefore, consistent with License Condition 34, Amendment 62, monthly monitoring for cyanide at 36-02 TRB is not required and sampling will continue semiannually.

5.0 REFERENCES

- INTERA Incorporated (INTERA). 2018. Responses to NRC Comments, Ambrosia Lake Work Plans 2017 and 2018. May 4. ML18192C139.
- Nuclear Regulatory Commission (NRC), United States. 2020. SUA-1473 Regulatory Materials License Amendment 62. September 1. ML20218A586.
- Rio Algom Mining, LLC (RAML). 2016. Groundwater Stability Monitoring Report, First Half 2016. License SUA-1473 Docket 40-89085. Prepared for Rio Algom Mining, LLC. July 29. ML16215A059.
- _____. 2017a. Ambrosia Lake Facility, License SUA-1473, Docket No. 40-8905, Status Update and Additional ACL Rationale, April 13. ML17108A332.
- _____. 2017b. Ambrosia Lake Mill Site, Data Collection Work Plan in Support of Additional Alternate Concentration Limits. November 27. ML1734A826.
- _____. 2020. Groundwater Stability Monitoring Report, Third Quarter 2020. License SUA-1473 Docket 40-89085. December 1.

FIGURES

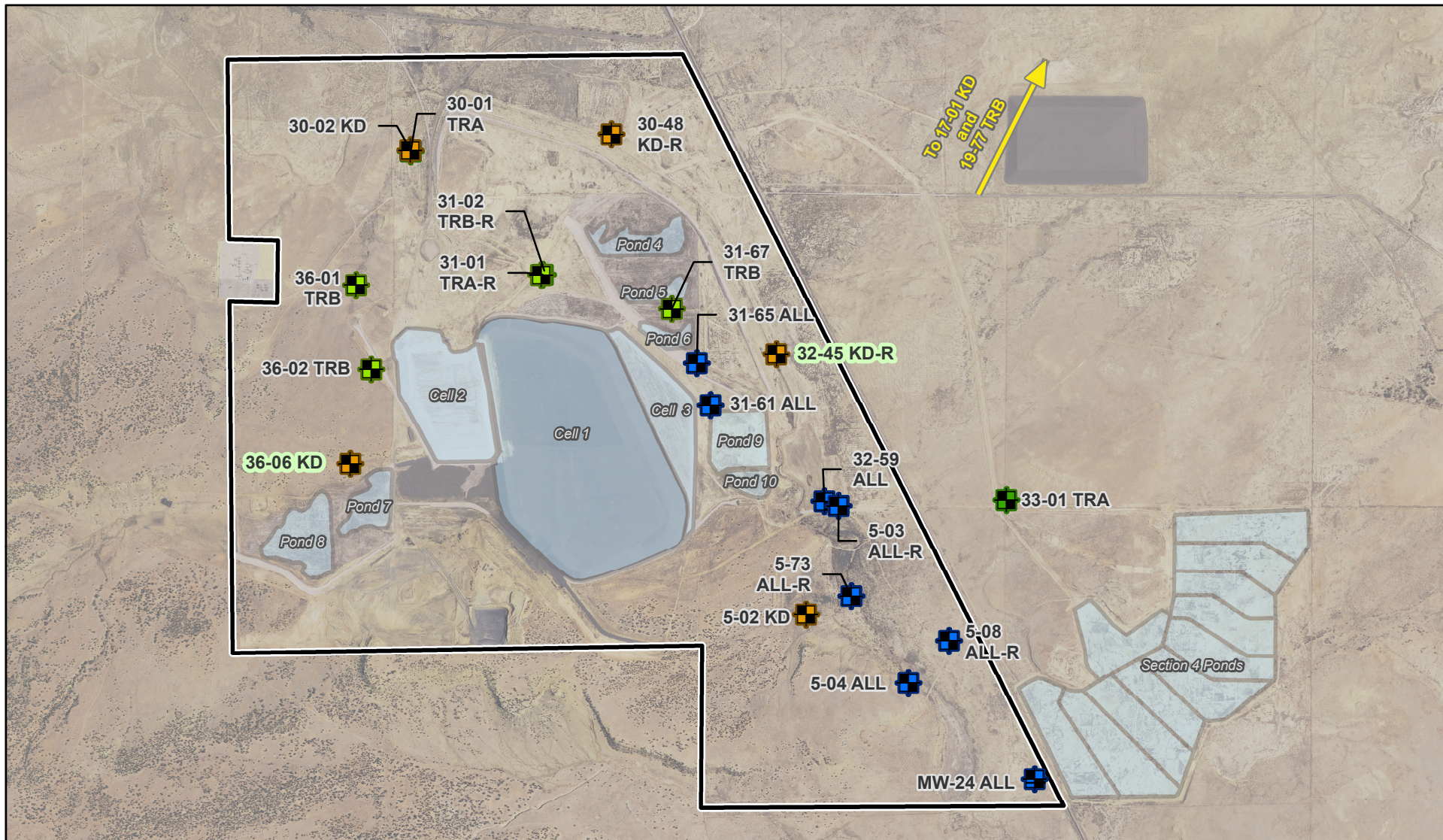


Figure 1
SUA-1473 Groundwater Monitoring
Well Network with Historical Site Features
Ambrosia Lake Facility



Note: Wells that do not have a monitoring requirement in SUA-1473 are not included in this figure.

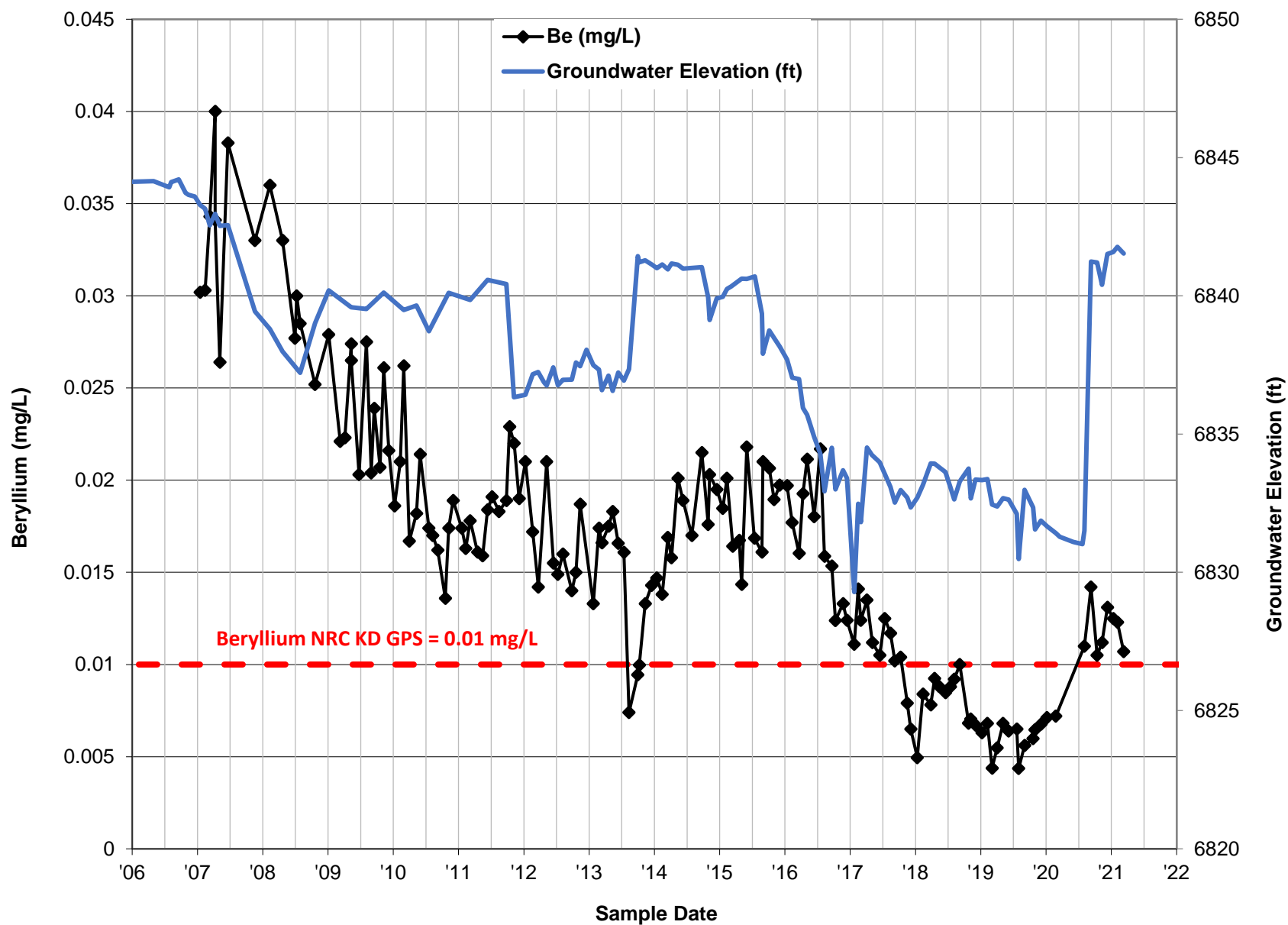


Figure 2
Beryllium Concentrations in Dakota Sandstone Monitoring Well 36-06 KD
Ambrosia Lake Facility

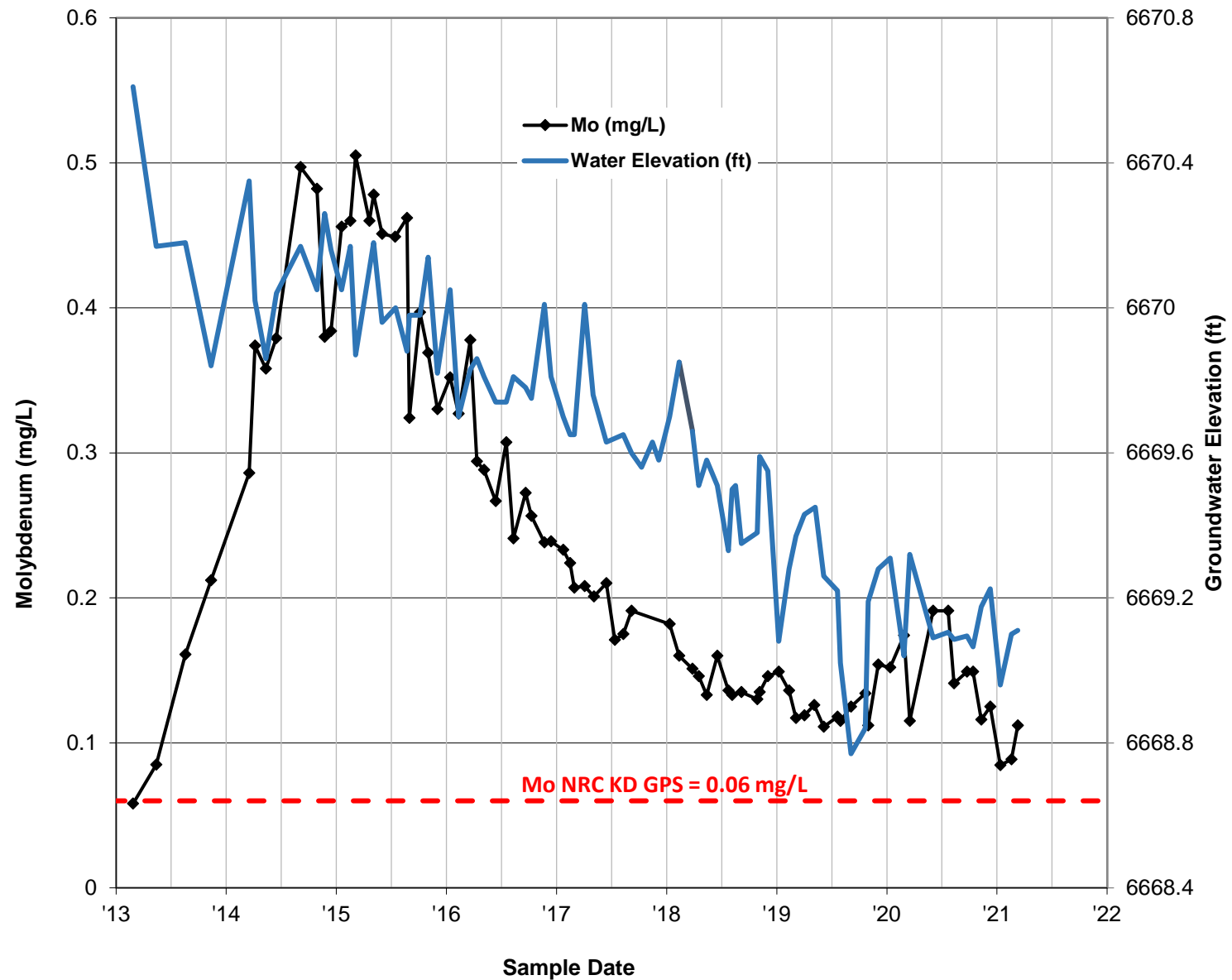


Figure 3
Molybdenum Concentrations in Dakota Sandstone Monitoring Well 32-45 KD-R
Ambrosia Lake Facility

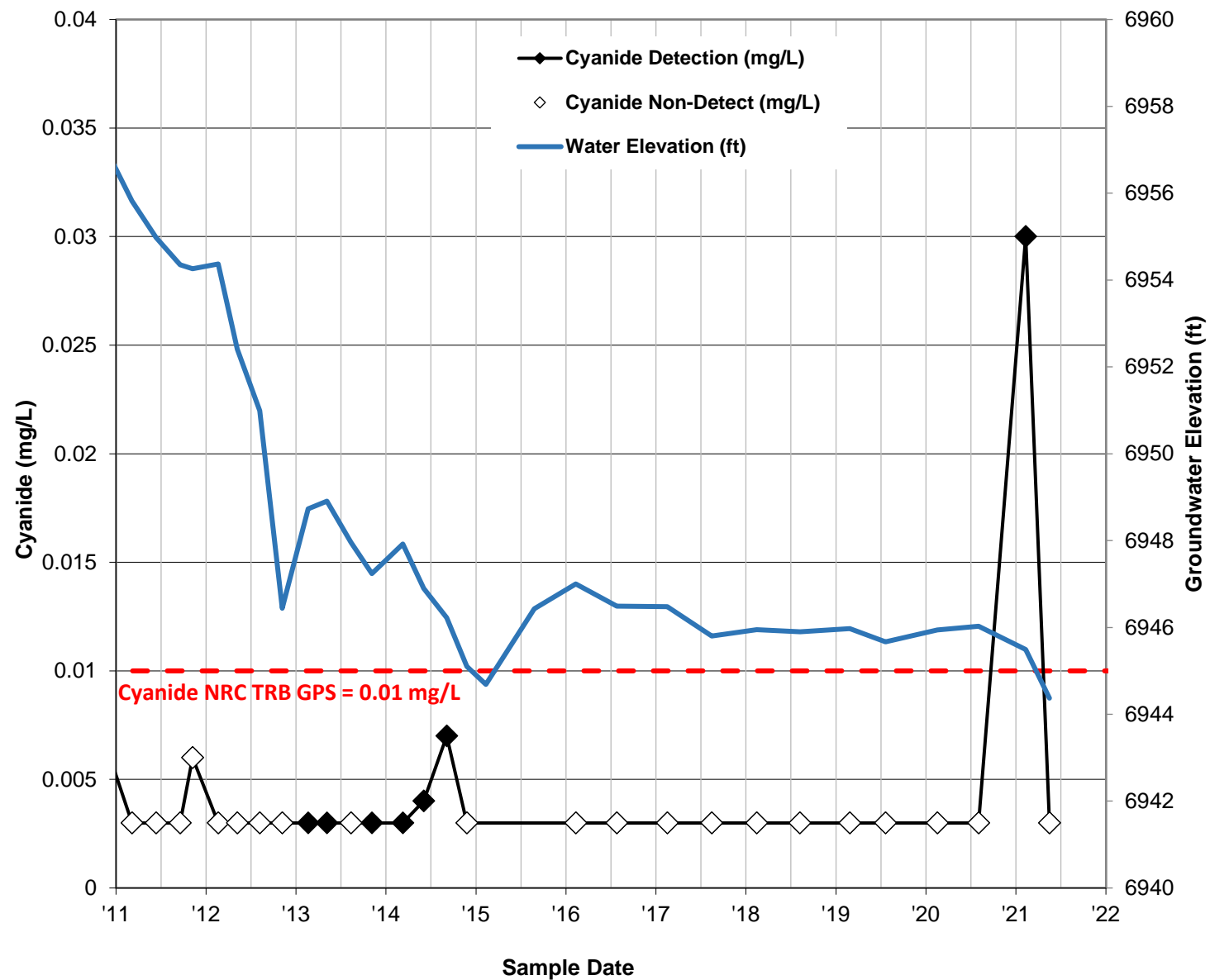


Figure 4
Cyanide Concentrations in Tres Hermanos B Sandstone Monitoring Well 36-02 TRB
Ambrosia Lake Facility

APPENDIX 1

Laboratory Analytical Results for Monthly GW Monitoring
During Q1 2021

January 21, 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: Clark Short, Angela Persico, Michaela Gorospe

Project ID: 4508122295

ACZ Project ID: L63766

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on January 14, 2021. This project has been assigned to ACZ's project number, L63766. 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 L63766. 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 20, 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: 4508122295

Sample ID: 36-06 KD

ACZ Sample ID: **L63766-01**

Date Sampled: 01/12/21 12:10

Date Received: 01/14/21

Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Beryllium, dissolved	M200.8 ICP-MS	1	0.0125			mg/L	0.00008	0.00025	01/19/21 13:35	enb

Rio Algom Mining Company

Project ID: 4508122295

Sample ID: 32-45 KDR

ACZ Sample ID: **L63766-02**

Date Sampled: 01/12/21 13:35

Date Received: 01/14/21

Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Molybdenum, dissolved M200.8 ICP-MS		1	0.0846			mg/L	0.0002	0.0005	01/19/21 13:38	enb

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: **L63766**

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
WG513063													
WG513063ICV	ICV	01/19/21 12:06	MS210115-2	.05		.04968	mg/L	99	90	110			
WG513063ICB	ICB	01/19/21 12:09				U	mg/L		-0.000176	0.000176			
WG513063LFB	LFB	01/19/21 12:12	MS201228-2	.05005		.05103	mg/L	102	85	115			
L63747-03AS	AS	01/19/21 13:04	MS201228-2	.25025	U	.23415	mg/L	94	70	130			
L63747-03ASD	ASD	01/19/21 13:07	MS201228-2	.25025	U	.23355	mg/L	93	70	130	0	20	

Molybdenum, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG513063													
WG513063ICV	ICV	01/19/21 12:06	MS210115-2	.01992		.01996	mg/L	100	90	110			
WG513063ICB	ICB	01/19/21 12:09				U	mg/L		-0.00044	0.00044			
WG513063LFB	LFB	01/19/21 12:12	MS201228-2	.0501		.0506	mg/L	101	85	115			
L63747-03AS	AS	01/19/21 13:04	MS201228-2	.2505	.0025	.26175	mg/L	103	70	130			
L63747-03ASD	ASD	01/19/21 13:07	MS201228-2	.2505	.0025	.25705	mg/L	102	70	130	2	20	

Rio Algom Mining Company

ACZ Project ID: **L63766**

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: **L63766**

No certification qualifiers associated with this analysis

Rio Algom Mining Company
4508122295

ACZ Project ID: L63766
Date Received: 01/14/2021 11:15
Received By:
Date Printed: 1/15/2021

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?
-----	-----	-----	-----	-----
6856	2.6	NA	14	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
4508122295

ACZ Project ID: L63766

Date Received: 01/14/2021 11:15

Received By:

Date Printed: 1/15/2021

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).

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

or

385-722-6707

March 17, 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: Clark Short, Angela Persico

Project ID: 4502696253

ACZ Project ID: L64129

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 06, 2021. This project has been assigned to ACZ's project number, L64129. 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 L64129. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

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

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

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

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



Scott Habermehl has reviewed
and approved this report.



Rio Algom Mining Company

March 17, 2021

Project ID: 4502696253

ACZ Project ID: L64129

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 6 groundwater samples from Rio Algom Mining Company on February 6, 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 L64129. 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: L64129-06/THORIUM 230

Tracer outside of acceptance limit for sample and batch QC. Sample activity <LLD.

1. (N1) Applies to: L64129-01/THORIUM 230

L64129-02/THORIUM 230

L64129-04/THORIUM 230

L64129-05/THORIUM 230

Tracer recovery outside of acceptance limits. Insufficient sample volume to REDO.

