

September 04, 2018

Report to:

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

Bill to:

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

cc: Michaela Gorospe, Clark Short

Project ID: 4506946843

ACZ Project ID: L46350

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 18, 2018. This project has been assigned to ACZ's project number, L46350. Please reference this number in all future inquiries.

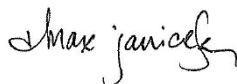
All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L46350. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

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 October 04, 2018. If the samples are determined to be hazardous, additional charges apply for disposal (typically \$11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

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



Max Janicek has reviewed and
approved this report.



Rio Algom Mining Company

Project ID: 4506946843

Sample ID: 32-52

ACZ Sample ID: **L46350-01**

Date Sampled: 08/16/18 17:29

Date Received: 08/18/18

Sample Matrix: Groundwater

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	2	326			mg/L	0.2	1	08/29/18 22:03	dcm
Magnesium, dissolved	M200.7 ICP	2	85.9			mg/L	0.4	2	08/29/18 22:03	dcm
Potassium, dissolved	M200.7 ICP	2	1.6	B		mg/L	0.4	2	08/29/18 22:03	dcm
Sodium, dissolved	M200.7 ICP	2	452			mg/L	0.4	2	08/29/18 22:03	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Chloride	SM4500Cl-E	10	236		*	mg/L	5	20	09/04/18 10:40	mss2
Conductivity @25C	SM2510B	1	4080			umhos/cm	1	10	08/28/18 23:56	enb
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1		U	*	mg/L	0.02	0.1	08/29/18 15:13	krh
Residue, Filterable (TDS) @180C	SM2540C	1	3340			mg/L	10	20	08/21/18 10:57	oah
Sulfate	D516-02/-07 - Turbidimetric	50	1690		*	mg/L	50	250	08/31/18 9:38	mss2


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:

<http://www.acz.com/public/extquallist.pdf>

Rio Algom Mining Company

ACZ Project ID: **L46350**

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.

Calcium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG455212													
WG455212ICV	ICV	08/29/18 20:32	II180824-2	100		100.9	mg/L	101	95	105			
WG455212ICB	ICB	08/29/18 20:38				U	mg/L		-0.3	0.3			
WG455212LFB	LFB	08/29/18 20:50	II180827-2	68.16145		69.28	mg/L	102	85	115			
L46328-02AS	AS	08/29/18 21:48	II180827-2	68.16145	45.6	111.9	mg/L	97	85	115			
L46328-02ASD	ASD	08/29/18 21:51	II180827-2	68.16145	45.6	111.6	mg/L	97	85	115	0	20	

Chloride

SM4500CI-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG455494													
WG455494ICB	ICB	09/04/18 9:16				U	mg/L		-1.5	1.5			
WG455494ICV	ICV	09/04/18 9:16	WI180530-1	54.89		55.95	mg/L	102	90	110			
WG455494LFB1	LFB	09/04/18 10:25	WI171229-5	30.03		31.82	mg/L	106	90	110			
L46389-01DUP	DUP	09/04/18 10:25			4.4	4.39	mg/L				0	20	RA
L46389-02AS	AS	09/04/18 10:25	WI171229-5	30.03	4.4	36.52	mg/L	107	90	110			
WG455494LFB2	LFB	09/04/18 10:34	WI171229-5	30.03		31.86	mg/L	106	90	110			

Conductivity @25C

SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG455060													
WG455060LCSW2	LCSW	08/28/18 15:20	PCN56415	1410		1380	umhos/cm	98	90	110			
WG455060LCSW5	LCSW	08/28/18 17:54	PCN56415	1410		1370	umhos/cm	97	90	110			
WG455060LCSW8	LCSW	08/28/18 20:06	PCN56415	1410		1360	umhos/cm	96	90	110			
WG455060LCSW11	LCSW	08/28/18 22:09	PCN56415	1410		1270	umhos/cm	90	90	110			
L46399-25DUP	DUP	08/29/18 0:43			232	231	umhos/cm				0	20	
WG455060LCSW14	LCSW	08/29/18 1:06	PCN56415	1410		1350	umhos/cm	96	90	110			