Rio Algom Mining Company

Project ID: 4502696253

Sample ID: 30-07 KD

ACZ Sample ID: **L64129-01**

Date Sampled: 02/05/21 12:03

Date Received: 02/06/21

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	02/16/21 18:13	jlw
Arsenic, dissolved	M200.8 ICP-MS	5	0.00256	B		mg/L	0.001	0.005	02/17/21 14:10	mfm
Barium, dissolved	M200.7 ICP	5	0.0510	B		mg/L	0.035	0.175	02/16/21 18:13	jlw
Beryllium, dissolved	M200.8 ICP-MS	5	<0.0004	U		mg/L	0.0004	0.00125	02/17/21 14:10	mfm
Boron, dissolved	M200.7 ICP	5	0.272	B		mg/L	0.1	0.5	02/16/21 18:13	jlw
Cadmium, dissolved	M200.8 ICP-MS	5	<0.00025	U		mg/L	0.00025	0.00125	02/17/21 14:10	mfm
Calcium, dissolved	M200.7 ICP	5	649			mg/L	0.5	2.5	02/16/21 18:13	jlw
Chromium, dissolved	M200.8 ICP-MS	5	<0.0025	U		mg/L	0.0025	0.01	02/17/21 14:10	mfm
Cobalt, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	02/16/21 18:13	jlw
Copper, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	02/16/21 18:13	jlw
Iron, dissolved	M200.7 ICP	5	1.69			mg/L	0.3	0.75	02/16/21 18:13	jlw
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	02/17/21 14:10	mfm
Magnesium, dissolved	M200.7 ICP	5	159			mg/L	1	5	02/16/21 18:13	jlw
Manganese, dissolved	M200.7 ICP	5	2.50			mg/L	0.05	0.25	02/16/21 18:13	jlw
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	02/11/21 13:44	llr
Molybdenum, dissolved	M200.8 ICP-MS	5	0.00162	B		mg/L	0.001	0.0025	02/17/21 14:10	mfm
Nickel, dissolved	M200.8 ICP-MS	5	<0.002	U		mg/L	0.002	0.005	02/17/21 14:10	mfm
Potassium, dissolved	M200.7 ICP	5	12.7			mg/L	1	5	02/16/21 18:13	jlw
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U	*	mg/L	0.002	0.005	02/12/21 12:37	llr
Selenium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.00125	02/17/21 14:10	mfm
Silver, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.125	02/16/21 18:13	jlw
Sodium, dissolved	M200.7 ICP	5	359			mg/L	1	5	02/16/21 18:13	jlw
Thallium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	02/17/21 14:10	mfm
Uranium, dissolved	M200.8 ICP-MS	5	0.00105	B		mg/L	0.0005	0.0025	02/17/21 14:10	mfm
Zinc, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	02/16/21 18:13	jlw

Rio Algom Mining Company

Project ID: 4502696253

Sample ID: 30-07 KD

ACZ Sample ID: **L64129-01**

Date Sampled: 02/05/21 12:03

Date Received: 02/06/21

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	296			mg/L	2	20	02/12/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	02/12/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	02/12/21 0:00	eep
Total Alkalinity		1	296			mg/L	2	20	02/12/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-1.6			%			03/17/21 0:00	calc
Sum of Anions			64			meq/L			03/17/21 0:00	calc
Sum of Cations			62			meq/L			03/17/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	50	430		*	mg/L	20	100	02/24/21 23:49	krh
Cyanide, Total	D7511-09	1	0.023			mg/L	0.003	0.01	02/19/21 15:19	wtc
Fluoride	M300.0 - Ion Chromatography	50	<2.5	U	*	mg/L	2.5	12.5	02/24/21 23:49	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U		mg/L	0.02	0.1	02/25/21 1:28	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	4130			mg/L	40	80	02/08/21 13:21	mlh
Sulfate	M300.0 - Ion Chromatography	50	2200			mg/L	20	100	02/24/21 23:49	krh
TDS (calculated)	Calculation		3990			mg/L			03/17/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.04						03/17/21 0:00	calc

Rio Algom Mining Company

Project ID: 4502696253

Sample ID: 36-08 TRA

ACZ Sample ID: **L64129-02**

Date Sampled: 02/04/21 13:01

Date Received: 02/06/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	<1	U		mg/L	1	5	02/16/21 18:17	jlw
Arsenic, dissolved	M200.8 ICP-MS	20	<0.004	U		mg/L	0.004	0.02	02/17/21 14:12	mfm
Barium, dissolved	M200.7 ICP	20	0.148	B		mg/L	0.14	0.7	02/16/21 18:17	jlw
Beryllium, dissolved	M200.8 ICP-MS	20	<0.0016	U		mg/L	0.0016	0.005	02/17/21 14:12	mfm
Boron, dissolved	M200.7 ICP	20	0.824	B		mg/L	0.4	2	02/16/21 18:17	jlw
Cadmium, dissolved	M200.8 ICP-MS	20	0.00197	B		mg/L	0.001	0.005	02/17/21 14:12	mfm
Calcium, dissolved	M200.7 ICP	20	525			mg/L	2	10	02/16/21 18:17	jlw
Chromium, dissolved	M200.8 ICP-MS	20	<0.01	U		mg/L	0.01	0.04	02/17/21 14:12	mfm
Cobalt, dissolved	M200.7 ICP	20	<0.2	U		mg/L	0.2	1	02/16/21 18:17	jlw
Copper, dissolved	M200.7 ICP	20	<0.2	U		mg/L	0.2	1	02/16/21 18:17	jlw
Iron, dissolved	M200.7 ICP	20	<1.2	U		mg/L	1.2	3	02/16/21 18:17	jlw
Lead, dissolved	M200.8 ICP-MS	20	<0.002	U		mg/L	0.002	0.01	02/17/21 14:12	mfm
Magnesium, dissolved	M200.7 ICP	20	5520			mg/L	4	20	02/16/21 18:17	jlw
Manganese, dissolved	M200.7 ICP	20	9.73			mg/L	0.2	1	02/16/21 18:17	jlw
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	02/11/21 13:45	llr
Molybdenum, dissolved	M200.8 ICP-MS	20	<0.004	U		mg/L	0.004	0.01	02/17/21 14:12	mfm
Nickel, dissolved	M200.8 ICP-MS	20	0.106			mg/L	0.008	0.02	02/17/21 14:12	mfm
Potassium, dissolved	M200.7 ICP	20	22.0			mg/L	4	20	02/16/21 18:17	jlw
Selenium, dissolved	SM 3114 B, AA-Hydride	20	0.151			mg/L	0.04	0.1	02/17/21 9:34	llr
Selenium, dissolved	M200.8 ICP-MS	20	0.142			mg/L	0.002	0.005	02/17/21 14:12	mfm
Silver, dissolved	M200.7 ICP	20	<0.2	U		mg/L	0.2	0.5	02/16/21 18:17	jlw
Sodium, dissolved	M200.7 ICP	20	460			mg/L	4	20	02/16/21 18:17	jlw
Thallium, dissolved	M200.8 ICP-MS	20	<0.002	U		mg/L	0.002	0.01	02/17/21 14:12	mfm
Uranium, dissolved	M200.8 ICP-MS	20	0.0194			mg/L	0.002	0.01	02/17/21 14:12	mfm
Zinc, dissolved	M200.7 ICP	20	<0.4	U		mg/L	0.4	1	02/16/21 18:17	jlw

Rio Algom Mining Company

Project ID: 4502696253

Sample ID: 36-08 TRA

ACZ Sample ID: **L64129-02**

Date Sampled: 02/04/21 13:01

Date Received: 02/06/21

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	595			mg/L	2	20	02/12/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	02/12/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	02/12/21 0:00	eep
Total Alkalinity		1	595			mg/L	2	20	02/12/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			2.0			%			03/17/21 0:00	calc
Sum of Anions			480			meq/L			03/17/21 0:00	calc
Sum of Cations			500			meq/L			03/17/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	200	876		*	mg/L	80	400	02/25/21 0:07	krh
Cyanide, Total	D7511-09	1	<0.003	UH	*	mg/L	0.003	0.01	02/19/21 15:21	wtc
Fluoride	M300.0 - Ion Chromatography	200	<10	U	*	mg/L	10	50	02/25/21 0:07	krh
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	100	103			mg/L	2	10	02/25/21 1:56	pjb
Residue, Filterable (TDS) @180C	SM2540C	10	29400			mg/L	200	400	02/08/21 13:23	mlh
Sulfate	M300.0 - Ion Chromatography	500	21100			mg/L	200	1000	03/01/21 20:18	krh
TDS (calculated)	Calculation		28900			mg/L			03/17/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.02						03/17/21 0:00	calc

Rio Algom Mining Company

Project ID: 4502696253

Sample ID: 30-06 TRB

ACZ Sample ID: **L64129-03**

Date Sampled: 02/04/21 15:55

Date Received: 02/06/21

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	02/16/21 18:20	jlw
Arsenic, dissolved	M200.8 ICP-MS	5	<0.001	U		mg/L	0.001	0.005	02/17/21 14:14	mfm
Barium, dissolved	M200.7 ICP	5	0.0485	B		mg/L	0.035	0.175	02/16/21 18:20	jlw
Beryllium, dissolved	M200.8 ICP-MS	5	<0.0004	U		mg/L	0.0004	0.00125	02/17/21 14:14	mfm
Boron, dissolved	M200.7 ICP	5	0.479	B		mg/L	0.1	0.5	02/16/21 18:20	jlw
Cadmium, dissolved	M200.8 ICP-MS	5	<0.00025	U		mg/L	0.00025	0.00125	02/17/21 14:14	mfm
Calcium, dissolved	M200.7 ICP	5	597			mg/L	0.5	2.5	02/16/21 18:20	jlw
Chromium, dissolved	M200.8 ICP-MS	5	<0.0025	U		mg/L	0.0025	0.01	02/17/21 14:14	mfm
Cobalt, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	02/16/21 18:20	jlw
Copper, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	02/16/21 18:20	jlw
Iron, dissolved	M200.7 ICP	5	0.352	B		mg/L	0.3	0.75	02/16/21 18:20	jlw
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	02/17/21 14:14	mfm
Magnesium, dissolved	M200.7 ICP	5	513			mg/L	1	5	02/16/21 18:20	jlw
Manganese, dissolved	M200.7 ICP	5	0.482			mg/L	0.05	0.25	02/16/21 18:20	jlw
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	02/15/21 13:54	llr
Molybdenum, dissolved	M200.8 ICP-MS	5	0.00329			mg/L	0.001	0.0025	02/17/21 14:14	mfm
Nickel, dissolved	M200.8 ICP-MS	5	0.00843			mg/L	0.002	0.005	02/17/21 14:14	mfm
Potassium, dissolved	M200.7 ICP	5	14.6			mg/L	1	5	02/16/21 18:20	jlw
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U	*	mg/L	0.002	0.005	02/12/21 12:41	llr
Selenium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.00125	02/17/21 14:14	mfm
Silver, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.125	02/16/21 18:20	jlw
Sodium, dissolved	M200.7 ICP	5	528			mg/L	1	5	02/16/21 18:20	jlw
Thallium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	02/17/21 14:14	mfm
Uranium, dissolved	M200.8 ICP-MS	5	0.0705			mg/L	0.0005	0.0025	02/17/21 14:14	mfm
Zinc, dissolved	M200.7 ICP	5	<0.1	U		mg/L	0.1	0.25	02/16/21 18:20	jlw

Rio Algom Mining Company

Project ID: 4502696253

Sample ID: 30-06 TRB

ACZ Sample ID: **L64129-03**

Date Sampled: 02/04/21 15:55

Date Received: 02/06/21

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	577			mg/L	2	20	02/12/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	02/12/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	02/12/21 0:00	eep
Total Alkalinity		1	577			mg/L	2	20	02/12/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.0			%			03/17/21 0:00	calc
Sum of Anions			100			meq/L			03/17/21 0:00	calc
Sum of Cations			96			meq/L			03/17/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	50	770			mg/L	20	100	02/25/21 0:25	krh
Cyanide, Total	D7511-09	1	<0.003	UH	*	mg/L	0.003	0.01	02/19/21 15:23	wtc
Fluoride	M300.0 - Ion Chromatography	50	<2.5	U	*	mg/L	2.5	12.5	02/25/21 0:25	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U	*	mg/L	0.02	0.1	02/27/21 2:11	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	6350			mg/L	40	80	02/08/21 13:25	mlh
Sulfate	M300.0 - Ion Chromatography	50	3180			mg/L	20	100	02/25/21 0:25	krh
TDS (calculated)	Calculation		5960			mg/L			03/17/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.07						03/17/21 0:00	calc

Rio Algom Mining Company

Project ID: 4502696253

Sample ID: 30-05 TRA

ACZ Sample ID: **L64129-04**

Date Sampled: 02/05/21 10:37

Date Received: 02/06/21

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	02/16/21 18:23	jlw
Arsenic, dissolved	M200.8 ICP-MS	2	0.00348			mg/L	0.0004	0.002	02/17/21 14:16	mfm
Barium, dissolved	M200.7 ICP	2	0.0318	B		mg/L	0.014	0.07	02/16/21 18:23	jlw
Beryllium, dissolved	M200.8 ICP-MS	2	<0.00016	U	*	mg/L	0.00016	0.0005	02/17/21 14:16	mfm
Boron, dissolved	M200.7 ICP	2	0.418			mg/L	0.04	0.2	02/16/21 18:23	jlw
Cadmium, dissolved	M200.8 ICP-MS	2	<0.0001	U		mg/L	0.0001	0.0005	02/17/21 14:16	mfm
Calcium, dissolved	M200.7 ICP	2	157			mg/L	0.2	1	02/16/21 18:23	jlw
Chromium, dissolved	M200.8 ICP-MS	2	<0.001	U		mg/L	0.001	0.004	02/17/21 14:16	mfm
Cobalt, dissolved	M200.7 ICP	2	<0.02	U		mg/L	0.02	0.1	02/16/21 18:23	jlw
Copper, dissolved	M200.7 ICP	2	<0.02	U		mg/L	0.02	0.1	02/16/21 18:23	jlw
Iron, dissolved	M200.7 ICP	2	0.209	B		mg/L	0.12	0.3	02/16/21 18:23	jlw
Lead, dissolved	M200.8 ICP-MS	2	<0.0002	U		mg/L	0.0002	0.001	02/17/21 14:16	mfm
Magnesium, dissolved	M200.7 ICP	2	67.2			mg/L	0.4	2	02/16/21 18:23	jlw
Manganese, dissolved	M200.7 ICP	2	0.197			mg/L	0.02	0.1	02/16/21 18:23	jlw
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	02/15/21 13:55	llr
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0212			mg/L	0.0004	0.001	02/17/21 14:16	mfm
Nickel, dissolved	M200.8 ICP-MS	2	0.00250			mg/L	0.0008	0.002	02/17/21 14:16	mfm
Potassium, dissolved	M200.7 ICP	2	8.42			mg/L	0.4	2	02/16/21 18:23	jlw
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U	*	mg/L	0.002	0.005	02/12/21 12:43	llr
Selenium, dissolved	M200.8 ICP-MS	2	<0.0002	U		mg/L	0.0002	0.0005	02/17/21 14:16	mfm
Silver, dissolved	M200.7 ICP	2	<0.02	U		mg/L	0.02	0.05	02/16/21 18:23	jlw
Sodium, dissolved	M200.7 ICP	2	358			mg/L	0.4	2	02/16/21 18:23	jlw
Thallium, dissolved	M200.8 ICP-MS	2	<0.0002	U		mg/L	0.0002	0.001	02/17/21 14:16	mfm
Uranium, dissolved	M200.8 ICP-MS	2	0.00428			mg/L	0.0002	0.001	02/17/21 14:16	mfm
Zinc, dissolved	M200.7 ICP	2	<0.04	U		mg/L	0.04	0.1	02/16/21 18:23	jlw

Rio Algom Mining Company

Project ID: 4502696253

Sample ID: 30-05 TRA

ACZ Sample ID: **L64129-04**

Date Sampled: 02/05/21 10:37

Date Received: 02/06/21

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	156			mg/L	2	20	02/12/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	02/12/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	02/12/21 0:00	eep
Total Alkalinity		1	156			mg/L	2	20	02/12/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-3.3			%			03/17/21 0:00	calc
Sum of Anions			31			meq/L			03/17/21 0:00	calc
Sum of Cations			29			meq/L			03/17/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	20	42.2			mg/L	8	40	02/25/21 1:01	krh
Cyanide, Total	D7511-09	1	0.016			mg/L	0.003	0.01	02/19/21 17:50	wtc
Fluoride	M300.0 - Ion Chromatography	20	<1	U	*	mg/L	1	5	02/25/21 1:01	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U		mg/L	0.02	0.1	02/25/21 1:37	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	2080			mg/L	20	40	02/08/21 13:27	mlh
Sulfate	M300.0 - Ion Chromatography	20	1290			mg/L	8	40	02/25/21 1:01	krh
TDS (calculated)	Calculation		2020			mg/L			03/17/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.03						03/17/21 0:00	calc

Rio Algom Mining Company

Project ID: 4502696253

Sample ID: 03-60 TRB

ACZ Sample ID: **L64129-05**

Date Sampled: 02/04/21 14:55

Date Received: 02/06/21

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	02/16/21 18:26	jlw
Arsenic, dissolved	M200.8 ICP-MS	5	<0.001	U		mg/L	0.001	0.005	02/17/21 14:21	mfm
Barium, dissolved	M200.7 ICP	5	0.0505	B		mg/L	0.035	0.175	02/16/21 18:26	jlw
Beryllium, dissolved	M200.8 ICP-MS	5	<0.0004	U		mg/L	0.0004	0.00125	02/17/21 14:21	mfm
Boron, dissolved	M200.7 ICP	5	0.492	B		mg/L	0.1	0.5	02/16/21 18:26	jlw
Cadmium, dissolved	M200.8 ICP-MS	5	<0.00025	U		mg/L	0.00025	0.00125	02/17/21 14:21	mfm
Calcium, dissolved	M200.7 ICP	5	604			mg/L	0.5	2.5	02/16/21 18:26	jlw
Chromium, dissolved	M200.8 ICP-MS	5	<0.0025	U		mg/L	0.0025	0.01	02/17/21 14:21	mfm
Cobalt, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	02/16/21 18:26	jlw
Copper, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.25	02/16/21 18:26	jlw
Iron, dissolved	M200.7 ICP	5	0.369	B		mg/L	0.3	0.75	02/16/21 18:26	jlw
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	02/17/21 14:21	mfm
Magnesium, dissolved	M200.7 ICP	5	518			mg/L	1	5	02/16/21 18:26	jlw
Manganese, dissolved	M200.7 ICP	5	0.480			mg/L	0.05	0.25	02/16/21 18:26	jlw
Mercury, total	M245.1 CVAA	1	<0.0002	U		mg/L	0.0002	0.001	02/15/21 13:56	llr
Molybdenum, dissolved	M200.8 ICP-MS	5	0.00388			mg/L	0.001	0.0025	02/17/21 14:21	mfm
Nickel, dissolved	M200.8 ICP-MS	5	0.00843			mg/L	0.002	0.005	02/17/21 14:21	mfm
Potassium, dissolved	M200.7 ICP	5	15.2			mg/L	1	5	02/16/21 18:26	jlw
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U	*	mg/L	0.002	0.005	02/12/21 12:45	llr
Selenium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.00125	02/17/21 14:21	mfm
Silver, dissolved	M200.7 ICP	5	<0.05	U		mg/L	0.05	0.125	02/16/21 18:26	jlw
Sodium, dissolved	M200.7 ICP	5	538			mg/L	1	5	02/16/21 18:26	jlw
Thallium, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	02/17/21 14:21	mfm
Uranium, dissolved	M200.8 ICP-MS	5	0.0706			mg/L	0.0005	0.0025	02/17/21 14:21	mfm
Zinc, dissolved	M200.7 ICP	5	0.312			mg/L	0.1	0.25	02/16/21 18:26	jlw

Rio Algom Mining Company

Project ID: 4502696253

Sample ID: 03-60 TRB

ACZ Sample ID: **L64129-05**

Date Sampled: 02/04/21 14:55

Date Received: 02/06/21

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	595			mg/L	2	20	02/12/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	02/12/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	02/12/21 0:00	eep
Total Alkalinity		1	595			mg/L	2	20	02/12/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-1.5			%			03/17/21 0:00	calc
Sum of Anions			100			meq/L			03/17/21 0:00	calc
Sum of Cations			97			meq/L			03/17/21 0:00	calc
Chloride	M300.0 - Ion Chromatography	50	768			mg/L	20	100	02/25/21 1:37	krh
Cyanide, Total	D7511-09	1	0.007	BH	*	mg/L	0.003	0.01	02/19/21 17:52	wtc
Fluoride	M300.0 - Ion Chromatography	50	<2.5	U	*	mg/L	2.5	12.5	02/25/21 1:37	krh
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U		mg/L	0.02	0.1	02/25/21 1:39	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	6060			mg/L	40	80	02/11/21 11:56	scd
Sulfate	M300.0 - Ion Chromatography	50	3170			mg/L	20	100	02/25/21 1:37	krh
TDS (calculated)	Calculation		5980			mg/L			03/17/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.01						03/17/21 0:00	calc

Rio Algom Mining Company

Project ID: 4502696253

Sample ID: 36-06 KD

ACZ Sample ID: **L64129-06**

Date Sampled: 02/04/21 11:03

Date Received: 02/06/21

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	02/17/21 14:23	mfm
Arsenic, dissolved	M200.8 ICP-MS	5	0.0202			mg/L	0.001	0.005	02/17/21 14:23	mfm
Barium, dissolved	M200.7 ICP	5	0.0450	B		mg/L	0.035	0.175	02/16/21 18:36	jlw
Beryllium, dissolved	M200.8 ICP-MS	5	0.0123			mg/L	0.0004	0.00125	02/17/21 14:23	mfm
Cadmium, dissolved	M200.8 ICP-MS	5	0.00753			mg/L	0.00025	0.00125	02/17/21 14:23	mfm
Calcium, dissolved	M200.7 ICP	5	516			mg/L	0.5	2.5	02/16/21 18:36	jlw
Iron, dissolved	M200.7 ICP	5	141			mg/L	0.3	0.75	02/16/21 18:36	jlw
Lead, dissolved	M200.8 ICP-MS	5	<0.0005	U		mg/L	0.0005	0.0025	02/17/21 14:23	mfm
Magnesium, dissolved	M200.7 ICP	5	381			mg/L	1	5	02/16/21 18:36	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	<0.001	U		mg/L	0.001	0.0025	02/17/21 14:23	mfm
Nickel, dissolved	M200.8 ICP-MS	5	0.150			mg/L	0.002	0.005	02/17/21 14:23	mfm
Potassium, dissolved	M200.7 ICP	5	11.5			mg/L	1	5	02/16/21 18:36	jlw
Selenium, dissolved	SM 3114 B, AA-Hydride	1	0.0026	B	*	mg/L	0.002	0.005	02/12/21 12:47	llr
Sodium, dissolved	M200.7 ICP	5	574			mg/L	1	5	02/16/21 18:36	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.527			mg/L	0.0005	0.0025	02/17/21 14:23	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	02/12/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	02/12/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	02/12/21 0:00	eep
Total Alkalinity		1	<2	U		mg/L	2	20	02/12/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-8.6			%			03/17/21 0:00	calc
Sum of Anions			107			meq/L			03/17/21 0:00	calc
Sum of Cations			90			meq/L			03/17/21 0:00	calc
Chloride	SM4500Cl-E	20	1120		*	mg/L	10	40	02/28/21 18:51	syw
Conductivity @25C	SM2510B	1	7910			umhos/cm	1	10	02/12/21 1:19	eep
Cyanide, Total	D7511-09	1	0.005	BH	*	mg/L	0.003	0.01	02/19/21 17:54	wtc
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U		mg/L	0.02	0.1	02/25/21 1:40	pjb
Residue, Filterable (TDS) @180C	SM2540C	5	7440			mg/L	100	200	02/09/21 17:43	scd
Sulfate	D516-02/-07/-11 - Turbidimetric	100	3580		*	mg/L	100	500	02/27/21 15:00	ttg
TDS (calculated)	Calculation		6320			mg/L			03/17/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.18						03/17/21 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: **L64129**

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
WG514251													
WG514251PBW1	PBW	02/11/21 20:40				U	mg/L		-20	20			
WG514251LCSW3	LCSW	02/11/21 20:58	WC210130-4	820.0001		769.8	mg/L	94	90	110			
WG514251LCSW6	LCSW	02/12/21 0:15	WC210130-4	820.0001		789.4	mg/L	96	90	110			
WG514251PBW2	PBW	02/12/21 0:23				3	mg/L		-20	20			
L64148-01DUP	DUP	02/12/21 2:02			113	113.1	mg/L				0	20	
WG514251LCSW9	LCSW	02/12/21 3:51	WC210130-4	820.0001		777.1	mg/L	95	90	110			
WG514251PBW3	PBW	02/12/21 3:59				3.4	mg/L		-20	20			

Aluminum, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514420													
WG514420ICV	ICV	02/16/21 17:51	II210127-1	2		2.029	mg/L	101	95	105			
WG514420ICB	ICB	02/16/21 17:57				U	mg/L		-0.15	0.15			
WG514420LFB	LFB	02/16/21 18:10	II210208-3	1.0013		1.026	mg/L	102	85	115			
L64129-05AS	AS	02/16/21 18:30	II210208-3	5.0065	U	5.295	mg/L	106	85	115			
L64129-05ASD	ASD	02/16/21 18:33	II210208-3	5.0065	U	5.315	mg/L	106	85	115	0	20	

Antimony, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514510													
WG514510ICV	ICV	02/17/21 14:03	MS210115-2	.0201		.02199	mg/L	109	90	110			
WG514510ICB	ICB	02/17/21 14:05				.00063	mg/L		-0.00088	0.00088			
WG514510LFB	LFB	02/17/21 14:07	MS201228-2	.01		.00862	mg/L	86	85	115			
L64129-04AS	AS	02/17/21 14:17	MS201228-2	.02	U	.01731	mg/L	87	70	130			
L64129-04ASD	ASD	02/17/21 14:19	MS201228-2	.02	U	.01773	mg/L	89	70	130	2	20	

Arsenic, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514510													
WG514510ICV	ICV	02/17/21 14:03	MS210115-2	.05		.05093	mg/L	102	90	110			
WG514510ICB	ICB	02/17/21 14:05				U	mg/L		-0.00044	0.00044			
WG514510LFB	LFB	02/17/21 14:07	MS201228-2	.05005		.04704	mg/L	94	85	115			
L64129-04AS	AS	02/17/21 14:17	MS201228-2	.1001	.00348	.10043	mg/L	97	70	130			
L64129-04ASD	ASD	02/17/21 14:19	MS201228-2	.1001	.00348	.09909	mg/L	96	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
WG514420													
WG514420ICV	ICV	02/16/21 17:51	II210127-1	2		1.9782	mg/L	99	95	105			
WG514420ICB	ICB	02/16/21 17:57				U	mg/L		-0.021	0.021			
WG514420LFB	LFB	02/16/21 18:10	II210208-3	.5		.4936	mg/L	99	85	115			
L64129-05AS	AS	02/16/21 18:30	II210208-3	2.5	.0505	2.5645	mg/L	101	85	115			
L64129-05ASD	ASD	02/16/21 18:33	II210208-3	2.5	.0505	2.5725	mg/L	101	85	115	0	20	

Rio Algom Mining Company

ACZ Project ID: **L64129**

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
WG514510													
WG514510ICV	ICV	02/17/21 14:03	MS210115-2	.05		.048262	mg/L	97	90	110			
WG514510ICB	ICB	02/17/21 14:05				U	mg/L		-0.000176	0.000176			
WG514510LFB	LFB	02/17/21 14:07	MS201228-2	.05005		.045743	mg/L	91	85	115			
L64129-04AS	AS	02/17/21 14:17	MS201228-2	.1001	U	.074372	mg/L	74	70	130			
L64129-04ASD	ASD	02/17/21 14:19	MS201228-2	.1001	U	.073305	mg/L	73	70	130	1	20	

Boron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514420													
WG514420ICV	ICV	02/16/21 17:51	II210127-1	2		1.977	mg/L	99	95	105			
WG514420ICB	ICB	02/16/21 17:57				U	mg/L		-0.06	0.06			
WG514420LFB	LFB	02/16/21 18:10	II210208-3	.5005		.511	mg/L	102	85	115			
L64129-05AS	AS	02/16/21 18:30	II210208-3	2.5025	.492	3.042	mg/L	102	85	115			
L64129-05ASD	ASD	02/16/21 18:33	II210208-3	2.5025	.492	3.031	mg/L	101	85	115	0	20	

Cadmium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514510													
WG514510ICV	ICV	02/17/21 14:03	MS210115-2	.05		.0504	mg/L	101	90	110			
WG514510ICB	ICB	02/17/21 14:05				U	mg/L		-0.00011	0.00011			
WG514510LFB	LFB	02/17/21 14:07	MS201228-2	.05005		.045706	mg/L	91	85	115			
L64129-04AS	AS	02/17/21 14:17	MS201228-2	.1001	U	.092126	mg/L	92	70	130			
L64129-04ASD	ASD	02/17/21 14:19	MS201228-2	.1001	U	.090396	mg/L	90	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
WG514420													
WG514420ICV	ICV	02/16/21 17:51	II210127-1	100		98.2	mg/L	98	95	105			
WG514420ICB	ICB	02/16/21 17:57				U	mg/L		-0.3	0.3			
WG514420LFB	LFB	02/16/21 18:10	II210208-3	68.00934		67.97	mg/L	100	85	115			
L64129-05AS	AS	02/16/21 18:30	II210208-3	340.0467	604	952.5	mg/L	102	85	115			
L64129-05ASD	ASD	02/16/21 18:33	II210208-3	340.0467	604	955.5	mg/L	103	85	115	0	20	

Rio Algom Mining Company

ACZ Project ID: **L64129**

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
WG512998													
WG512998ICV	ICV	01/14/21 17:43	WI210114-2	20.02		20.1	mg/L	100	90	110			
WG512998ICB	ICB	01/14/21 18:01				U	mg/L		-0.4	0.4			
WG514877													
WG514877LFB	LFB	02/24/21 19:56	WI201018-4	30		30.74	mg/L	102	90	110			
L64102-01DUP	DUP	02/24/21 20:32			U	U	mg/L				0	20	RA
L64102-02AS	AS	02/24/21 21:08	WI201018-4	3000	U	3090.67	mg/L	103	90	110			
L64129-03DUP	DUP	02/25/21 0:43			770	771.41	mg/L				0	20	
L64129-04AS	AS	02/25/21 1:19	WI201018-4	600	42.2	663.23	mg/L	104	90	110			

Chloride

SM4500CI-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG515075													
WG515075ICB	ICB	02/28/21 16:48				U	mg/L		-1.5	1.5			
WG515075ICV	ICV	02/28/21 16:48	WI200506-2	55.055		58.22	mg/L	106	90	110			
WG515075LFB1	LFB	02/28/21 18:18	WI200327-3	30.03		31.73	mg/L	106	90	110			
L58829-42DUP	DUP	02/28/21 18:18			U	U	mg/L				0	20	RA
L60544-30AS	AS	02/28/21 18:18	WI200327-3	30.03	U	31.29	mg/L	104	90	110			
WG515075LFB2	LFB	02/28/21 18:22	WI200327-3	30.03		31.93	mg/L	106	90	110			

Chromium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514510													
WG514510ICV	ICV	02/17/21 14:03	MS210115-2	.05		.05056	mg/L	101	90	110			
WG514510ICB	ICB	02/17/21 14:05				U	mg/L		-0.0011	0.0011			
WG514510LFB	LFB	02/17/21 14:07	MS201228-2	.05		.04544	mg/L	91	85	115			
L64129-04AS	AS	02/17/21 14:17	MS201228-2	.1	U	.09248	mg/L	92	70	130			
L64129-04ASD	ASD	02/17/21 14:19	MS201228-2	.1	U	.09167	mg/L	92	70	130	1	20	

Cobalt, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514420													
WG514420ICV	ICV	02/16/21 17:51	II210127-1	2.004		1.907	mg/L	95	95	105			
WG514420ICB	ICB	02/16/21 17:57				U	mg/L		-0.03	0.03			
WG514420LFB	LFB	02/16/21 18:10	II210208-3	.5005		.486	mg/L	97	85	115			
L64129-05AS	AS	02/16/21 18:30	II210208-3	2.5025	U	2.434	mg/L	97	85	115			
L64129-05ASD	ASD	02/16/21 18:33	II210208-3	2.5025	U	2.44	mg/L	98	85	115	0	20	

Conductivity @25C

SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514251													
WG514251LCSW2	LCSW	02/11/21 20:47	PCN63121	1410		1484	umhos/cm	105	90	110			
WG514251LCSW5	LCSW	02/12/21 0:02	PCN63121	1410		1471	umhos/cm	104	90	110			
L64148-01DUP	DUP	02/12/21 2:02			2030	2020	umhos/cm				0	20	
WG514251LCSW8	LCSW	02/12/21 3:39	PCN63121	1410		1469	umhos/cm	104	90	110			

Rio Algom Mining Company

ACZ Project ID: **L64129**

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
WG514420													
WG514420ICV	ICV	02/16/21 17:51	II210127-1	2		1.936	mg/L	97	95	105			
WG514420ICB	ICB	02/16/21 17:57				U	mg/L		-0.03	0.03			
WG514420LFB	LFB	02/16/21 18:10	II210208-3	.5015		.49	mg/L	98	85	115			
L64129-05AS	AS	02/16/21 18:30	II210208-3	2.5075	U	2.526	mg/L	101	85	115			
L64129-05ASD	ASD	02/16/21 18:33	II210208-3	2.5075	U	2.555	mg/L	102	85	115	1	20	

Cyanide, Total

D7511-09

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514401													
WG514401ICV	ICV	02/19/21 14:37	WI210212-7	.3003		.2869	mg/L	96	90	110			
WG514401ICB	ICB	02/19/21 14:39				U	mg/L		-0.003	0.003			
WG514401LFB	LFB	02/19/21 17:46	WI210212-5	.1		.1032	mg/L	103	84	116			
L64129-06AS	AS	02/19/21 17:56	WI210212-5	.1	.005	.0933	mg/L	88	84	116			
L64129-06ASD	ASD	02/19/21 17:58	WI210212-5	.1	.005	.0897	mg/L	85	84	116	4	20	

Fluoride

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG512998													
WG512998ICV	ICV	01/14/21 17:43	WI210114-2	4		4.069	mg/L	102	90	110			
WG512998ICB	ICB	01/14/21 18:01				U	mg/L		-0.05	0.05			
WG514877													
WG514877LFB	LFB	02/24/21 19:56	WI201018-4	1.5		1.615	mg/L	108	90	110			
L64102-01DUP	DUP	02/24/21 20:32			1210	1205.877	mg/L				0	20	
L64102-02AS	AS	02/24/21 21:08	WI201018-4	150	92.2	252.214	mg/L	107	90	110			
L64129-03DUP	DUP	02/25/21 0:43			U	U	mg/L				0	20	RA
L64129-04AS	AS	02/25/21 1:19	WI201018-4	30	U	32.799	mg/L	109	90	110			

Iron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514420													
WG514420ICV	ICV	02/16/21 17:51	II210127-1	2		1.94	mg/L	97	95	105			
WG514420ICB	ICB	02/16/21 17:57				U	mg/L		-0.18	0.18			
WG514420LFB	LFB	02/16/21 18:10	II210208-3	1.0018		.994	mg/L	99	85	115			
L64129-05AS	AS	02/16/21 18:30	II210208-3	5.009	.369	5.32	mg/L	99	85	115			
L64129-05ASD	ASD	02/16/21 18:33	II210208-3	5.009	.369	5.3	mg/L	98	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
WG514510													
WG514510ICV	ICV	02/17/21 14:03	MS210115-2	.05		.05137	mg/L	103	90	110			
WG514510ICB	ICB	02/17/21 14:05				U	mg/L		-0.00022	0.00022			
WG514510LFB	LFB	02/17/21 14:07	MS201228-2	.05005		.04717	mg/L	94	85	115			
L64129-04AS	AS	02/17/21 14:17	MS201228-2	.1001	U	.0999	mg/L	100	70	130			
L64129-04ASD	ASD	02/17/21 14:19	MS201228-2	.1001	U	.09794	mg/L	98	70	130	2	20	

Rio Algom Mining Company

ACZ Project ID: **L64129**

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
WG514420													
WG514420ICV	ICV	02/16/21 17:51	II210127-1	100		98.76	mg/L	99	95	105			
WG514420ICB	ICB	02/16/21 17:57				U	mg/L		-0.6	0.6			
WG514420LFB	LFB	02/16/21 18:10	II210208-3	50.00226		49.55	mg/L	99	85	115			
L64129-05AS	AS	02/16/21 18:30	II210208-3	250.0113	518	780.5	mg/L	105	85	115			
L64129-05ASD	ASD	02/16/21 18:33	II210208-3	250.0113	518	782	mg/L	106	85	115	0	20	

Manganese, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514420													
WG514420ICV	ICV	02/16/21 17:51	II210127-1	2		1.917	mg/L	96	95	105			
WG514420ICB	ICB	02/16/21 17:57				U	mg/L		-0.03	0.03			
WG514420LFB	LFB	02/16/21 18:10	II210208-3	.5005		.471	mg/L	94	85	115			
L64129-05AS	AS	02/16/21 18:30	II210208-3	2.5025	.48	2.847	mg/L	95	85	115			
L64129-05ASD	ASD	02/16/21 18:33	II210208-3	2.5025	.48	2.853	mg/L	95	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
WG514129													
WG514129ICV	ICV	02/11/21 10:22	HG210118-2	.005		.00482	mg/L	96	95	105			
WG514129ICB	ICB	02/11/21 10:23				U	mg/L		-0.0002	0.0002			
WG514159													
WG514159LRB	LRB	02/11/21 13:28				U	mg/L		-0.00044	0.00044			
WG514159LFB	LFB	02/11/21 13:29	HG210208-5	.002002		.00179	mg/L	89	85	115			
L64155-06LFM	LFM	02/11/21 13:54	HG210208-5	.002002	U	.0018	mg/L	90	85	115			
L64155-06LFMD	LFMD	02/11/21 13:55	HG210208-5	.002002	U	.00185	mg/L	92	85	115	3	20	
WG514328													
WG514328ICV	ICV	02/15/21 13:05	HG210118-2	.005		.00483	mg/L	97	90	110			
WG514328ICB	ICB	02/15/21 13:06				U	mg/L		-0.0006	0.0006			
WG514330													
WG514330LRB	LRB	02/15/21 13:52				U	mg/L		-0.00044	0.00044			
WG514330LFB	LFB	02/15/21 13:53	HG210208-5	.002002		.00191	mg/L	95	85	115			
L64170-01LFM	LFM	02/15/21 14:02	HG210208-5	.002002	U	.0019	mg/L	95	85	115			
L64170-01LFMD	LFMD	02/15/21 14:03	HG210208-5	.002002	U	.00191	mg/L	95	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
WG514510													
WG514510ICV	ICV	02/17/21 14:03	MS210115-2	.01992		.02055	mg/L	103	90	110			
WG514510ICB	ICB	02/17/21 14:05				U	mg/L		-0.00044	0.00044			
WG514510LFB	LFB	02/17/21 14:07	MS201228-2	.0501		.04724	mg/L	94	85	115			
L64129-04AS	AS	02/17/21 14:17	MS201228-2	.1002	.0212	.12903	mg/L	108	70	130			
L64129-04ASD	ASD	02/17/21 14:19	MS201228-2	.1002	.0212	.12754	mg/L	106	70	130	1	20	

Rio Algom Mining Company

ACZ Project ID: **L64129**

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
WG514510													
WG514510ICV	ICV	02/17/21 14:03	MS210115-2	.05		.0511	mg/L	102	90	110			
WG514510ICB	ICB	02/17/21 14:05				U	mg/L		-0.00088	0.00088			
WG514510LFB	LFB	02/17/21 14:07	MS201228-2	.05		.0464	mg/L	93	85	115			
L64129-04AS	AS	02/17/21 14:17	MS201228-2	.1	.0025	.09113	mg/L	89	70	130			
L64129-04ASD	ASD	02/17/21 14:19	MS201228-2	.1	.0025	.09145	mg/L	89	70	130	0	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
WG514917													
WG514917ICV	ICV	02/25/21 0:10	WI210218-5	2.416		2.386	mg/L	99	90	110			
WG514917ICB	ICB	02/25/21 0:12				U	mg/L		-0.02	0.02			
WG514920													
WG514920LFB	LFB	02/25/21 1:27	WI201001-11	2		2.049	mg/L	102	90	110			
L64129-01AS	AS	02/25/21 1:30	WI201001-11	2	U	2.14	mg/L	107	90	110			
L64129-02DUP	DUP	02/25/21 1:58			103	103.34	mg/L				0	20	
WG515060													
WG515060ICV	ICV	02/26/21 23:08	WI210218-5	2.416		2.396	mg/L	99	90	110			
WG515060ICB	ICB	02/26/21 23:09				U	mg/L		-0.02	0.02			
WG515065													
WG515065LFB	LFB	02/27/21 2:07	WI201001-11	2		2.038	mg/L	102	90	110			
L64127-01AS	AS	02/27/21 2:10	WI201001-11	20	16.5	36.731	mg/L	101	90	110			
L64129-03DUP	DUP	02/27/21 2:12			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
WG514420													
WG514420ICV	ICV	02/16/21 17:51	II210127-1	20		19.77	mg/L	99	95	105			
WG514420ICB	ICB	02/16/21 17:57				U	mg/L		-0.6	0.6			
WG514420LFB	LFB	02/16/21 18:10	II210208-3	99.97791		98.15	mg/L	98	85	115			
L64129-05AS	AS	02/16/21 18:30	II210208-3	499.88955	15.2	526.5	mg/L	102	85	115			
L64129-05ASD	ASD	02/16/21 18:33	II210208-3	499.88955	15.2	529	mg/L	103	85	115	0	20	