Magnesium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG455212													
WG455212ICV	ICV	08/29/18 20:32	II180824-2	100		101.78	mg/L	102	95	105			
WG455212ICB	ICB	08/29/18 20:38				U	mg/L		-0.6	0.6			
WG455212LFB	LFB	08/29/18 20:50	II180827-2	50.2933		48.28	mg/L	96	85	115			
L46328-02AS	AS	08/29/18 21:48	II180827-2	50.2933	1.8	50.72	mg/L	97	85	115			
L46328-02ASD	ASD	08/29/18 21:51	II180827-2	50.2933	1.8	49.36	mg/L	95	85	115	3	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
WG455205													
WG455205ICV	ICV	08/29/18 15:09	WI180602-1	2.416		2.31	mg/L	96	90	110			
WG455205ICB	ICB	08/29/18 15:10				U	mg/L		-0.02	0.02			
WG455205LFB	LFB	08/29/18 15:11	WI180703-7	2		1.987	mg/L	99	90	110			
L46473-01AS	AS	08/29/18 15:15	WI180703-7	2	U	2.009	mg/L	100	90	110			
L46562-01DUP	DUP	08/29/18 15:17			U	U	mg/L				0	20	RA

Rio Algom Mining Company

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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.

Potassium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG455212													
WG455212ICV	ICV	08/29/18 20:32	II180824-2	20		20.2	mg/L	101	95	105			
WG455212ICB	ICB	08/29/18 20:38				U	mg/L		-0.6	0.6			
WG455212LFB	LFB	08/29/18 20:50	II180827-2	101.3833		101.5	mg/L	100	85	115			
L46328-02AS	AS	08/29/18 21:48	II180827-2	101.3833	.3	104.7	mg/L	103	85	115			
L46328-02ASD	ASD	08/29/18 21:51	II180827-2	101.3833	.3	101.4	mg/L	100	85	115	3	20	

Residue, Filterable (TDS) @180C

SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG454494													
WG454494PBW	PBW	08/21/18 10:05				U	mg/L		-20	20			
WG454494LCSW	LCSW	08/21/18 10:07	PCN56357	260		248	mg/L	95	80	120			
L46351-02DUP	DUP	08/21/18 11:05			2010	2020	mg/L				0	10	

Sodium, dissolved

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG455212													
WG455212ICV	ICV	08/29/18 20:32	II180824-2	100		102.15	mg/L	102	95	105			
WG455212ICB	ICB	08/29/18 20:38				U	mg/L		-0.6	0.6			
WG455212LFB	LFB	08/29/18 20:50	II180827-2	100.8796		102.2	mg/L	101	85	115			
L46328-02AS	AS	08/29/18 21:48	II180827-2	100.8796	5.7	109.6	mg/L	103	85	115			
L46328-02ASD	ASD	08/29/18 21:51	II180827-2	100.8796	5.7	107.1	mg/L	101	85	115	2	20	

Sulfate

D516-02/-07 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG455356													
WG455356ICB	ICB	08/31/18 8:19				U	mg/L		-3	3			
WG455356ICV	ICV	08/31/18 8:19	WI180827-2	20		19.6	mg/L	98	90	110			
L45307-06DUP	DUP	08/31/18 9:21			180	181	mg/L				1	20	
L45307-07AS	AS	08/31/18 9:23	SO4TURB5X	10	111	119	mg/L	80	90	110			M3
WG455356LFB	LFB	08/31/18 9:37	WI180726-1	10		10.3	mg/L	103	90	110			

Rio Algom Mining Company

ACZ Project ID: **L46350**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L46350-01	WG455494	Chloride	SM4500Cl-E	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG455205	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).
	WG455356	Sulfate	D516-02/-07 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Rio Algom Mining Company

ACZ Project ID: **L46350**

No certification qualifiers associated with this analysis

Rio Algom Mining Company
4506946843

ACZ Project ID: L46350
Date Received: 08/18/2018 11:35
Received By:
Date Printed: 8/20/2018

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?
-----	-----	-----	-----	-----
4428	4.5	<=6.0	15	N/A

Was ice present in the shipment container(s)?

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

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

Rio Algom Mining Company
4506946843

ACZ Project ID: L46350

Date Received: 08/18/2018 11:35

Received By:

Date Printed: 8/20/2018

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).



Project Number: L 46350

Cooler
Number

Cooler Tag

1

4428 11:35 08/18/18
Temp: 4.5 C By: cmb
Rad: 15 uR Seal: N/A

2

3

4

5

6

7

8

9

10

Sample
Number

Associated Cooler

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

Log-In Order Verified:

Initials/Date:

CS 8.18.18