Rio Algom Mining Company

ACZ Project ID: **L64129**

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
WG514003													
WG514003PBW	PBW	02/08/21 12:45				U	mg/L		-20	20			
WG514003LCSW	LCSW	02/08/21 12:46	PCN62892	1000		1006	mg/L	101	80	120			
L64129-04DUP	DUP	02/08/21 13:29			2080	2098	mg/L				1	10	
WG514080													
WG514080PBW	PBW	02/09/21 17:30				U	mg/L		-20	20			
WG514080LCSW	LCSW	02/09/21 17:33	PCN62892	1000		992	mg/L	99	80	120			
L64140-03DUP	DUP	02/09/21 18:09			3910	3908	mg/L				0	10	
WG514208													
WG514208PBW	PBW	02/11/21 11:50				U	mg/L		-20	20			
WG514208LCSW	LCSW	02/11/21 11:53	PCN62892	1000		982	mg/L	98	80	120			
L64172-01DUP	DUP	02/11/21 12:26			7320	7340	mg/L				0	10	

Selenium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514510													
WG514510ICV	ICV	02/17/21 14:03	MS210115-2	.05		.04998	mg/L	100	90	110			
WG514510ICB	ICB	02/17/21 14:05				.00012	mg/L		-0.00022	0.00022			
WG514510LFB	LFB	02/17/21 14:07	MS201228-2	.05		.04615	mg/L	92	85	115			
L64129-04AS	AS	02/17/21 14:17	MS201228-2	.1	U	.09698	mg/L	97	70	130			
L64129-04ASD	ASD	02/17/21 14:19	MS201228-2	.1	U	.09394	mg/L	94	70	130	3	20	

Selenium, dissolved

SM 3114 B, AA-Hydride

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514263													
WG514263ICV	ICV	02/12/21 12:05	SE210107-2	.025		.025	mg/L	100	90	110			
WG514263ICB	ICB	02/12/21 12:07				U	mg/L		-0.006	0.006			
WG514263LRB	LRB	02/12/21 12:09				U	mg/L		-0.006	0.006			
WG514263LFB	LFB	02/12/21 12:11	SE201123-2	.0225		.0213	mg/L	95	85	115			
L64085-02LFM	LFM	02/12/21 12:19	SE201123-2	.0225	U	.019	mg/L	84	85	115			M2
L64085-02LFMD	LFMD	02/12/21 12:21	SE201123-2	.0225	U	.0188	mg/L	84	85	115	1	20	M2
L64129-06LFM	LFM	02/12/21 12:49	SE201123-2	.0225	.0026	.0202	mg/L	78	85	115			M2
L64129-06LFMD	LFMD	02/12/21 12:51	SE201123-2	.0225	.0026	.0202	mg/L	78	85	115	0	20	M2
WG514437													
WG514437ICV	ICV	02/17/21 9:25	SE210107-2	.025		.0258	mg/L	103	90	110			
WG514437ICB	ICB	02/17/21 9:28				U	mg/L		-0.006	0.006			
WG514437LRB	LRB	02/17/21 9:30				U	mg/L		-0.006	0.006			
WG514437LFB	LFB	02/17/21 9:32	SE201123-2	.0225		.0223	mg/L	99	85	115			
L64158-05LFM	LFM	02/17/21 9:44	SE201123-2	.0225	.0028	.0237	mg/L	93	85	115			
L64158-05LFMD	LFMD	02/17/21 9:46	SE201123-2	.0225	.0028	.0244	mg/L	96	85	115	3	20	

Rio Algom Mining Company

ACZ Project ID: **L64129**

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
WG514420													
WG514420ICV	ICV	02/16/21 17:51	II210127-1	1		.971	mg/L	97	95	105			
WG514420ICB	ICB	02/16/21 17:57				U	mg/L		-0.03	0.03			
WG514420LFB	LFB	02/16/21 18:10	II210208-3	.502		.485	mg/L	97	85	115			
L64129-05AS	AS	02/16/21 18:30	II210208-3	2.51	U	2.542	mg/L	101	85	115			
L64129-05ASD	ASD	02/16/21 18:33	II210208-3	2.51	U	2.47	mg/L	98	85	115	3	20	

Sodium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514420													
WG514420ICV	ICV	02/16/21 17:51	II210127-1	100		97.71	mg/L	98	95	105			
WG514420ICB	ICB	02/16/21 17:57				U	mg/L		-0.6	0.6			
WG514420LFB	LFB	02/16/21 18:10	II210208-3	100.0235		97.14	mg/L	97	85	115			
L64129-05AS	AS	02/16/21 18:30	II210208-3	500.1175	538	1045.5	mg/L	101	85	115			
L64129-05ASD	ASD	02/16/21 18:33	II210208-3	500.1175	538	1046.5	mg/L	102	85	115	0	20	

Sulfate

D516-02/-07/-11 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG515070													
WG515070ICB	ICB	02/27/21 14:20				U	mg/L		-3	3			
WG515070ICV	ICV	02/27/21 14:20	WI210225-3	20		19.9	mg/L	100	90	110			
WG515070LFB	LFB	02/27/21 14:45	WI210105-3	10		9.5	mg/L	95	90	110			
L64148-01AS	AS	02/27/21 14:56	SO4TURB20X	10	740	691.2	mg/L	-488	90	110			M3
L64145-01DUP	DUP	02/27/21 14:59			220	221.2	mg/L				1	20	

Sulfate

M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG512998													
WG512998ICV	ICV	01/14/21 17:43	WI210114-2	50		51.49	mg/L	103	90	110			
WG512998ICB	ICB	01/14/21 18:01				U	mg/L		-0.4	0.4			
WG514877													
WG514877LFB	LFB	02/24/21 19:56	WI201018-4	30		30.53	mg/L	102	90	110			
L64129-03DUP	DUP	02/25/21 0:43			3180	3183.97	mg/L				0	20	
L64129-04AS	AS	02/25/21 1:19	WI201018-4	600	1290	1853.01	mg/L	94	90	110			
L64102-01DUP	DUP	03/01/21 19:06			84900	84794.77	mg/L				0	20	
L64102-02AS	AS	03/01/21 19:42	WI201018-4	6000	11900	17984.84	mg/L	101	90	110			

Thallium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514510													
WG514510ICV	ICV	02/17/21 14:03	MS210115-2	.05		.04913	mg/L	98	90	110			
WG514510ICB	ICB	02/17/21 14:05				U	mg/L		-0.00022	0.00022			
WG514510LFB	LFB	02/17/21 14:07	MS201228-2	.0501		.04612	mg/L	92	85	115			
L64129-04AS	AS	02/17/21 14:17	MS201228-2	.1002	U	.10049	mg/L	100	70	130			
L64129-04ASD	ASD	02/17/21 14:19	MS201228-2	.1002	U	.09812	mg/L	98	70	130	2	20	

Rio Algom Mining CompanyACZ Project ID: **L64129**

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.

Uranium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514510													
WG514510ICV	ICV	02/17/21 14:03	MS210115-2	.05		.05024	mg/L	100	90	110			
WG514510ICB	ICB	02/17/21 14:05				U	mg/L		-0.00022	0.00022			
WG514510LFB	LFB	02/17/21 14:07	MS201228-2	.05		.0455	mg/L	91	85	115			
L64129-04AS	AS	02/17/21 14:17	MS201228-2	.1	.00428	.10695	mg/L	103	70	130			
L64129-04ASD	ASD	02/17/21 14:19	MS201228-2	.1	.00428	.10495	mg/L	101	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
WG514420													
WG514420ICV	ICV	02/16/21 17:51	II210127-1	2		1.956	mg/L	98	95	105			
WG514420ICB	ICB	02/16/21 17:57				U	mg/L		-0.06	0.06			
WG514420LFB	LFB	02/16/21 18:10	II210208-3	.50075		.502	mg/L	100	85	115			
L64129-05AS	AS	02/16/21 18:30	II210208-3	2.50375	.312	2.538	mg/L	89	85	115			
L64129-05ASD	ASD	02/16/21 18:33	II210208-3	2.50375	.312	2.549	mg/L	89	85	115	0	20	

Rio Algom Mining Company

ACZ Project ID: **L64129**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L64129-01	WG514877	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).
		Fluoride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
	WG514263	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.
L64129-02	WG514877	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).
	WG514401	Cyanide, Total	D7511-09	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
	WG514877	Fluoride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
L64129-03	WG514401	Cyanide, Total	D7511-09	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
	WG514877	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).
	WG515065	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).
	WG514263	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.
L64129-04	WG514510	Beryllium, dissolved	M200.8 ICP-MS	IA	Internal standard recovery exceeded the acceptance limits. Concentration of associated target analyte(s) in the sample is < MDL.
	WG514877	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).
	WG514263	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.
L64129-05	WG514401	Cyanide, Total	D7511-09	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
	WG514877	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).
	WG514263	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.
L64129-06	WG515075	Chloride	SM4500CI-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).
	WG514401	Cyanide, Total	D7511-09	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
	WG514263	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.
	WG515070	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: 4502696253

Sample ID: 30-07 KD

Locator:

ACZ Sample ID: **L64129-01**

Date Sampled: 02/05/21 12:03

Date Received: 02/06/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	03/03/21 14:47		10	2.7	7.1	pCi/L	*	tjr

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	03/03/21 12:29		-0.328	1.8	3.7	pCi/L	*	tjr

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	02/17/21 0:25		1.5	0.2	0.15	pCi/L		djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	02/24/21 17:22		4.9	1.1	2.2	pCi/L	*	cer

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	02/23/21 13:03		1.74	2.1	3.5	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4502696253

Sample ID: 36-08 TRA

Locator:

ACZ Sample ID: **L64129-02**

Date Sampled: 02/04/21 13:01

Date Received: 02/06/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	03/03/21 14:47		63	15	37	pCi/L	*	tjr

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	03/03/21 12:29		-1.44	3	6	pCi/L	*	tjr

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	02/17/21 0:27		2.5	1.2	1.7	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	02/24/21 17:22		6.8	1.8	3.5	pCi/L	*	cer

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	02/23/21 13:03		0.695	2.9	5.5	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4502696253

Sample ID: 30-06 TRB

Locator:

ACZ Sample ID: **L64129-03**

Date Sampled: 02/04/21 15:55

Date Received: 02/06/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	03/16/21 12:50		-27	8.4	35	pCi/L	*	tjr

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	03/08/21 17:03		0.416	1.8	3.5	pCi/L	*	tjr

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	02/17/21 0:28		1.8	0.28	0.29	pCi/L		djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	02/24/21 17:22		6.3	1	1.8	pCi/L	*	cer

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	02/23/21 13:03		-0.466	1.1	2.3	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4502696253

Sample ID: 30-05 TRA

Locator:

ACZ Sample ID: **L64129-04**

Date Sampled: 02/05/21 10:37

Date Received: 02/06/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	03/03/21 14:47		5.8	1.4	3.5	pCi/L	*	tjr

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	03/03/21 12:29		-0.372	2.3	4.7	pCi/L	*	tjr

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	02/24/21 0:02		0.59	0.12	0.12	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	02/24/21 17:22		2.2	0.87	1.9	pCi/L	*	cer

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	02/23/21 13:03		1.03	3.5	6.8	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4502696253

Sample ID: 03-60 TRB

Locator:

ACZ Sample ID: **L64129-05**

Date Sampled: 02/04/21 14:55

Date Received: 02/06/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	03/03/21 16:39		10	1.8	4.3	pCi/L	*	tjr

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	03/03/21 12:30		1.95	3.8	6.9	pCi/L	*	tjr

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	02/24/21 0:04		1.1	0.3	0.38	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	02/24/21 17:22		4.9	0.84	1.6	pCi/L	*	cer

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	02/23/21 13:03		-3.06	6.4	14	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4502696253

Sample ID: 36-06 KD

Locator:

ACZ Sample ID: **L64129-06**

Date Sampled: 02/04/21 11:03

Date Received: 02/06/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	03/03/21 16:39		52	14	35	pCi/L	*	tjr

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	03/03/21 12:30		0.31	2.8	5.4	pCi/L	*	tjr

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	02/24/21 0:05		12	0.6	0.17	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	02/24/21 17:22		11	1.2	1.9	pCi/L	*	cer

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	02/23/21 13:03		25.1	9.9	11	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>

Rio Algom Mining Company

ACZ Project ID: **L64129**

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
WG514049																
WG514049LCSW	LCSW	03/03/21	PCN59629	95.3				95	2.9	3.2	100	55	121			
WG514049PBW	PBW	03/03/21						7.3	1.5	3.7			7.4			
L63948-02DUP	DUP-RER	03/03/21			56	38	110	100	53	150				0.67	2	N1
L63948-02DUP	DUP-RPD	03/03/21			56	38	110	100	53	150				56	20	RG
L64129-04DUP	DUP-RER	03/03/21			5.8	1.4	3.5	8.9	2	5.2				1.27	2	
L64129-04DUP	DUP-RPD	03/03/21			5.8	1.4	3.5	8.9	2	5.2				42	20	RG
L64129-05MS	MS	03/03/21	PCN59629	95.3	10	1.8	4.3	91	3	3.5	85	55	121			
WG515528																
WG515528LCSW	LCSW	03/16/21	PCN59629	95.2				84	2.8	6.5	88	55	121			
WG515528PBW	PBW	03/16/21						-8.1	1.6	6.9			13.8			
L64422-01MS	MS	03/16/21	PCN59629	237.99	-8.9	3.9	16	220	7.3	16	96	55	121			
L64129-03DUP	DUP-RER	03/16/21			-27	8.4	35	-21	7.5	31				0.53	2	
L64129-03DUP	DUP-RPD	03/16/21			-27	8.4	35	-21	7.5	31				25	20	RG
L64571-04DUP	DUP-RPD	03/16/21			1500	110	320	1400	100	310				7	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
WG515132																
WG515132PBW	PBW	03/03/21						-1.86	2.7	5.6			11.2			
WG515132LCSW	LCSW	03/03/21	PCN59629	500				454	75	4.2	91	51	128			
L64214-01DUP	DUP-RER	03/03/21			0.825	1.6	2.9	-2.27	3.6	7.5				0.79	2	
L64214-01DUP	DUP-RPD	03/03/21			0.825	1.6	2.9	-2.27	3.6	7.5				428	20	RG
L64214-01MS	MS	03/03/21	PCN59629	500	0.825	1.6	2.9	460	80	5.5	92	51	128			

Rio Algom Mining Company

ACZ Project ID: **L64129**

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 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
WG514126																
WG514126PBW	PBW	02/17/21						-.03	0.08	0.1			0.2			
WG514126LCSW	LCSW	02/17/21	PCN61539	20				16	0.57	0.11	80	43	148			
L64002-01DUP	DUP-RPD	02/17/21			0.18	0.13	0.15	.14	0.11	0.11				25	20	RG
L64002-01DUP	DUP-RER	02/17/21			0.18	0.13	0.15	.14	0.11	0.11				0.23	2	
L64127-02DUP	DUP-RPD	02/17/21			4.9	0.36	0.39	5.5	0.43	0.1				12	20	
L64002-02MS	MS	02/17/21	PCN61539	20	-0.02	0.14	0.26	17	0.55	0.06	85	43	148			
WG514490																
WG514490PBW	PBW	02/24/21						.12	0.14	0.14			0.28			
WG514490LCSW	LCSW	02/24/21	PCN61539	20				21	0.69	0.16	105	43	148			
L64159-03DUP	DUP-RPD	02/24/21			0.1	0.1	0.07	.13	0.08	0.15				26	20	RG
L64159-03DUP	DUP-RER	02/24/21			0.1	0.1	0.07	.13	0.08	0.15				0.23	2	
L64183-01DUP	DUP-RER	02/24/21			0.48	0.16	0.13	.6	0.11	0.07				0.62	2	
L64183-01DUP	DUP-RPD	02/24/21			0.48	0.16	0.13	.6	0.11	0.07				22	20	RG
L64174-01MS	MS	02/24/21	PCN61539	20	0.22	0.14	0.13	17	0.53	0.12	84	43	148			

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
WG514569																
L64127-02DUP	DUP-RPD	02/24/21			4.4	1.3	2.5	4.4	1.8	3.6				0	20	
WG514569LCSW	LCSW	02/24/21	PCN61541	9.18				8.9	1.2	0.85	97	47	123			
WG514569PBW	PBW	02/24/21						-.25	0.35	0.38			0.76			
L64203-01DUP	DUP-RPD	02/24/21			-0.15	0.62	1.6	.17	0.78	1.8				3200	20	RG
L64203-01DUP	DUP-RER	02/24/21			-0.15	0.62	1.6	.17	0.78	1.8				0.32	2	
L64178-03MS	MS	02/24/21	PCN61541	9.18	-1	0.96	2.3	16	2	3.4	185	47	123			M1

Rio Algom Mining Company

ACZ Project ID: **L64129**

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.

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
WG514700																
WG514700PBW	PBW	02/23/21						-.0413	0.71	1.4			2.8			N1
WG514700LCSW	LCSW	02/23/21	PCN58726	200				193	34	1.7	97	91	126			N1
L64085-01DUP	DUP-RER	02/23/21			1.15	3	5.6	-.151	3.8	7.6				0.27	2	N1
L64085-01DUP	DUP-RPD	02/23/21			1.15	3	5.6	-.151	3.8	7.6				260	20	RG
L64214-01DUP	DUP-RPD	02/24/21			-2.65	2.6	5.7	.758	1.5	2.7				360	20	RG
L64214-01DUP	DUP-RER	02/24/21			-2.65	2.6	5.7	.758	1.5	2.7				1.14	2	N1
L64214-02MS	MS	02/24/21	PCN58726	400	1.48	2.1	3.5	359	56	2.3	89	91	126			M2

Rio Algom Mining Company

ACZ Project ID: **L64129**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L64129-01	WG514049	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.
	WG515132	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.
	WG514569	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
	WG514700	Thorium 230, dissolved	ESM 4506	DJ	Sample dilution required due to insufficient sample.
			ESM 4506	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
	WG514049	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.
	WG515132	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.
	WG514126	Radium 226, dissolved	M903.1	D1	Sample required dilution due to matrix.
L64129-02	WG514569	Radium 228, dissolved	M9320	D1	Sample required dilution due to matrix.
			M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
	WG514700	Thorium 230, dissolved	ESM 4506	D1	Sample required dilution due to matrix.
			ESM 4506	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
	WG515528	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.
	WG515132	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.
	WG514569	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
	WG514700	Thorium 230, dissolved	ESM 4506	DJ	Sample dilution required due to insufficient sample.
			ESM 4506	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
L64129-03	WG515528	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.
	WG515132	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.
	WG514569	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
	WG514700	Thorium 230, dissolved	ESM 4506	DJ	Sample dilution required due to insufficient sample.
			ESM 4506	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
	WG515528	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.
	WG515132	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.
	WG514569	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

Rio Algom Mining Company

ACZ Project ID: **L64129**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L64129-04	WG514049	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.
	WG515132	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.
	WG514490	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.
	WG514569	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
	WG514700	Thorium 230, dissolved	ESM 4506	DJ	Sample dilution required due to insufficient sample.
			ESM 4506	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
L64129-05	WG514049	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.
	WG515132	Polonium 210, dissolved	HASL Po-01-RC	DJ	Sample dilution required due to insufficient sample.
			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.
	WG514490	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.
	WG514569	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
	WG514700	Thorium 230, dissolved	ESM 4506	DJ	Sample dilution required due to insufficient sample.
			ESM 4506	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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 Company

ACZ Project ID: **L64129**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L64129-06	WG514049	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.
	WG515132	Polonium 210, dissolved	HASL Po-01-RC	DJ	Sample dilution required due to insufficient sample.
			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.
	WG514490	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.
	WG514569	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
	WG514700	Thorium 230, dissolved	ESM 4506	DJ	Sample dilution required due to insufficient sample.
			ESM 4506	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			ESM 4506	N1A	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 Company

ACZ Project ID: **L64129**

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
4502696253

ACZ Project ID: L64129
Date Received: 02/06/2021 10:49
Received By:
Date Printed: 2/8/2021

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?
-----	-----	-----	-----	-----
4904	5	<=6.0	13	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
4502696253

ACZ Project ID: L64129

Date Received: 02/06/2021 10:49

Received By:

Date Printed: 2/8/2021

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).

10f-2



Laboratories, Inc. L64129

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: 1-505-287-8851

Copy of Report to:

Name: See Attached Note Sheet
Company: INTERA, INC.

E-mail: See Attached Note Sheet
Telephone: 505-246-1600 x1207

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: 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 ☒ NO ☐

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: J. Carroll 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 #: N/A
PO#: 4502696253
Reporting state for compliance testing: NM
Check box if samples include NRC licensed material? ☒

SAMPLE IDENTIFICATION		DATE:TIME	Matrix	# of Containers												
30-07 KD	2/5/21	1203	GW	7	<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"/>
36-08 TRA	2/4/21	1301	GW	7	<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"/>
30-06 TRB	2/4/21	1555	GW	7	<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"/>
30-05 TRA	2/5/21	1037	GW	7	<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"/>
03-60 TRB	2/4/21	1455	GW	7	<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"/>

REMARKS
RAML COC#: 21-11. Note different COC's may have different PO's. Shipment of 2 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
J. Carroll	[Signature]	2/4/21 1630	ERM		2/4/21 10:49

FRMAD050.06.14.14

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

64129 Chain of Custody

March 26, 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: Clark Short, Angela Persico, Michaela Gorospe

Project ID: 4510319940

ACZ Project ID: L64422

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 24, 2021. This project has been assigned to ACZ's project number, L64422. 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 L64422. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

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

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

All samples and sub-samples associated with this project will be disposed of after April 25, 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: 19-77 TRB

ACZ Sample ID: **L64422-01**

Date Sampled: 02/18/21 10:08

Date Received: 02/24/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	2	128			mg/L	0.2	1	03/08/21 17:40	jlw
Iron, dissolved	M200.7 ICP	2	<0.12	U		mg/L	0.12	0.3	03/05/21 19:55	jlw
Magnesium, dissolved	M200.7 ICP	2	64.4			mg/L	0.4	2	03/08/21 17:40	jlw
Molybdenum, dissolved	M200.8 ICP-MS	2	0.00394			mg/L	0.0004	0.001	03/03/21 13:19	enb
Nickel, dissolved	M200.8 ICP-MS	2	0.00224			mg/L	0.0008	0.002	03/03/21 13:19	enb
Potassium, dissolved	M200.7 ICP	2	7.62			mg/L	0.4	2	03/05/21 19:55	jlw
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	03/08/21 14:25	llr
Sodium, dissolved	M200.7 ICP	2	927			mg/L	0.4	2	03/08/21 17:40	jlw
Uranium, dissolved	M200.8 ICP-MS	2	0.00631			mg/L	0.0002	0.001	03/03/21 13:19	enb

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	453			mg/L	2	20	02/27/21 0:00	eep
Carbonate as CaCO3		1	<2	U		mg/L	2	20	02/27/21 0:00	eep
Hydroxide as CaCO3		1	<2	U		mg/L	2	20	02/27/21 0:00	eep
Total Alkalinity		1	453			mg/L	2	20	02/27/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			1.9			%			03/26/21 0:00	calc
Sum of Anions			51			meq/L			03/26/21 0:00	calc
Sum of Cations			53			meq/L			03/26/21 0:00	calc
Chloride	SM4500Cl-E	1	15.8		*	mg/L	0.5	2	03/10/21 13:28	bjp/wtc
Conductivity @25C	SM2510B	1	4410			umhos/cm	1	10	02/27/21 22:20	eep
Cyanide, Total	D7511-09	1	<0.003	U		mg/L	0.003	0.01	03/04/21 14:12	wtc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.394		*	mg/L	0.02	0.1	03/12/21 0:22	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	3500			mg/L	20	40	02/24/21 15:20	scd
Sulfate	D516-02/-07/-11 - Turbidimetric	50	1990			mg/L	50	250	03/17/21 19:24	syw
TDS (calculated)	Calculation		3410			mg/L			03/26/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.03						03/26/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 33-01 TRA

ACZ Sample ID: **L64422-02**

Date Sampled: 02/18/21 11:55

Date Received: 02/24/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	2	174			mg/L	0.2	1	03/08/21 17:44	jlw
Iron, dissolved	M200.7 ICP	2	<0.12	U		mg/L	0.12	0.3	03/05/21 19:58	jlw
Magnesium, dissolved	M200.7 ICP	2	55.9			mg/L	0.4	2	03/08/21 17:44	jlw
Molybdenum, dissolved	M200.8 ICP-MS	2	0.00206			mg/L	0.0004	0.001	03/03/21 13:22	enb
Nickel, dissolved	M200.8 ICP-MS	2	0.00085	B		mg/L	0.0008	0.002	03/03/21 13:22	enb
Potassium, dissolved	M200.7 ICP	2	5.78			mg/L	0.4	2	03/05/21 19:58	jlw
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	03/08/21 14:27	llr
Sodium, dissolved	M200.7 ICP	2	598			mg/L	0.4	2	03/08/21 17:44	jlw
Uranium, dissolved	M200.8 ICP-MS	2	0.00063	B		mg/L	0.0002	0.001	03/03/21 13:22	enb

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	77.9			mg/L	2	20	02/27/21 0:00	eep
Carbonate as CaCO ₃		1	<2	U		mg/L	2	20	02/27/21 0:00	eep
Hydroxide as CaCO ₃		1	<2	U		mg/L	2	20	02/27/21 0:00	eep
Total Alkalinity		1	77.9			mg/L	2	20	02/27/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			3.9			%			03/26/21 0:00	calc
Sum of Anions			37			meq/L			03/26/21 0:00	calc
Sum of Cations			40			meq/L			03/26/21 0:00	calc
Chloride	SM4500Cl-E	1	32.4		*	mg/L	0.5	2	03/10/21 13:28	bjp/wtc
Conductivity @25C	SM2510B	1	3350			umhos/cm	1	10	02/27/21 22:29	eep
Cyanide, Total	D7511-09	1	0.005	B		mg/L	0.003	0.01	03/04/21 14:14	wtc
Nitrate/Nitrite as N	M353.2 - H ₂ SO ₄ preserved	1	<0.02	U	*	mg/L	0.02	0.1	03/12/21 0:25	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	2680			mg/L	20	40	02/24/21 15:23	scd
Sulfate	D516-02/-07/-11 - Turbidimetric	50	1640			mg/L	50	250	03/17/21 19:26	syw
TDS (calculated)	Calculation		2550			mg/L			03/26/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.05						03/26/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-45 KD-R

ACZ Sample ID: **L64422-03**

Date Sampled: 02/18/21 12:52

Date Received: 02/24/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, dissolved	M200.8 ICP-MS	1	0.00052	B		mg/L	0.0004	0.002	03/03/21 13:25	enb
Arsenic, dissolved	M200.8 ICP-MS	1	0.00040	B		mg/L	0.0002	0.001	03/03/21 13:25	enb
Barium, dissolved	M200.7 ICP	1	0.0329	B		mg/L	0.007	0.035	03/05/21 20:01	jlw
Beryllium, dissolved	M200.8 ICP-MS	1	<0.00008	U		mg/L	0.00008	0.00025	03/03/21 13:25	enb
Cadmium, dissolved	M200.8 ICP-MS	1	<0.00005	U		mg/L	0.00005	0.00025	03/03/21 13:25	enb
Calcium, dissolved	M200.7 ICP	1	216			mg/L	0.1	0.5	03/08/21 17:47	jlw
Iron, dissolved	M200.7 ICP	1	<0.06	U		mg/L	0.06	0.15	03/05/21 20:01	jlw
Lead, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	03/03/21 13:25	enb
Magnesium, dissolved	M200.7 ICP	1	51.5			mg/L	0.2	1	03/08/21 17:47	jlw
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0885			mg/L	0.0002	0.0005	03/03/21 13:25	enb
Nickel, dissolved	M200.8 ICP-MS	1	0.00267			mg/L	0.0004	0.001	03/03/21 13:25	enb
Potassium, dissolved	M200.7 ICP	1	6.84			mg/L	0.2	1	03/05/21 20:01	jlw
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	03/08/21 14:34	llr
Sodium, dissolved	M200.7 ICP	1	159			mg/L	0.2	1	03/08/21 17:47	jlw
Uranium, dissolved	M200.8 ICP-MS	1	0.0367			mg/L	0.0001	0.0005	03/03/21 13:25	enb

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	365			mg/L	2	20	02/27/21 0:00	eep
Carbonate as CaCO3		1	<2	U		mg/L	2	20	02/27/21 0:00	eep
Hydroxide as CaCO3		1	<2	U		mg/L	2	20	02/27/21 0:00	eep
Total Alkalinity		1	365			mg/L	2	20	02/27/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.0			%			03/26/21 0:00	calc
Sum of Anions			22			meq/L			03/26/21 0:00	calc
Sum of Cations			22			meq/L			03/26/21 0:00	calc
Chloride	SM4500Cl-E	1	78.5		*	mg/L	0.5	2	03/10/21 13:28	bjp/wtc
Conductivity @25C	SM2510B	1	1860			umhos/cm	1	10	02/27/21 22:41	eep
Cyanide, Total	D7511-09	1	<0.003	U		mg/L	0.003	0.01	03/03/21 17:16	wtc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.074	B	*	mg/L	0.02	0.1	03/12/21 0:27	pjb
Residue, Filterable (TDS) @180C	SM2540C	1	1400			mg/L	20	40	02/24/21 15:26	scd
Sulfate	D516-02/-07/-11 - Turbidimetric	20	602			mg/L	20	100	03/17/21 19:26	syw
TDS (calculated)	Calculation		1340			mg/L			03/26/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.04						03/26/21 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: **L64422**

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
WG515069													
WG515069PBW1	PBW	02/27/21 15:11				3.9	mg/L		-20	20			
WG515069LCSW3	LCSW	02/27/21 15:29	WC210217-1	820.0001		783.6	mg/L	96	90	110			
WG515069LCSW6	LCSW	02/27/21 18:12	WC210217-1	820.0001		777.5	mg/L	95	90	110			
WG515069PBW2	PBW	02/27/21 18:20				3.1	mg/L		-20	20			
WG515069LCSW9	LCSW	02/27/21 21:44	WC210217-1	820.0001		798.7	mg/L	97	90	110			
WG515069PBW3	PBW	02/27/21 21:52				2.8	mg/L		-20	20			
L64424-03DUP	DUP	02/27/21 23:37			342	342.7	mg/L				0	20	
WG515069LCSW12	LCSW	02/28/21 1:56	WC210217-1	820.0001		787.5	mg/L	96	90	110			
WG515069PBW4	PBW	02/28/21 2:04				3.2	mg/L		-20	20			
WG515069LCSW15	LCSW	02/28/21 5:52	WC210217-1	820.0001		812.4	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
WG515228													
WG515228ICV	ICV	03/03/21 12:51	MS210115-2	.0201		.01945	mg/L	97	90	110			
WG515228ICB	ICB	03/03/21 12:54				U	mg/L		-0.00088	0.00088			
WG515228LFB	LFB	03/03/21 12:57	MS201228-2	.01		.00984	mg/L	98	85	115			
L64408-02AS	AS	03/03/21 13:10	MS201228-2	.02	U	.0193	mg/L	97	70	130			
L64408-02ASD	ASD	03/03/21 13:13	MS201228-2	.02	U	.01913	mg/L	96	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
WG515228													
WG515228ICV	ICV	03/03/21 12:51	MS210115-2	.05		.04864	mg/L	97	90	110			
WG515228ICB	ICB	03/03/21 12:54				U	mg/L		-0.00044	0.00044			
WG515228LFB	LFB	03/03/21 12:57	MS201228-2	.05005		.04823	mg/L	96	85	115			
L64408-02AS	AS	03/03/21 13:10	MS201228-2	.1001	.00591	.11034	mg/L	104	70	130			
L64408-02ASD	ASD	03/03/21 13:13	MS201228-2	.1001	.00591	.10948	mg/L	103	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
WG515369													
WG515369ICV	ICV	03/05/21 19:26	II210219-1	2		1.9098	mg/L	95	95	105			
WG515369ICB	ICB	03/05/21 19:32				U	mg/L		-0.021	0.021			
WG515369LFB	LFB	03/05/21 19:45	II210301-2	.5		.4875	mg/L	98	85	115			
L64422-03AS	AS	03/05/21 20:05	II210301-2	.5	.0329	.5337	mg/L	100	85	115			
L64422-03ASD	ASD	03/05/21 20:08	II210301-2	.5	.0329	.5235	mg/L	98	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
WG515228													
WG515228ICV	ICV	03/03/21 12:51	MS210115-2	.05		.04713	mg/L	94	90	110			
WG515228ICB	ICB	03/03/21 12:54				U	mg/L		-0.000176	0.000176			
WG515228LFB	LFB	03/03/21 12:57	MS201228-2	.05005		.0478	mg/L	96	85	115			
L64408-02AS	AS	03/03/21 13:10	MS201228-2	.1001	U	.08466	mg/L	85	70	130			
L64408-02ASD	ASD	03/03/21 13:13	MS201228-2	.1001	U	.0853	mg/L	85	70	130	1	20	

Rio Algom Mining Company

ACZ Project ID: **L64422**

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
WG515228													
WG515228ICV	ICV	03/03/21 12:51	MS210115-2	.05		.05096	mg/L	102	90	110			
WG515228ICB	ICB	03/03/21 12:54				U	mg/L		-0.00011	0.00011			
WG515228LFB	LFB	03/03/21 12:57	MS201228-2	.05005		.05154	mg/L	103	85	115			
L64408-02AS	AS	03/03/21 13:10	MS201228-2	.1001	U	.09524	mg/L	95	70	130			
L64408-02ASD	ASD	03/03/21 13:13	MS201228-2	.1001	U	.0961	mg/L	96	70	130	1	20	

Calcium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG515443													
WG515443ICV	ICV	03/08/21 17:12	II210219-1	100		97.93	mg/L	98	95	105			
WG515443ICB	ICB	03/08/21 17:18				U	mg/L		-0.3	0.3			
WG515443LFB	LFB	03/08/21 17:31	II210301-2	68.00934		69.41	mg/L	102	85	115			
L64422-03AS	AS	03/08/21 17:50	II210301-2	68.00934	216	280	mg/L	94	85	115			
L64422-03ASD	ASD	03/08/21 17:53	II210301-2	68.00934	216	277.2	mg/L	90	85	115	1	20	

Chloride

SM4500CI-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG515599													
WG515599ICB	ICB	03/10/21 13:05				U	mg/L		-1.5	1.5			
WG515599ICV	ICV	03/10/21 13:05	WI200506-2	55.055		59.36	mg/L	108	90	110			
WG515599LFB1	LFB	03/10/21 13:28	WI200327-3	30.03		31.11	mg/L	104	90	110			
L64408-01AS	AS	03/10/21 13:28	WI200327-3	30.03	62.7	86.03	mg/L	78	90	110			M2
WG515599LFB2	LFB	03/10/21 13:32	WI200327-3	30.03		31.3	mg/L	104	90	110			
L64389-01DUP	DUP	03/10/21 14:44			253	255.52	mg/L				1	20	

Conductivity @25C

SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG515069													
WG515069LCSW2	LCSW	02/27/21 15:17	PCN63121	1410		1441	umhos/cm	102	90	110			
WG515069LCSW5	LCSW	02/27/21 18:00	PCN63121	1410		1448	umhos/cm	103	90	110			
WG515069LCSW8	LCSW	02/27/21 21:31	PCN63121	1410		1436	umhos/cm	102	90	110			
L64424-03DUP	DUP	02/27/21 23:37			2870	2870	umhos/cm				0	20	
WG515069LCSW11	LCSW	02/28/21 1:45	PCN63121	1410		1430	umhos/cm	101	90	110			
WG515069LCSW14	LCSW	02/28/21 5:39	PCN63121	1410		1424	umhos/cm	101	90	110			

Cyanide, Total

D7511-09

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG515208													
WG515208ICV	ICV	03/03/21 16:22	WI210302-4	.3003		.282	mg/L	94	90	110			
WG515208ICB	ICB	03/03/21 16:24				U	mg/L		-0.003	0.003			
L64474-01AS	AS	03/03/21 17:20	WI210302-9	.1	.004	.0992	mg/L	95	84	116			
L64474-01ASD	ASD	03/03/21 17:22	WI210302-9	.1	.004	.094	mg/L	90	84	116	5	20	
WG515208ICV1	ICV	03/04/21 13:28	WI210302-4	.3003		.2894	mg/L	96	90	110			
WG515208ICB1	ICB	03/04/21 13:30				U	mg/L		-0.003	0.003			
WG515208LFB	LFB	03/04/21 13:36	WI210302-9	.1		.1082	mg/L	108	84	116			

Rio Algom Mining Company

ACZ Project ID: **L64422**

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
WG515369													
WG515369ICV	ICV	03/05/21 19:26	II210219-1	2		1.891	mg/L	95	95	105			
WG515369ICB	ICB	03/05/21 19:32				U	mg/L		-0.18	0.18			
WG515369LFB	LFB	03/05/21 19:45	II210301-2	1.0018		.986	mg/L	98	85	115			
L64422-03AS	AS	03/05/21 20:05	II210301-2	1.0018	U	.988	mg/L	99	85	115			
L64422-03ASD	ASD	03/05/21 20:08	II210301-2	1.0018	U	.966	mg/L	96	85	115	2	20	

Lead, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG515228													
WG515228ICV	ICV	03/03/21 12:51	MS210115-2	.05		.05118	mg/L	102	90	110			
WG515228ICB	ICB	03/03/21 12:54				U	mg/L		-0.00022	0.00022			
WG515228LFB	LFB	03/03/21 12:57	MS201228-2	.05005		.05234	mg/L	105	85	115			
L64408-02AS	AS	03/03/21 13:10	MS201228-2	.1001	.00022	.10364	mg/L	103	70	130			
L64408-02ASD	ASD	03/03/21 13:13	MS201228-2	.1001	.00022	.10418	mg/L	104	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
WG515443													
WG515443ICV	ICV	03/08/21 17:12	II210219-1	100		97.08	mg/L	97	95	105			
WG515443ICB	ICB	03/08/21 17:18				U	mg/L		-0.6	0.6			
WG515443LFB	LFB	03/08/21 17:31	II210301-2	50.00226		49.85	mg/L	100	85	115			
L64422-03AS	AS	03/08/21 17:50	II210301-2	50.00226	51.5	101.8	mg/L	101	85	115			
L64422-03ASD	ASD	03/08/21 17:53	II210301-2	50.00226	51.5	100.8	mg/L	99	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
WG515228													
WG515228ICV	ICV	03/03/21 12:51	MS210115-2	.01992		.02005	mg/L	101	90	110			
WG515228ICB	ICB	03/03/21 12:54				U	mg/L		-0.00044	0.00044			
WG515228LFB	LFB	03/03/21 12:57	MS201228-2	.0501		.05185	mg/L	103	85	115			
L64408-02AS	AS	03/03/21 13:10	MS201228-2	.1002	.0408	.13808	mg/L	97	70	130			
L64408-02ASD	ASD	03/03/21 13:13	MS201228-2	.1002	.0408	.13816	mg/L	97	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
WG515228													
WG515228ICV	ICV	03/03/21 12:51	MS210115-2	.05		.05154	mg/L	103	90	110			
WG515228ICB	ICB	03/03/21 12:54				U	mg/L		-0.00088	0.00088			
WG515228LFB	LFB	03/03/21 12:57	MS201228-2	.05		.04997	mg/L	100	85	115			
L64408-02AS	AS	03/03/21 13:10	MS201228-2	.1	.00752	.10192	mg/L	94	70	130			
L64408-02ASD	ASD	03/03/21 13:13	MS201228-2	.1	.00752	.10196	mg/L	94	70	130	0	20	

Rio Algom Mining Company

ACZ Project ID: **L64422**

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
WG515731													
WG515731ICV	ICV	03/11/21 22:47	WI210302-17	2.416		2.302	mg/L	95	90	110			
WG515731ICB	ICB	03/11/21 22:48				U	mg/L		-0.02	0.02			
WG515733													
WG515733LFB	LFB	03/12/21 0:21	WI201001-11	2		1.971	mg/L	99	90	110			
L64422-01AS	AS	03/12/21 0:24	WI201001-11	2	.394	2.539	mg/L	107	90	110			
L64422-02DUP	DUP	03/12/21 0:26			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
WG515369													
WG515369ICV	ICV	03/05/21 19:26	II210219-1	20		19.04	mg/L	95	95	105			
WG515369ICB	ICB	03/05/21 19:32				U	mg/L		-0.6	0.6			
WG515369LFB	LFB	03/05/21 19:45	II210301-2	99.97791		97.29	mg/L	97	85	115			
L64422-03AS	AS	03/05/21 20:05	II210301-2	99.97791	6.84	107.9	mg/L	101	85	115			
L64422-03ASD	ASD	03/05/21 20:08	II210301-2	99.97791	6.84	106	mg/L	99	85	115	2	20	

Residue, Filterable (TDS) @180C

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514897													
WG514897PBW	PBW	02/24/21 15:00				U	mg/L		-20	20			
WG514897LCSW	LCSW	02/24/21 15:02	PCN62449	1000		988	mg/L	99	80	120			
L64423-01DUP	DUP	02/24/21 15:31			4310	4184	mg/L				3	10	

Selenium, dissolved

SM 3114 B, AA-Hydride

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG515156													
WG515156ICV	ICV	03/08/21 13:37	SE210107-2	.025		.0255	mg/L	102	90	110			
WG515156ICB	ICB	03/08/21 13:39				U	mg/L		-0.006	0.006			
WG515155													
WG515155LRB	LRB	03/08/21 14:07				U	mg/L		-0.006	0.006			
WG515155LFB	LFB	03/08/21 14:09	SE210302-2	.0225		.0226	mg/L	100	85	115			
L64323-06LFM	LFM	03/08/21 14:15	SE210302-2	.0225	U	.0226	mg/L	100	85	115			
L64323-06LFMD	LFMD	03/08/21 14:17	SE210302-2	.0225	U	.0226	mg/L	100	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
WG515443													
WG515443ICV	ICV	03/08/21 17:12	II210219-1	100		96.83	mg/L	97	95	105			
WG515443ICB	ICB	03/08/21 17:18				U	mg/L		-0.6	0.6			
WG515443LFB	LFB	03/08/21 17:31	II210301-2	100.0235		99.71	mg/L	100	85	115			
L64422-03AS	AS	03/08/21 17:50	II210301-2	100.0235	159	256	mg/L	97	85	115			
L64422-03ASD	ASD	03/08/21 17:53	II210301-2	100.0235	159	255.9	mg/L	97	85	115	0	20	

Rio Algom Mining Company

ACZ Project ID: **L64422**

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
WG515728													
WG515728ICB	ICB	03/17/21 17:01				U	mg/L		-3	3			
WG515728ICV	ICV	03/17/21 17:01	WI210225-3	20		20.5	mg/L	103	90	110			
WG515728LFB	LFB	03/17/21 18:58	WI210105-3	10		10	mg/L	100	90	110			
L63928-06DUP	DUP	03/17/21 18:58			11.6	11.5	mg/L				1	20	
L63928-07AS	AS	03/17/21 18:58	WI210105-3	10	11.4	22.1	mg/L	107	90	110			
L64599-04AS	AS	03/17/21 19:02	WI210105-3	10	7.6	16.7	mg/L	91	90	110			
L64599-03DUP	DUP	03/17/21 19:27			303	303.7	mg/L				0	20	

Uranium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG515228													
WG515228ICV	ICV	03/03/21 12:51	MS210115-2	.05		.04925	mg/L	99	90	110			
WG515228ICB	ICB	03/03/21 12:54				U	mg/L		-0.00022	0.00022			
WG515228LFB	LFB	03/03/21 12:57	MS201228-2	.05		.05051	mg/L	101	85	115			
L64408-02AS	AS	03/03/21 13:10	MS201228-2	.1	.00307	.10662	mg/L	104	70	130			
L64408-02ASD	ASD	03/03/21 13:13	MS201228-2	.1	.00307	.10808	mg/L	105	70	130	1	20	

Rio Algom Mining CompanyACZ Project ID: **L64422**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L64422-01	WG515599	Chloride	SM4500Cl-E	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG515733	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).
L64422-02	WG515599	Chloride	SM4500Cl-E	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG515733	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).
L64422-03	WG515599	Chloride	SM4500Cl-E	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG515733	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).

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 19-77 TRB

Locator:

ACZ Sample ID: **L64422-01**

Date Sampled: 02/18/21 10:08

Date Received: 02/24/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	03/16/21 12:50		-8.9	3.9	16	pCi/L	*	tjr

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	03/07/21 15:32		2.13	2	3	pCi/L	*	tjr

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	03/09/21 0:24		0.58	0.23	0.22	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	03/17/21 14:31		0.69	0.87	2.1	pCi/L		cer

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	03/21/21 16:22		1.02	0.75	1	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 33-01 TRA

Locator:

ACZ Sample ID: **L64422-02**

Date Sampled: 02/18/21 11:55

Date Received: 02/24/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	03/16/21 12:50		-9.7	4.2	17	pCi/L	*	tjr

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	03/07/21 15:32		-2.15	3.5	7.2	pCi/L	*	tjr

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	03/09/21 0:25		1.7	0.33	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	03/15/21 19:44		2.3	0.87	1.8	pCi/L		amk

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	03/21/21 16:21		0.517	0.55	0.89	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 32-45 KD-R

Locator:

ACZ Sample ID: **L64422-03**

Date Sampled: 02/18/21 12:52

Date Received: 02/24/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	03/16/21 14:25		-27	4	17	pCi/L	*	tjr

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	03/25/21 15:25		125	27	9.3	pCi/L	*	tjr

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	03/09/21 0:27		1.5	0.25	0.13	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	03/17/21 14:31		1.4	1.3	2.9	pCi/L	*	cer

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	03/21/21 16:21		0.74	0.55	0.69	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>

Rio Algom Mining Company

ACZ Project ID: **L64422**

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
WG515528																
L64422-01MS	MS	03/16/21	PCN59629	237.99	-8.9	3.9	16	220	7.3	16	96	55	121			
WG515528LCSW	LCSW	03/16/21	PCN59629	95.2				84	2.8	6.5	88	55	121			
L64129-03DUP	DUP-RER	03/16/21			-27	8.4	35	-21	7.5	31				0.53	2	
WG515528PBW	PBW	03/16/21						-8.1	1.6	6.9			13.8			
L64129-03DUP	DUP-RPD	03/16/21			-27	8.4	35	-21	7.5	31				25	20	RG
L64571-04DUP	DUP-RPD	03/16/21			1500	110	320	1400	100	310				7	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
WG515211																
WG515211PBW	PBW	03/07/21						-3.94	2.4	5.5			11			
WG515211LCSW	LCSW	03/07/21	PCN59629	500				426	72	4.8	85	51	128			
L64348-03MS	MS	03/07/21	PCN59629	500	0.211	1.9	3.9	509	87	4.1	102	51	128			
L64348-02DUP	DUP-RPD	03/08/21			0.762	1.6	2.9	.824	2.6	4.8				8	20	
WG516324																
WG516324PBW	PBW	03/25/21						.716	2	3.6			7.2			
WG516324LCSW	LCSW	03/25/21	PCN59628	500				550	89	2.9	110	51	128			
L64571-01MS	MS	03/25/21	PCN59628	1000	-2.13	4.9	9.7	1120	190	11	112	51	128			
L64422-03DUP	DUP-RPD	03/25/21			125	27	9.3	51.3	15	8				84	20	RM

Rio Algom Mining Company

ACZ Project ID: **L64422**

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 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
WG515268																
WG515268PBW	PBW	03/09/21						.1	0.13	0.13			0.26			
WG515268LCSW	LCSW	03/09/21	PCN62879	20				19	0.65	0.15	95	43	148			
L64398-01DUP	DUP-RPD	03/09/21			0.21	0.08	0.11	.1	0.08	0.15				71	20	RG
L64398-01DUP	DUP-RER	03/09/21			0.21	0.08	0.11	.1	0.08	0.15				0.97	2	
L64398-03DUP	DUP-RPD	03/09/21			0.04	0.11	0.21	.23	0.09	0.09				141	20	RG
L64398-03DUP	DUP-RER	03/09/21			0.04	0.11	0.21	.23	0.09	0.09				1.33	2	
L64398-04MS	MS	03/09/21	PCN62879	40	0.03	0.07	0.07	26	0.92	0.29	65	43	148			

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
WG515455																
WG515455LCSW	LCSW	03/17/21	PCN61541	9.12				5.6	1	0.8	61	47	123			
L64424-01MS	MS	03/17/21	PCN61541	9.12	2	0.8	1.7	10	1.1	1.8	88	47	123			
WG515455PBW	PBW	03/17/21						.21	0.35	0.36			0.72			
L64423-02DUP	DUP-RPD	03/17/21			0.29	0.84	2.1	.32	1.4	3.4				10	20	
L64424-05DUP	DUP-RER	03/17/21			1.2	0.91	2.3	1.5	1.1	2.6				0.21	2	
L64424-05DUP	DUP-RPD	03/17/21			1.2	0.91	2.3	1.5	1.1	2.6				22	20	RG
WG515633																
WG515633PBW	PBW	03/15/21						-.09	0.53	0.56			1.12			
L64362-01DUP	DUP-RER	03/15/21			0.43	0.89	2.2	.24	0.73	1.8				0.17	2	
WG515633LCSW	LCSW	03/15/21	PCN61541	9.13				8.9	1.2	0.86	98	47	123			
L64362-01DUP	DUP-RPD	03/15/21			0.43	0.89	2.2	.24	0.73	1.8				57	20	RG
L64398-05MS	MS	03/15/21	PCN61541	9.13	0.46	0.93	2.2	9	1.1	1.9	94	47	123			
L64423-01DUP	DUP-RPD	03/15/21			7.8	1.2	2.1	6.7	0.96	1.8				15	20	

Rio Algom Mining Company

ACZ Project ID: **L64422**

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.

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
WG515903																
WG515903LCSW	LCSW	03/21/21	PCN58726	200				217	30	0.84	109	91	126			
L64520-01DUP	DUP-RPD	03/22/21			1.01	0.59	0.77	1.44	0.7	0.86				35	20	RG
L64520-01DUP	DUP-RER	03/22/21			1.01	0.59	0.77	1.44	0.7	0.86				0.47	2	
L64522-01DUP	DUP-RER	03/22/21			0.183	0.26	0.44	.806	0.46	0.61				1.18	2	
L64522-01DUP	DUP-RPD	03/22/21			0.183	0.26	0.44	.806	0.46	0.61				126	20	RG
L64520-02MS	MS	03/22/21	PCN58726	200	0.554	0.55	0.87	208	27	0.69	104	91	126			
WG515903PBW	PBW	03/22/21						.864	0.49	0.56			1.12			

Rio Algom Mining Company

ACZ Project ID: **L64422**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L64422-01	WG515528	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.
	WG515268	Radium 226, dissolved	M903.1	D1	Sample required dilution due to matrix.
			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.
	WG515903	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.
L64422-02	WG515528	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.
	WG515268	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.
	WG515903	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.
L64422-03	WG515528	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.
	WG516324	Polonium 210, dissolved	HASL Po-01-RC	D1	Sample required dilution due to matrix.
			HASL Po-01-RC	RM	For a water matrix, the duplicate precision assessment (RPD or RER) exceeded the control limit. High sediment, turbidity, or presence of an immiscible liquid attributed to non-homogeneity of the sample.
	WG515268	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.
	WG515455	Radium 228, dissolved	M9320	DJ	Sample dilution required due to insufficient sample.
	WG515903	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 CompanyACZ Project ID: **L64422**

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: L64422
Date Received: 02/24/2021 09:28
Received By:
Date Printed: 2/25/2021

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?
6040	9.8	NA	15	Yes
4662	3.7	<=6.0	15	Yes

Was ice present in the shipment container(s)?

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

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

Rio Algom Mining Company
4510319940

ACZ Project ID: L64422

Date Received: 02/24/2021 09:28

Received By:

Date Printed: 2/25/2021

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).

March 29, 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: Clark Short, Angela Persico, Michaela Gorospe

Project ID: 4510319940

ACZ Project ID: L64757

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on March 13, 2021. This project has been assigned to ACZ's project number, L64757. 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 L64757. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

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

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

All samples and sub-samples associated with this project will be disposed of after April 28, 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: **L64757-01**

Date Sampled: 03/11/21 13:09

Date Received: 03/13/21

Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Antimony, dissolved	M200.8 ICP-MS	1	0.00063	B	*	mg/L	0.0004	0.002	03/24/21 15:36	mfm
Arsenic, dissolved	M200.8 ICP-MS	1	0.00040	B		mg/L	0.0002	0.001	03/24/21 15:36	mfm
Barium, dissolved	M200.7 ICP	1	0.0290	B		mg/L	0.007	0.035	03/24/21 15:16	kja
Beryllium, dissolved	M200.8 ICP-MS	1	<0.00008	U		mg/L	0.00008	0.00025	03/24/21 15:36	mfm
Cadmium, dissolved	M200.8 ICP-MS	1	0.000061	B		mg/L	0.00005	0.00025	03/24/21 15:36	mfm
Calcium, dissolved	M200.7 ICP	1	198		*	mg/L	0.1	0.5	03/24/21 15:16	kja
Iron, dissolved	M200.7 ICP	1	<0.06	U		mg/L	0.06	0.15	03/24/21 15:16	kja
Lead, dissolved	M200.8 ICP-MS	1	<0.0001	U		mg/L	0.0001	0.0005	03/24/21 15:36	mfm
Magnesium, dissolved	M200.7 ICP	1	47.8		*	mg/L	0.2	1	03/24/21 15:16	kja
Molybdenum, dissolved	M200.8 ICP-MS	1	0.112			mg/L	0.0002	0.0005	03/25/21 18:18	bsu
Nickel, dissolved	M200.8 ICP-MS	1	0.00120			mg/L	0.0004	0.001	03/24/21 15:36	mfm
Potassium, dissolved	M200.7 ICP	1	6.42			mg/L	0.2	1	03/24/21 15:16	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	03/18/21 13:51	llr
Sodium, dissolved	M200.7 ICP	1	149		*	mg/L	0.2	1	03/24/21 15:16	kja
Uranium, dissolved	M200.8 ICP-MS	1	0.0448			mg/L	0.0001	0.0005	03/24/21 15:36	mfm

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-06 KD

ACZ Sample ID: **L64757-02**

Date Sampled: 03/11/21 14:18

Date Received: 03/13/21

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	03/24/21 15:37	mfm
Arsenic, dissolved	M200.8 ICP-MS	1	0.00895			mg/L	0.0002	0.001	03/24/21 15:37	mfm
Barium, dissolved	M200.7 ICP	5	<0.035	U		mg/L	0.035	0.175	03/25/21 16:01	jlw
Beryllium, dissolved	M200.8 ICP-MS	1	0.0107			mg/L	0.00008	0.00025	03/24/21 15:37	mfm
Cadmium, dissolved	M200.8 ICP-MS	2	0.00761			mg/L	0.0001	0.0005	03/25/21 18:20	bsu
Calcium, dissolved	M200.7 ICP	5	476			mg/L	0.5	2.5	03/25/21 16:01	jlw
Iron, dissolved	M200.7 ICP	5	147		*	mg/L	0.3	0.75	03/26/21 16:30	kja
Lead, dissolved	M200.8 ICP-MS	2	0.00023	B	*	mg/L	0.0002	0.001	03/25/21 18:20	bsu
Magnesium, dissolved	M200.7 ICP	5	357			mg/L	1	5	03/25/21 16:01	jlw
Molybdenum, dissolved	M200.8 ICP-MS	2	<0.0004	U	*	mg/L	0.0004	0.001	03/25/21 18:20	bsu
Nickel, dissolved	M200.8 ICP-MS	1	0.110			mg/L	0.0004	0.001	03/24/21 15:37	mfm
Potassium, dissolved	M200.7 ICP	5	10.7			mg/L	1	5	03/25/21 16:01	jlw
Selenium, dissolved	SM 3114 B, AA-Hydride	1	0.0032	B	*	mg/L	0.002	0.005	03/26/21 13:05	kja
Sodium, dissolved	M200.7 ICP	5	584			mg/L	1	5	03/26/21 16:30	kja
Uranium, dissolved	M200.8 ICP-MS	2	0.585			mg/L	0.0002	0.001	03/25/21 18:20	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>

Rio Algom Mining Company

ACZ Project ID: **L64757**

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

Antimony, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG516393													
WG516393ICV	ICV	03/24/21 15:28	MS210115-2	.0201		.02128	mg/L	106	90	110			
WG516393ICB	ICB	03/24/21 15:30				U	mg/L		-0.00088	0.00088			
WG516393LFB	LFB	03/24/21 15:32	MS210312-6	.01		.00856	mg/L	86	85	115			
L64758-01AS	AS	03/24/21 15:41	MS210312-6	.01	U	.00627	mg/L	63	70	130			M2
L64758-01ASD	ASD	03/24/21 15:43	MS210312-6	.01	U	.00652	mg/L	65	70	130	4	20	M2

Arsenic, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG516393													
WG516393ICV	ICV	03/24/21 15:28	MS210115-2	.05		.04888	mg/L	98	90	110			
WG516393ICB	ICB	03/24/21 15:30				U	mg/L		-0.00044	0.00044			
WG516393LFB	LFB	03/24/21 15:32	MS210312-6	.05005		.04857	mg/L	97	85	115			
L64758-01AS	AS	03/24/21 15:41	MS210312-6	.05005	.00045	.05095	mg/L	101	70	130			
L64758-01ASD	ASD	03/24/21 15:43	MS210312-6	.05005	.00045	.049	mg/L	97	70	130	4	20	

Barium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG516365													
WG516365ICV	ICV	03/24/21 14:40	II210317-1	2		1.9512	mg/L	98	95	105			
WG516365ICB	ICB	03/24/21 14:47				U	mg/L		-0.021	0.021			
WG516365LFB	LFB	03/24/21 15:00	II210319-2	.5		.4753	mg/L	95	85	115			
L64767-01AS	AS	03/24/21 15:26	II210319-2	.5	.028	.4932	mg/L	93	85	115			
L64767-01ASD	ASD	03/24/21 15:29	II210319-2	.5	.028	.4901	mg/L	92	85	115	1	20	
WG516420													
WG516420ICV	ICV	03/25/21 14:57	II210317-1	2		1.9405	mg/L	97	95	105			
WG516420ICB	ICB	03/25/21 15:03				U	mg/L		-0.021	0.021			
WG516420LFB	LFB	03/25/21 15:15	II210319-2	.5		.4783	mg/L	96	85	115			
L64856-01AS	AS	03/25/21 16:33	II210319-2	2.5	U	2.4105	mg/L	96	85	115			
L64856-01ASD	ASD	03/25/21 16:36	II210319-2	2.5	U	2.403	mg/L	96	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
WG516393													
WG516393ICV	ICV	03/24/21 15:28	MS210115-2	.05		.04897	mg/L	98	90	110			
WG516393ICB	ICB	03/24/21 15:30				U	mg/L		-0.000176	0.000176			
WG516393LFB	LFB	03/24/21 15:32	MS210312-6	.05005		.049331	mg/L	99	85	115			
L64758-01AS	AS	03/24/21 15:41	MS210312-6	.05005	U	.043902	mg/L	88	70	130			
L64758-01ASD	ASD	03/24/21 15:43	MS210312-6	.05005	U	.042721	mg/L	85	70	130	3	20	

Rio Algom Mining Company

ACZ Project ID: **L64757**

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
WG516393													
WG516393ICV	ICV	03/24/21 15:28	MS210115-2	.05		.047486	mg/L	95	90	110			
WG516393ICB	ICB	03/24/21 15:30				U	mg/L		-0.00011	0.00011			
WG516393LFB	LFB	03/24/21 15:32	MS210312-6	.05005		.044953	mg/L	90	85	115			
L64758-01AS	AS	03/24/21 15:41	MS210312-6	.05005	U	.050369	mg/L	101	70	130			
L64758-01ASD	ASD	03/24/21 15:43	MS210312-6	.05005	U	.047938	mg/L	96	70	130	5	20	
WG516470													
WG516470ICV	ICV	03/25/21 17:34	MS210115-2	.05		.051751	mg/L	104	90	110			
WG516470ICB	ICB	03/25/21 17:36				U	mg/L		-0.00011	0.00011			
WG516470LFB	LFB	03/25/21 17:38	MS210312-6	.05005		.052779	mg/L	105	85	115			
L64885-02AS	AS	03/25/21 17:45	MS210312-6	.05005	U	.053949	mg/L	108	70	130			
L64885-02ASD	ASD	03/25/21 17:47	MS210312-6	.05005	U	.053912	mg/L	108	70	130	0	20	
L58828-46AS	AS	03/25/21 17:58	MS210312-6	.05005	.0026	.048913	mg/L	93	70	130			
L58828-46ASD	ASD	03/25/21 18:00	MS210312-6	.05005	.0026	.056385	mg/L	107	70	130	14	20	

Calcium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG516365													
WG516365ICV	ICV	03/24/21 14:40	II210317-1	100		98.05	mg/L	98	95	105			
WG516365ICB	ICB	03/24/21 14:47				U	mg/L		-0.3	0.3			
WG516365LFB	LFB	03/24/21 15:00	II210319-2	68.00934		65.82	mg/L	97	85	115			
L64767-01AS	AS	03/24/21 15:26	II210319-2	68.00934	158	215.7	mg/L	85	85	115			
L64767-01ASD	ASD	03/24/21 15:29	II210319-2	68.00934	158	214.9	mg/L	84	85	115	0	20	MA
WG516420													
WG516420ICV	ICV	03/25/21 14:57	II210317-1	100		95.37	mg/L	95	95	105			
WG516420ICB	ICB	03/25/21 15:03				.14	mg/L		-0.3	0.3			
WG516420LFB	LFB	03/25/21 15:15	II210319-2	68.00934		64.99	mg/L	96	85	115			
L64856-01AS	AS	03/25/21 16:33	II210319-2	340.0467	423	744.5	mg/L	95	85	115			
L64856-01ASD	ASD	03/25/21 16:36	II210319-2	340.0467	423	750	mg/L	96	85	115	1	20	

Iron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG516365													
WG516365ICV	ICV	03/24/21 14:40	II210317-1	2		1.906	mg/L	95	95	105			
WG516365ICB	ICB	03/24/21 14:47				U	mg/L		-0.18	0.18			
WG516365LFB	LFB	03/24/21 15:00	II210319-2	1.0018		.947	mg/L	95	85	115			
L64767-01AS	AS	03/24/21 15:26	II210319-2	1.0018	U	.922	mg/L	92	85	115			
L64767-01ASD	ASD	03/24/21 15:29	II210319-2	1.0018	U	.91	mg/L	91	85	115	1	20	
WG516485													
WG516485ICV	ICV	03/26/21 15:26	II210317-1	2		1.937	mg/L	97	95	105			
WG516485ICB	ICB	03/26/21 15:32				U	mg/L		-0.18	0.18			
WG516485LFB	LFB	03/26/21 15:45	II210319-2	1.0018		1.059	mg/L	106	85	115			
L64856-01AS	AS	03/26/21 17:02	II210319-2	5.009	230	228.25	mg/L	25	85	115			M3
L64856-01ASD	ASD	03/26/21 17:05	II210319-2	5.009	230	224.45	mg/L	-51	85	115	2	20	M3

Rio Algom Mining Company

ACZ Project ID: **L64757**

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, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG516393													
WG516393ICV	ICV	03/24/21 15:28	MS210115-2	.05		.04751	mg/L	95	90	110			
WG516393ICB	ICB	03/24/21 15:30				U	mg/L		-0.00022	0.00022			
WG516393LFB	LFB	03/24/21 15:32	MS210312-6	.05005		.04649	mg/L	93	85	115			
L64758-01AS	AS	03/24/21 15:41	MS210312-6	.05005	U	.05321	mg/L	106	70	130			
L64758-01ASD	ASD	03/24/21 15:43	MS210312-6	.05005	U	.0526	mg/L	105	70	130	1	20	
WG516470													
WG516470ICV	ICV	03/25/21 17:34	MS210115-2	.05		.05094	mg/L	102	90	110			
WG516470ICB	ICB	03/25/21 17:36				U	mg/L		-0.00022	0.00022			
WG516470LFB	LFB	03/25/21 17:38	MS210312-6	.05005		.05198	mg/L	104	85	115			
L64885-02AS	AS	03/25/21 17:45	MS210312-6	.05005	U	.05368	mg/L	107	70	130			
L64885-02ASD	ASD	03/25/21 17:47	MS210312-6	.05005	U	.05354	mg/L	107	70	130	0	20	
L58828-46AS	AS	03/25/21 17:58	MS210312-6	.05005	.00046	.04716	mg/L	93	70	130			
L58828-46ASD	ASD	03/25/21 18:00	MS210312-6	.05005	.00046	.05444	mg/L	108	70	130	14	20	

Magnesium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG516365													
WG516365ICV	ICV	03/24/21 14:40	II210317-1	100		97.45	mg/L	97	95	105			
WG516365ICB	ICB	03/24/21 14:47				U	mg/L		-0.6	0.6			
WG516365LFB	LFB	03/24/21 15:00	II210319-2	50.00226		47.37	mg/L	95	85	115			
L64767-01AS	AS	03/24/21 15:26	II210319-2	50.00226	111	153.4	mg/L	85	85	115			
L64767-01ASD	ASD	03/24/21 15:29	II210319-2	50.00226	111	153.1	mg/L	84	85	115	0	20	MA
WG516420													
WG516420ICV	ICV	03/25/21 14:57	II210317-1	100		94.52	mg/L	95	95	105			
WG516420ICB	ICB	03/25/21 15:03				U	mg/L		-0.6	0.6			
WG516420LFB	LFB	03/25/21 15:15	II210319-2	50.00226		46.91	mg/L	94	85	115			
L64856-01AS	AS	03/25/21 16:33	II210319-2	250.0113	279	515	mg/L	94	85	115			
L64856-01ASD	ASD	03/25/21 16:36	II210319-2	250.0113	279	515.5	mg/L	95	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
WG516470													
WG516470ICV	ICV	03/25/21 17:34	MS210115-2	.01992		.0207	mg/L	104	90	110			
WG516470ICB	ICB	03/25/21 17:36				U	mg/L		-0.00044	0.00044			
WG516470LFB	LFB	03/25/21 17:38	MS210312-6	.0501		.05257	mg/L	105	85	115			
L64885-02AS	AS	03/25/21 17:45	MS210312-6	.0501	U	.05401	mg/L	108	70	130			
L64885-02ASD	ASD	03/25/21 17:47	MS210312-6	.0501	U	.05431	mg/L	108	70	130	1	20	
L58828-46AS	AS	03/25/21 17:58	MS210312-6	.0501	U	.04644	mg/L	93	70	130			
L58828-46ASD	ASD	03/25/21 18:00	MS210312-6	.0501	U	.05403	mg/L	108	70	130	15	20	

Rio Algom Mining Company

ACZ Project ID: **L64757**

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
WG516393													
WG516393ICV	ICV	03/24/21 15:28	MS210115-2	.05		.05048	mg/L	101	90	110			
WG516393ICB	ICB	03/24/21 15:30				U	mg/L		-0.00088	0.00088			
WG516393LFB	LFB	03/24/21 15:32	MS210312-6	.05		.04793	mg/L	96	85	115			
L64758-01AS	AS	03/24/21 15:41	MS210312-6	.05	U	.04317	mg/L	86	70	130			
L64758-01ASD	ASD	03/24/21 15:43	MS210312-6	.05	U	.04222	mg/L	84	70	130	2	20	

Potassium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG516365													
WG516365ICV	ICV	03/24/21 14:40	II210317-1	20		19.61	mg/L	98	95	105			
WG516365ICB	ICB	03/24/21 14:47				U	mg/L		-0.6	0.6			
WG516365LFB	LFB	03/24/21 15:00	II210319-2	99.97791		95.22	mg/L	95	85	115			
L64767-01AS	AS	03/24/21 15:26	II210319-2	99.97791	4.91	99.24	mg/L	94	85	115			
L64767-01ASD	ASD	03/24/21 15:29	II210319-2	99.97791	4.91	99.03	mg/L	94	85	115	0	20	

WG516420

WG516420ICV	ICV	03/25/21 14:57	II210317-1	20		19.15	mg/L	96	95	105			
WG516420ICB	ICB	03/25/21 15:03				U	mg/L		-0.6	0.6			
WG516420LFB	LFB	03/25/21 15:15	II210319-2	99.97791		94.27	mg/L	94	85	115			
L64856-01AS	AS	03/25/21 16:33	II210319-2	499.88955	6.11	483.1	mg/L	95	85	115			
L64856-01ASD	ASD	03/25/21 16:36	II210319-2	499.88955	6.11	486.4	mg/L	96	85	115	1	20	

Selenium, dissolved

SM 3114 B, AA-Hydride

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG515956													
WG515956ICV	ICV	03/18/21 11:53	SE210107-2	.025		.0229	mg/L	92	90	110			
WG515956ICB	ICB	03/18/21 11:55				U	mg/L		-0.006	0.006			
WG515954													
WG515954LRB	LRB	03/18/21 13:15				U	mg/L		-0.006	0.006			
WG515954LFB	LFB	03/18/21 13:17	SE210302-2	.0225		.0204	mg/L	91	85	115			
L64757-01LFM	LFM	03/18/21 13:53	SE210302-2	.0225	U	.0206	mg/L	92	85	115			
L64757-01LFMD	LFMD	03/18/21 13:55	SE210302-2	.0225	U	.021	mg/L	93	85	115	2	20	

WG516414

WG516414ICV	ICV	03/26/21 12:57	SE210107-2	.025		.0261	mg/L	104	90	110			
WG516414ICB	ICB	03/26/21 12:59				U	mg/L		-0.006	0.006			
WG516414LRB	LRB	03/26/21 13:01				U	mg/L		-0.006	0.006			
WG516414LFB	LFB	03/26/21 13:03	SE210302-2	.0225		.0201	mg/L	89	85	115			
L64767-02LFM	LFM	03/26/21 13:11	SE210302-2	.0225	U	.0186	mg/L	83	85	115			M2
L64767-02LFMD	LFMD	03/26/21 13:13	SE210302-2	.0225	U	.0189	mg/L	84	85	115	2	20	M2

Rio Algom Mining Company

ACZ Project ID: **L64757**

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
WG516365													
WG516365ICV	ICV	03/24/21 14:40	II210317-1	100		96.91	mg/L	97	95	105			
WG516365ICB	ICB	03/24/21 14:47				U	mg/L		-0.6	0.6			
WG516365LFB	LFB	03/24/21 15:00	II210319-2	100.0235		93.75	mg/L	94	85	115			
L64767-01AS	AS	03/24/21 15:26	II210319-2	100.0235	202	285.5	mg/L	83	85	115			MA
L64767-01ASD	ASD	03/24/21 15:29	II210319-2	100.0235	202	287	mg/L	85	85	115	1	20	
WG516485													
WG516485ICV	ICV	03/26/21 15:26	II210317-1	100		97.62	mg/L	98	95	105			
WG516485ICB	ICB	03/26/21 15:32				U	mg/L		-0.6	0.6			
WG516485LFB	LFB	03/26/21 15:45	II210319-2	100.0235		100.1	mg/L	100	85	115			
L64856-01AS	AS	03/26/21 17:02	II210319-2	500.1175	42.3	559.5	mg/L	103	85	115			
L64856-01ASD	ASD	03/26/21 17:05	II210319-2	500.1175	42.3	553.5	mg/L	102	85	115	1	20	

Uranium, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG516393													
WG516393ICV	ICV	03/24/21 15:28	MS210115-2	.05		.04835	mg/L	97	90	110			
WG516393ICB	ICB	03/24/21 15:30				U	mg/L		-0.00022	0.00022			
WG516393LFB	LFB	03/24/21 15:32	MS210312-6	.05		.04571	mg/L	91	85	115			
L64758-01AS	AS	03/24/21 15:41	MS210312-6	.05	.515	.5663	mg/L	103	70	130			
L64758-01ASD	ASD	03/24/21 15:43	MS210312-6	.05	.515	.56353	mg/L	97	70	130	0	20	
WG516470													
WG516470ICV	ICV	03/25/21 17:34	MS210115-2	.05		.05069	mg/L	101	90	110			
WG516470ICB	ICB	03/25/21 17:36				U	mg/L		-0.00022	0.00022			
WG516470LFB	LFB	03/25/21 17:38	MS210312-6	.05		.05137	mg/L	103	85	115			
L64885-02AS	AS	03/25/21 17:45	MS210312-6	.05	.00133	.05545	mg/L	108	70	130			
L64885-02ASD	ASD	03/25/21 17:47	MS210312-6	.05	.00133	.05506	mg/L	107	70	130	1	20	
L58828-46AS	AS	03/25/21 17:58	MS210312-6	.05	.00858	.05526	mg/L	93	70	130			
L58828-46ASD	ASD	03/25/21 18:00	MS210312-6	.05	.00858	.06269	mg/L	108	70	130	13	20	

Rio Algom Mining Company

ACZ Project ID: **L64757**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L64757-01	WG516393	Antimony, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG516365	Calcium, 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.
		Magnesium, 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.
		Sodium, 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.
L64757-02	WG516393	Antimony, dissolved	M200.8 ICP-MS	IA	Internal standard recovery exceeded the acceptance limits. Concentration of associated target analyte(s) in the sample is < MDL.
			M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG516485	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.
	WG516470	Lead, dissolved	M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
		Molybdenum, dissolved	M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
	WG516414	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.

Rio Algom Mining Company

ACZ Project ID: **L64757**

No certification qualifiers associated with this analysis

Rio Algom Mining Company
4510319940

ACZ Project ID: L64757
Date Received: 03/13/2021 11:57
Received By:
Date Printed: 3/23/2021

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 SX Date:Time section prior to ACZ custody.			
A change was made in the SX Date:Time section prior to ACZ custody.			
A change was made in the SX Date:Time 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
L64757-01 : Only a Green PC bottle was received for this sample. Analytes requiring a Raw, White, Yellow, and Radchem bottle have been removed from the quote.			
L64757-02 : Only a Green PC bottle was received for this sample. Analytes requiring a Raw, White, Yellow, and Radchem bottle have been removed from the quote.			
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

Rio Algom Mining Company
4510319940

ACZ Project ID: L64757
Date Received: 03/13/2021 11:57
Received By:
Date Printed: 3/23/2021

Shipping Containers

Cooler Id	Temp (°C)	Temp Criteria (°C)	Rad (µR/Hr)	Custody Seal Intact?
NA34736	8	NA	14	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).

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

or

385-722-6707

March 12, 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: Clark Short, Angela Persico, Michaela Gorospe

Project ID: 4510319940

ACZ Project ID: L64214

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 11, 2021. This project has been assigned to ACZ's project number, L64214. 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 L64214. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

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

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

All samples and sub-samples associated with this project will be disposed of after April 11, 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

March 12, 2021

Project ID: 4510319940

ACZ Project ID: L64214

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 2 groundwater samples from Rio Algom Mining Company on February 11, 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 L64214. 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. (N1) Applies to: L64214-02/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. (N1) Applies to: L64214-01 and -02 /THORIUM 230

Tracer recovery outside of acceptance limits. Insufficient sample volume to REDO.

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 5-73 ALL-R

ACZ Sample ID: **L64214-01**

Date Sampled: 02/08/21 14:48

Date Received: 02/11/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	5	724			mg/L	0.5	2.5	02/19/21 14:24	kja
Iron, dissolved	M200.7 ICP	5	<0.3	U		mg/L	0.3	0.75	02/19/21 14:24	kja
Magnesium, dissolved	M200.7 ICP	5	471			mg/L	1	5	02/19/21 14:24	kja
Molybdenum, dissolved	M200.8 ICP-MS	5	0.00558			mg/L	0.001	0.0025	02/18/21 11:22	mfm
Nickel, dissolved	M200.8 ICP-MS	5	0.00928		*	mg/L	0.002	0.005	02/18/21 11:22	mfm
Potassium, dissolved	M200.7 ICP	5	2.29	B		mg/L	1	5	02/19/21 14:24	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	25	0.226			mg/L	0.05	0.125	03/08/21 14:11	llr
Sodium, dissolved	M200.7 ICP	5	830			mg/L	1	5	02/19/21 14:24	kja
Uranium, dissolved	M200.8 ICP-MS	5	1.49		*	mg/L	0.0005	0.0025	02/18/21 11:22	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	667			mg/L	2	20	02/18/21 0:00	eep
Carbonate as CaCO3		1	<2	U		mg/L	2	20	02/18/21 0:00	eep
Hydroxide as CaCO3		1	<2	U		mg/L	2	20	02/18/21 0:00	eep
Total Alkalinity		1	667			mg/L	2	20	02/18/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			1.4			%			03/12/21 0:00	calc
Sum of Anions			108			meq/L			03/12/21 0:00	calc
Sum of Cations			111			meq/L			03/12/21 0:00	calc
Chloride	SM4500Cl-E	20	1560		*	mg/L	10	40	02/28/21 20:01	syw
Conductivity @25C	SM2510B	1	7610			umhos/cm	1	10	02/18/21 5:43	eep
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	3	5.36			mg/L	0.06	0.3	02/27/21 21:58	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	6840		*	mg/L	40	80	02/11/21 20:34	jck
Sulfate	D516-02/-07/-11 - Turbidimetric	100	2450			mg/L	100	500	03/08/21 15:45	syw
TDS (calculated)	Calculation		6440			mg/L			03/12/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.06						03/12/21 0:00	calc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-02 TRB

ACZ Sample ID: **L64214-02**

Date Sampled: 02/10/21 10:00

Date Received: 02/11/21

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	5	331			mg/L	0.5	2.5	02/19/21 14:27	kja
Iron, dissolved	M200.7 ICP	5	26.2			mg/L	0.3	0.75	02/19/21 14:27	kja
Magnesium, dissolved	M200.7 ICP	5	1180			mg/L	1	5	02/19/21 14:27	kja
Molybdenum, dissolved	M200.8 ICP-MS	5	<0.001	U		mg/L	0.001	0.0025	02/18/21 11:24	mfm
Nickel, dissolved	M200.8 ICP-MS	5	0.00451	B	*	mg/L	0.002	0.005	02/18/21 11:24	mfm
Potassium, dissolved	M200.7 ICP	5	16.3			mg/L	1	5	02/19/21 14:27	kja
Selenium, dissolved	SM 3114 B, AA-Hydride	1	<0.002	U		mg/L	0.002	0.005	02/17/21 9:59	llr
Sodium, dissolved	M200.7 ICP	5	661			mg/L	1	5	02/19/21 14:27	kja
Uranium, dissolved	M200.8 ICP-MS	5	0.00406		*	mg/L	0.0005	0.0025	02/18/21 11:24	mfm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	1220			mg/L	2	20	02/18/21 0:00	eep
Carbonate as CaCO3		1	<2	U		mg/L	2	20	02/18/21 0:00	eep
Hydroxide as CaCO3		1	<2	U		mg/L	2	20	02/18/21 0:00	eep
Total Alkalinity		1	1220		*	mg/L	2	20	02/18/21 0:00	eep
Cation-Anion Balance	Calculation									
Cation-Anion Balance			3.2			%			03/12/21 0:00	calc
Sum of Anions			135			meq/L			03/12/21 0:00	calc
Sum of Cations			144			meq/L			03/12/21 0:00	calc
Chloride	SM4500Cl-E	20	1950		*	mg/L	10	40	02/28/21 20:01	syw
Conductivity @25C	SM2510B	1	8790		*	umhos/cm	1	10	02/18/21 6:00	eep
Cyanide, Total	D7511-09	1	0.030		*	mg/L	0.003	0.01	02/24/21 14:25	wtc
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	<0.02	U		mg/L	0.02	0.1	02/27/21 22:05	pjb
Residue, Filterable (TDS) @180C	SM2540C	5	7920		*	mg/L	100	200	02/15/21 16:42	jck
Sulfate	D516-02/-07/-11 - Turbidimetric	100	2670			mg/L	100	500	03/08/21 15:45	syw
TDS (calculated)	Calculation		7580			mg/L			03/12/21 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.04						03/12/21 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: **L64214**

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
WG514529													
WG514529PBW1	PBW	02/17/21 21:13				3.1	mg/L		-20	20			
WG514529LCSW3	LCSW	02/17/21 21:32	WC210217-1	820.0001		787.1	mg/L	96	90	110			
WG514529LCSW6	LCSW	02/18/21 0:34	WC210130-4	820.0001		794	mg/L	97	90	110			
WG514529PBW2	PBW	02/18/21 0:41				2.9	mg/L		-20	20			
WG514529LCSW9	LCSW	02/18/21 3:44	WC210130-4	820.0001		798.1	mg/L	97	90	110			
WG514529PBW3	PBW	02/18/21 3:52				2.9	mg/L		-20	20			
L64275-01DUP	DUP	02/18/21 7:25			131	147.1	mg/L				12	20	
WG514529LCSW12	LCSW	02/18/21 7:42	WC210130-4	820.0001		787.9	mg/L	96	90	110			
WG514529PBW4	PBW	02/18/21 7:51				3.1	mg/L		-20	20			

Calcium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514665													
WG514665ICV	ICV	02/19/21 13:30	II210127-1	100		97.34	mg/L	97	95	105			
WG514665ICB	ICB	02/19/21 13:35				U	mg/L		-0.3	0.3			
WG514665LFB	LFB	02/19/21 13:48	II210208-3	68.00934		67.19	mg/L	99	85	115			
L64136-02AS	AS	02/19/21 14:03	II210208-3	68.00934	54	118.6	mg/L	95	85	115			
L64136-02ASD	ASD	02/19/21 14:06	II210208-3	68.00934	54	118.7	mg/L	95	85	115	0	20	

Chloride

SM4500Cl-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG515076													
WG515076ICB	ICB	02/28/21 16:48				U	mg/L		-1.5	1.5			
WG515076ICV	ICV	02/28/21 16:48	WI200506-2	55.055		58.22	mg/L	106	90	110			
WG515076LFB1	LFB	02/28/21 19:26	WI200327-3	30.03		32.02	mg/L	107	90	110			
L64275-01DUP	DUP	02/28/21 19:28			21.3	21.16	mg/L				1	20	
WG515076LFB2	LFB	02/28/21 19:30	WI200327-3	30.03		32.46	mg/L	108	90	110			
L64214-02AS	AS	02/28/21 20:01	20XCL	30	1950	1914.12	mg/L	-120	90	110			M3

Conductivity @25C

SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514529													
WG514529LCSW2	LCSW	02/17/21 21:19	PCN63121	1410		1429	umhos/cm	101	90	110			
WG514529LCSW5	LCSW	02/18/21 0:21	PCN63121	1410		1421	umhos/cm	101	90	110			
WG514529LCSW8	LCSW	02/18/21 3:31	PCN63121	1410		1413	umhos/cm	100	90	110			
L64275-01DUP	DUP	02/18/21 7:25			716	718	umhos/cm				0	20	
WG514529LCSW11	LCSW	02/18/21 7:31	PCN63121	1410		1397	umhos/cm	99	90	110			
WG514529LCSW14	LCSW	02/18/21 10:22	PCN63121	1410		1391	umhos/cm	99	90	110			

Rio Algom Mining Company

ACZ Project ID: **L64214**

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
WG514875													
WG514875ICV	ICV	02/24/21 13:39	WI210212-7	.3003		.2807	mg/L	93	90	110			
WG514875ICB	ICB	02/24/21 13:41				U	mg/L		-0.003	0.003			
WG514875ICV1	ICV	02/24/21 17:29	WI210212-7	.3003		.3073	mg/L	102	90	110			
WG514875ICB1	ICB	02/24/21 17:31				U	mg/L		-0.003	0.003			
WG514875LFB	LFB	02/24/21 17:35	WI210212-5	.1		.1025	mg/L	103	84	116			
L64392-05AS	AS	02/24/21 17:49	WI210212-5	.1	.039	.092	mg/L	53	84	116			MC
L64392-05ASD	ASD	02/24/21 17:51	WI210212-5	.1	.039	.0887	mg/L	50	84	116	4	20	MC

Iron, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514665													
WG514665ICV	ICV	02/19/21 13:30	II210127-1	2		1.948	mg/L	97	95	105			
WG514665ICB	ICB	02/19/21 13:35				U	mg/L		-0.18	0.18			
WG514665LFB	LFB	02/19/21 13:48	II210208-3	1.0018		.981	mg/L	98	85	115			
L64136-02AS	AS	02/19/21 14:03	II210208-3	1.0018	1.88	2.77	mg/L	90	85	115			
L64136-02ASD	ASD	02/19/21 14:06	II210208-3	1.0018	1.88	2.789	mg/L	92	85	115	1	20	

Magnesium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514665													
WG514665ICV	ICV	02/19/21 13:30	II210127-1	100		97.93	mg/L	98	95	105			
WG514665ICB	ICB	02/19/21 13:35				U	mg/L		-0.6	0.6			
WG514665LFB	LFB	02/19/21 13:48	II210208-3	50.00226		49.07	mg/L	98	85	115			
L64136-02AS	AS	02/19/21 14:03	II210208-3	50.00226	27.8	75.11	mg/L	95	85	115			
L64136-02ASD	ASD	02/19/21 14:06	II210208-3	50.00226	27.8	75.23	mg/L	95	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
WG514550													
WG514550ICV	ICV	02/18/21 10:52	MS210115-2	.01992		.02002	mg/L	101	90	110			
WG514550ICB	ICB	02/18/21 10:53				U	mg/L		-0.00044	0.00044			
WG514550LFB	LFB	02/18/21 10:55	MS201228-2	.0501		.04681	mg/L	93	85	115			
L64224-01AS	AS	02/18/21 11:31	MS201228-2	.1002	U	.10604	mg/L	106	70	130			
L64224-01ASD	ASD	02/18/21 11:33	MS201228-2	.1002	U	.10396	mg/L	104	70	130	2	20	

Nickel, dissolved

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514550													
WG514550ICV	ICV	02/18/21 10:52	MS210115-2	.05		.04821	mg/L	96	90	110			
WG514550ICB	ICB	02/18/21 10:53				U	mg/L		-0.00088	0.00088			
WG514550LFB	LFB	02/18/21 10:55	MS201228-2	.05		.04711	mg/L	94	85	115			
L64224-01AS	AS	02/18/21 11:31	MS201228-2	.1	.37	.42477	mg/L	55	70	130			M3
L64224-01ASD	ASD	02/18/21 11:33	MS201228-2	.1	.37	.42898	mg/L	59	70	130	1	20	M3

Rio Algom Mining Company

ACZ Project ID: **L64214**

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
WG515072													
WG515072ICV	ICV	02/27/21 21:05	WI210218-5	2.416		2.399	mg/L	99	90	110			
WG515072ICB	ICB	02/27/21 21:07				U	mg/L		-0.02	0.02			
WG515072LFB	LFB	02/27/21 21:10	WI201001-11	2		2.001	mg/L	100	90	110			
L64212-01AS	AS	02/27/21 21:57	WI201001-11	1000	225	1254.2	mg/L	103	90	110			
L64214-01DUP	DUP	02/27/21 22:03			5.36	5.379	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
WG514665													
WG514665ICV	ICV	02/19/21 13:30	II210127-1	20		19.46	mg/L	97	95	105			
WG514665ICB	ICB	02/19/21 13:35				U	mg/L		-0.6	0.6			
WG514665LFB	LFB	02/19/21 13:48	II210208-3	99.97791		97.81	mg/L	98	85	115			
L64136-02AS	AS	02/19/21 14:03	II210208-3	99.97791	2.21	98.32	mg/L	96	85	115			
L64136-02ASD	ASD	02/19/21 14:06	II210208-3	99.97791	2.21	98.42	mg/L	96	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
WG514253													
WG514253PBW	PBW	02/11/21 19:40				U	mg/L		-20	20			
WG514253LCSW	LCSW	02/11/21 19:42	PCN62892	1000		994	mg/L	99	80	120			
L64211-03DUP	DUP	02/11/21 20:11			29800	29800	mg/L				0	10	
WG514391													
WG514391PBW	PBW	02/15/21 15:55				U	mg/L		-20	20			
WG514391LCSW	LCSW	02/15/21 15:57	PCN62448	1000		1000	mg/L	100	80	120			
L64259-05DUP	DUP	02/15/21 16:47			440	436	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
WG514437													
WG514437ICV	ICV	02/17/21 9:25	SE210107-2	.025		.0258	mg/L	103	90	110			
WG514437ICB	ICB	02/17/21 9:28				U	mg/L		-0.006	0.006			
WG514437LRB	LRB	02/17/21 9:30				U	mg/L		-0.006	0.006			
WG514437LFB	LFB	02/17/21 9:32	SE201123-2	.0225		.0223	mg/L	99	85	115			
L64158-05LFM	LFM	02/17/21 9:44	SE201123-2	.0225	.0028	.0237	mg/L	93	85	115			
L64158-05LFMD	LFMD	02/17/21 9:46	SE201123-2	.0225	.0028	.0244	mg/L	96	85	115	3	20	
WG515156													
WG515156ICV	ICV	03/08/21 13:37	SE210107-2	.025		.0255	mg/L	102	90	110			
WG515156ICB	ICB	03/08/21 13:39				U	mg/L		-0.006	0.006			
WG515155													
WG515155LRB	LRB	03/08/21 14:07				U	mg/L		-0.006	0.006			
WG515155LFB	LFB	03/08/21 14:09	SE210302-2	.0225		.0226	mg/L	100	85	115			
L64323-06LFM	LFM	03/08/21 14:15	SE210302-2	.0225	U	.0226	mg/L	100	85	115			
L64323-06LFMD	LFMD	03/08/21 14:17	SE210302-2	.0225	U	.0226	mg/L	100	85	115	0	20	

Rio Algom Mining Company

ACZ Project ID: **L64214**

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
WG514665													
WG514665ICV	ICV	02/19/21 13:30	II210127-1	100		96.38	mg/L	96	95	105			
WG514665ICB	ICB	02/19/21 13:35				U	mg/L		-0.6	0.6			
WG514665LFB	LFB	02/19/21 13:48	II210208-3	100.0235		96.23	mg/L	96	85	115			
L64136-02AS	AS	02/19/21 14:03	II210208-3	100.0235	4.6	99.27	mg/L	95	85	115			
L64136-02ASD	ASD	02/19/21 14:06	II210208-3	100.0235	4.6	99.44	mg/L	95	85	115	0	20	

Sulfate D516-02/-07/-11 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG515388													
WG515388ICB	ICB	03/08/21 14:45				U	mg/L		-3	3			
WG515388ICV	ICV	03/08/21 14:45	WI210225-3	20		20.2	mg/L	101	90	110			
L64192-01DUP	DUP	03/08/21 15:02			117	117	mg/L				0	20	
L64192-02AS	AS	03/08/21 15:43	SO4TURB	10	2200	2209.7	mg/L	97	90	110			
WG515388LFB	LFB	03/08/21 16:07	WI210105-3	10		10.8	mg/L	108	90	110			

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG514550													
WG514550ICV	ICV	02/18/21 10:52	MS210115-2	.05		.04957	mg/L	99	90	110			
WG514550ICB	ICB	02/18/21 10:53				U	mg/L		-0.00022	0.00022			
WG514550LFB	LFB	02/18/21 10:55	MS201228-2	.05		.04629	mg/L	93	85	115			
L64224-01AS	AS	02/18/21 11:31	MS201228-2	.1	.414	.48026	mg/L	66	70	130			M3
L64224-01ASD	ASD	02/18/21 11:33	MS201228-2	.1	.414	.4827	mg/L	69	70	130	1	20	M3

Rio Algom Mining Company

ACZ Project ID: **L64214**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L64214-01	WG515076	Chloride	SM4500Cl-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.
	WG514550	Nickel, dissolved	M200.8 ICP-MS	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.
	WG514253	Residue, Filterable (TDS) @180C	SM2540C	RO	The duplicate originally assigned to this sample was not used for precision assessment because residue density did not meet method limits. Another duplicate in the batch was used to assess precision. Method required duplicate frequency was not met.
	WG514550	Uranium, dissolved	M200.8 ICP-MS	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.
L64214-02	WG515076	Chloride	SM4500Cl-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.
	WG514529	Conductivity @25C	SM2510B	ZW	Method deviation. The sample was centrifuged prior to analysis due to high solid content.
	WG514875	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.
			D7511-09	Q3	Sample received with improper or inadequate chemical preservation.
	WG514550	Nickel, dissolved	M200.8 ICP-MS	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.
	WG514391	Residue, Filterable (TDS) @180C	SM2540C	N1	See Case Narrative.
	WG514529	Total Alkalinity	SM2320B - Titration	ZW	Method deviation. The sample was centrifuged prior to analysis due to high solid content.
	WG514550	Uranium, dissolved	M200.8 ICP-MS	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: 5-73 ALL-R

Locator:

ACZ Sample ID: **L64214-01**

Date Sampled: 02/08/21 14:48

Date Received: 02/11/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	03/03/21 16:39		11	2.4	6.6	pCi/L	*	tjr

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	03/03/21 12:30		0.825	1.6	2.9	pCi/L	*	tjr

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	02/24/21 0:24		-0.08	0.17	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	03/11/21 13:39		1.9	1.1	2.4	pCi/L		cer

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	02/23/21 13:03		-2.65	2.6	5.7	pCi/L	*	djc

Rio Algom Mining Company

Project ID: 4510319940

Sample ID: 36-02 TRB

Locator:

ACZ Sample ID: **L64214-02**

Date Sampled: 02/10/21 10:00

Date Received: 02/11/21

Sample Matrix: Groundwater

Lead 210, dissolved

Prep Method:

EICHROM, OTW01

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Lead 210, dissolved	03/03/21 16:39		9.7	2.4	6.8	pCi/L	*	tjr

Polonium 210, dissolved

Prep Method:

HASL Po-01-RC

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Polonium 210, dissolved	03/03/21 12:30		2.95	2.2	2.8	pCi/L	*	tjr

Radium 226, dissolved

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, dissolved	02/24/21 0:25		0.36	0.23	0.38	pCi/L	*	djc

Radium 228, dissolved

Prep Method:

M9320

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, dissolved	03/02/21 15:58		-0.77	0.95	2	pCi/L	*	fdw

Thorium 230, dissolved

Prep Method:

ESM 4506

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Thorium 230, dissolved	02/23/21 13:03		1.48	2.1	3.5	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>

Rio Algom Mining Company

ACZ Project ID: **L64214**

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
WG514795																
WG514795LCSW	LCSW	03/03/21	PCN59629	95.3				92	3	4.3	97	55	121			
WG514795PBW	PBW	03/03/21						2.8	1.5	4.5					9	
L64250-01DUP	DUP-RPD	03/03/21			3	1.5	4.7	3.2	1.7	5.1				6	20	
L64250-02MS	MS	03/03/21	PCN59629	95.3	9	1.7	4.5	92	2.9	3.8	87	55	121			
L64255-01DUP	DUP-RPD	03/03/21			36	6.5	17	15	4.6	13				82	20	RM

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
WG515132																
WG515132PBW	PBW	03/03/21						-1.86	2.7	5.6			11.2			
WG515132LCSW	LCSW	03/03/21	PCN59629	500				454	75	4.2	91	51	128			
L64214-01DUP	DUP-RPD	03/03/21			0.825	1.6	2.9	-2.27	3.6	7.5				428	20	RG
L64214-01DUP	DUP-RER	03/03/21			0.825	1.6	2.9	-2.27	3.6	7.5				0.79	2	
L64214-01MS	MS	03/03/21	PCN59629	500	0.825	1.6	2.9	460	80	5.5	92	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
WG514490																
WG514490PBW	PBW	02/24/21						.12	0.14	0.14			0.28			
WG514490LCSW	LCSW	02/24/21	PCN61539	20				21	0.69	0.16	105	43	148			
L64159-03DUP	DUP-RPD	02/24/21			0.1	0.1	0.07	.13	0.08	0.15				26	20	RG
L64159-03DUP	DUP-RER	02/24/21			0.1	0.1	0.07	.13	0.08	0.15				0.23	2	
L64183-01DUP	DUP-RPD	02/24/21			0.48	0.16	0.13	.6	0.11	0.07				22	20	RG
L64183-01DUP	DUP-RER	02/24/21			0.48	0.16	0.13	.6	0.11	0.07				0.62	2	
L64174-01MS	MS	02/24/21	PCN61539	20	0.22	0.14	0.13	17	0.53	0.12	84	43	148			

Rio Algom Mining Company

ACZ Project ID: **L64214**

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
WG514938																
WG514938PBW	PBW	03/02/21						.7	0.75	0.75			1.5			
L64130-01DUP	DUP-RPD	03/02/21			2.6	0.76	1.6	2.4	0.91	2.1				8	20	
WG514938LCSW	LCSW	03/02/21	PCN61541	9.17				10	1.3	0.96	109	47	123			
L64214-02MS	MS	03/02/21	PCN61541	12.39	-0.77	0.95	2	16	1.8	2.8	135	47	123			M1
L64222-02DUP	DUP-RPD	03/02/21			25	1.8	2.4	23	1.6	1.9				8	20	
WG515004																
L64286-02MS	MS	03/11/21	PCN61541	9.14	1.1	0.89	2.1	7.5	1.1	2	70	47	123			
WG515004LCSW	LCSW	03/11/21	PCN61541	9.14				9.2	1.3	0.92	101	47	123			
WG515004PBW	PBW	03/11/21						-22	0.44	0.47			0.94			
L64243-02DUP	DUP-RPD	03/11/21			0.9	0.77	1.8	1.1	1.1	2.4				20	20	
L64287-01DUP	DUP-RER	03/11/21			0.17	0.75	1.8	.36	0.87	2.2				0.17	2	
L64287-01DUP	DUP-RPD	03/11/21			0.17	0.75	1.8	.36	0.87	2.2				72	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
WG514700																
WG514700PBW	PBW	02/23/21						-.0413	0.71	1.4			2.8			N1
WG514700LCSW	LCSW	02/23/21	PCN58726	200				193	34	1.7	97	91	126			N1
L64085-01DUP	DUP-RER	02/23/21			1.15	3	5.6	-.151	3.8	7.6				0.27	2	N1
L64085-01DUP	DUP-RPD	02/23/21			1.15	3	5.6	-.151	3.8	7.6				260	20	RG
L64214-01DUP	DUP-RER	02/24/21			-2.65	2.6	5.7	.758	1.5	2.7				1.14	2	N1
L64214-01DUP	DUP-RPD	02/24/21			-2.65	2.6	5.7	.758	1.5	2.7				360	20	RG
L64214-02MS	MS	02/24/21	PCN58726	400	1.48	2.1	3.5	359	56	2.3	89	91	126			M2

Rio Algom Mining Company
ACZ Project ID: L64214

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L64214-01	WG514795	Lead 210, dissolved	EICHROM, OTW01	D1	Sample required dilution due to matrix.
	WG515132	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.
	WG514490	Radium 226, dissolved	M903.1	D1	Sample required dilution due to matrix.
			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.
	WG514700	Thorium 230, dissolved	ESM 4506	DJ	Sample dilution required due to insufficient sample.
			ESM 4506	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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.
	WG514795	Lead 210, dissolved	EICHROM, OTW01	D1	Sample required dilution due to matrix.
			EICHROM, OTW01	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
L64214-02	WG515132	Polonium 210, dissolved	HASL Po-01-RC	Q5	Sample received with inadequate chemical preservation. Additional preservation performed by the laboratory.
			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.
	WG514490	Radium 226, dissolved	M903.1	D1	Sample required dilution due to matrix.
			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.
	WG514938	Radium 228, dissolved	M9320	M1	Matrix spike recovery was high, 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.
	WG514700	Thorium 230, dissolved	ESM 4506	DJ	Sample dilution required due to insufficient sample.
			ESM 4506	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			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: **L64214**

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: L64214
Date Received: 02/11/2021 12:06
Received By:
Date Printed: 2/12/2021

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 L64214-02 Container B2374316 (GREEN CUBE): Added 10 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?
5230	4.4	<=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: L64214

Date Received: 02/11/2021 12:06

Received By:

Date Printed: 2/12/2021

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).



Laboratories, Inc. L64214

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

CHAIN of CUSTODY

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: 1-505-287-8851

Copy of Report to:

Name: See Attached Note Sheet

Company: INTERA, INC.

E-mail: See Attached Note Sheet

Telephone: 505-246-1600 x1207

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: 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



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: B. Williams

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 #: N/A

PO#: 4902696299

Reporting state for compliance testing: NM

Check box if samples include NRC licensed material?



SAMPLE IDENTIFICATION

DATE:TIME

Matrix

of Containers

NRC-ALL

NRC-TRD

5-73 ALL-R

2/8/21 1448

GW

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Matrix

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

REMARKS

RAML COC#: 21-14. Note different COC's may have different PO's. Shipment of 1 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. Williams [Signature]

2/19/21 1645

[Signature]

2/19/21 12:08

FRMAD050.06.14.14

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

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

or

385-722-6707

May 21, 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: Clark Short, Angela Persico, Michaela Gorospe, Hall Lab

Project ID: 4510319940

ACZ Project ID: L65907

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 19, 2021. This project has been assigned to ACZ's project number, L65907. Please reference this number in all future inquiries.

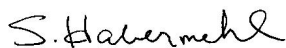
All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L65907. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

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 June 20, 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: 2105774-001A

ACZ Sample ID: **L65907-01**

Date Sampled: 05/17/21 15:28

Date Received: 05/19/21

Sample Matrix: Waste Water

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Cyanide, Total	D7511-09	1	<0.003	U	*	mg/L	0.003	0.01	05/20/21 12:29	md/wtc



Report Header Explanations

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

QC Sample Types

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

QC Sample Type Explanations

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

ACZ Qualifiers (Qual)

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

Method References

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

Comments

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

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

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

Rio Algom Mining Company

ACZ Project ID: **L65907**

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
WG519562													
WG519562ICV	ICV	05/20/21 12:19	WI210510-7	.3		.3048	mg/L	102	90	110			
WG519562ICB	ICB	05/20/21 12:21				U	mg/L		-0.003	0.003			
WG519562LFB	LFB	05/20/21 12:27	WI210510-4	.1		.0991	mg/L	99	84	116			
L65907-01AS	AS	05/20/21 12:31	WI210510-4	.1	U	.0833	mg/L	83	84	116			MC
L65907-01ASD	ASD	05/20/21 12:33	WI210510-4	.1	U	.0799	mg/L	80	84	116	4	20	MC

Rio Algom Mining Company

ACZ Project ID: **L65907**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L65907-01	WG519562	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.

Rio Algom Mining Company

ACZ Project ID: **L65907**

No certification qualifiers associated with this analysis

Rio Algom Mining Company
4510319940

ACZ Project ID: L65907
Date Received: 05/19/2021 10:32
Received By:
Date Printed: 5/20/2021

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?
-----	-----	-----	-----	-----
NA35116	-0.2	<=6.0	15	N/A

Was ice present in the shipment container(s)?

Yes - Gel 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: L65907

Date Received: 05/19/2021 10:32

Received By:

Date Printed: 5/20/2021

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



CHAIN OF CUSTODY RECORD

PAGE: 1 OF 1

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: clients.hallenvironmental.com

L65907



L65907 Chain of Custody

SUB CONTRACTOR: ACZ Laboratories		COMPANY: ACZ Laboratories	PHONE: (970) 879-6590	FAX: (815) 301-3857		
ADDRESS: 2773 Downhill Dr		ACCOUNT #:	EMAIL:			
CITY, STATE, ZIP: Steamboat Springs, CO 80487						
ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	ANALYTICAL COMMENTS
1	2105774-001A	36-02TRB	500AMBHDP	Aqueous	5/17/2021 3:28:00 PM	
# CONTAINERS: 1 *RUSH 3 DAY TAT* Cyanide by D7511						

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: <i>[Signature]</i>	Date: 5/18/2021	Time: 11:09 AM	Received By: <i>[Signature]</i>	Date: 5/19/21	Time: 10:30	REPORT TRANSMITTAL DESIRED: <input type="checkbox"/> HARDCOPY (extra cost) <input type="checkbox"/> FAX <input type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	FOR LAB USE ONLY	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Temp of samples: C Attempt to Cool?	
TAT: Standard RUSH Next BD 2nd BD 3rd BD X						Comments:	