ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

August 27, 2018

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

cc: Clark Short, Angela Persico

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

Project ID: 4506946843
ACZ Project ID: L46195

Kent Applegate:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 10, 2018. This project has been assigned to ACZ's project number, L46195. 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 L46195. 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 September 26, 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.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Rio Algom Mining Company
Project ID: 4506946843
Sample ID: 5-01

ACZ Sample ID: ***L46195-01***
Date Sampled: *08/07/18 13:01*
Date Received: *08/10/18*
Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	5	426			mg/L	0.5	3	08/27/18 11:26	dcm
Magnesium, dissolved	M200.7 ICP	5	223			mg/L	1	5	08/27/18 11:26	dcm
Potassium, dissolved	M200.7 ICP	5	2	B		mg/L	1	5	08/27/18 11:26	dcm
Sodium, dissolved	M200.7 ICP	5	374			mg/L	1	5	08/27/18 11:26	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Chloride	SM4500Cl-E	10	165		*	mg/L	5	20	08/17/18 12:54	mss2
Conductivity @25C	SM2510B	1	3690		*	umhos/cm	1	10	08/17/18 20:42	emk
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	4	7.06		*	mg/L	0.08	0.4	08/22/18 1:37	pjb
Residue, Filterable (TDS) @180C	SM2540C	2	4270		*	mg/L	20	40	08/11/18 10:17	nmc
Sulfate	D516-02/-07 - Turbidimetric	120	2950			mg/L	120	600	08/20/18 12:43	las

Rio Algom Mining Company
Project ID: 4506946843
Sample ID: 32-58

ACZ Sample ID: ***L46195-02***
Date Sampled: *08/08/18 10:11*
Date Received: *08/10/18*
Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	10	602			mg/L	1	5	08/27/18 11:29	dcm
Magnesium, dissolved	M200.7 ICP	10	1670			mg/L	2	10	08/27/18 11:29	dcm
Potassium, dissolved	M200.7 ICP	10		U		mg/L	2	10	08/27/18 11:29	dcm
Sodium, dissolved	M200.7 ICP	10	1630			mg/L	2	10	08/27/18 11:29	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Chloride	SM4500Cl-E	50	3450		*	mg/L	30	100	08/17/18 13:18	mss2
Conductivity @25C	SM2510B	1	11600			umhos/cm	1	10	08/17/18 20:44	emk
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	15	35.7		*	mg/L	0.3	2	08/22/18 1:38	pjb
Residue, Filterable (TDS) @180C	SM2540C	5	15000		*	mg/L	50	100	08/11/18 10:21	nmc
Sulfate	D516-02/-07 - Turbidimetric	500	5680		*	mg/L	500	2500	08/20/18 12:43	las

Rio Algom Mining Company
Project ID: 4506946843
Sample ID: 23-85

ACZ Sample ID: ***L46195-03***
Date Sampled: *08/08/18 11:05*
Date Received: *08/10/18*
Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	10	594			mg/L	1	5	08/27/18 11:32	dcm
Magnesium, dissolved	M200.7 ICP	10	1650			mg/L	2	10	08/27/18 11:32	dcm
Potassium, dissolved	M200.7 ICP	10		U		mg/L	2	10	08/27/18 11:32	dcm
Sodium, dissolved	M200.7 ICP	10	1610			mg/L	2	10	08/27/18 11:32	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Chloride	SM4500Cl-E	50	3410		*	mg/L	30	100	08/17/18 13:18	mss2
Conductivity @25C	SM2510B	1	11400			umhos/cm	1	10	08/17/18 20:46	emk
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	15	35.8		*	mg/L	0.3	2	08/22/18 1:40	pjb
Residue, Filterable (TDS) @180C	SM2540C	5	15300		*	mg/L	50	100	08/11/18 10:25	nmc
Sulfate	D516-02/-07 - Turbidimetric	500	5900		*	mg/L	500	2500	08/20/18 12:43	las

Rio Algom Mining Company
Project ID: 4506946843
Sample ID: S-9

ACZ Sample ID: ***L46195-04***
Date Sampled: *08/08/18 11:10*
Date Received: *08/10/18*
Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	5	16.4		*	mg/L	0.5	3	08/27/18 11:36	dcm
Magnesium, dissolved	M200.7 ICP	5	1410			mg/L	1	5	08/27/18 11:36	dcm
Potassium, dissolved	M200.7 ICP	5	14			mg/L	1	5	08/27/18 11:36	dcm
Sodium, dissolved	M200.7 ICP	5	1070			mg/L	1	5	08/27/18 11:36	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Chloride	SM4500Cl-E	50	2320		*	mg/L	30	100	08/17/18 13:18	mss2
Conductivity @25C	SM2510B	1	7850			umhos/cm	1	10	08/17/18 20:48	emk
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.04	B	*	mg/L	0.02	0.1	08/22/18 1:41	pjb
Residue, Filterable (TDS) @180C	SM2540C	5	9930		*	mg/L	50	100	08/11/18 10:29	nmc
Sulfate	D516-02/-07 - Turbidimetric	100	3960		*	mg/L	100	500	08/20/18 12:16	las

Rio Algom Mining Company
Project ID: 4506946843
Sample ID: 32-60

ACZ Sample ID: ***L46195-05***
Date Sampled: *08/08/18 16:54*
Date Received: *08/10/18*
Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	10	577		*	mg/L	1	5	08/27/18 11:39	dcm
Magnesium, dissolved	M200.7 ICP	10	1230			mg/L	2	10	08/27/18 11:39	dcm
Potassium, dissolved	M200.7 ICP	10	14			mg/L	2	10	08/27/18 11:39	dcm
Sodium, dissolved	M200.7 ICP	10	1540			mg/L	2	10	08/27/18 11:39	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Chloride	SM4500Cl-E	50	2360		*	mg/L	30	100	08/17/18 13:18	mss2
Conductivity @25C	SM2510B	1	9860			umhos/cm	1	10	08/17/18 20:51	emk
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	5	10.6		*	mg/L	0.1	0.5	08/22/18 1:42	pjb
Residue, Filterable (TDS) @180C	SM2540C	10	13300			mg/L	100	200	08/13/18 16:18	nmc
Sulfate	D516-02/-07 - Turbidimetric	500	4940		*	mg/L	500	2500	08/20/18 12:43	las

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Rio Algom Mining Company
Project ID: 4506946843
Sample ID: S-12

ACZ Sample ID: ***L46195-06***
Date Sampled: *08/09/18 10:45*
Date Received: *08/10/18*
Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	10	623		*	mg/L	1	5	08/27/18 11:42	dcm
Magnesium, dissolved	M200.7 ICP	10	1170			mg/L	2	10	08/27/18 11:42	dcm
Potassium, dissolved	M200.7 ICP	10	11			mg/L	2	10	08/27/18 11:42	dcm
Sodium, dissolved	M200.7 ICP	10	1630			mg/L	2	10	08/27/18 11:42	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Chloride	SM4500Cl-E	50	2820		*	mg/L	30	100	08/17/18 13:19	mss2
Conductivity @25C	SM2510B	1	10200			umhos/cm	1	10	08/17/18 20:53	emk
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	1.21		*	mg/L	0.02	0.1	08/22/18 1:25	pjb
Residue, Filterable (TDS) @180C	SM2540C	5	12700		*	mg/L	50	100	08/11/18 10:37	nmc
Sulfate	D516-02/-07 - Turbidimetric	500	4120		*	mg/L	500	2500	08/20/18 12:45	las

Rio Algom Mining Company
Project ID: 4506946843
Sample ID: 32-72

ACZ Sample ID: ***L46195-07***
Date Sampled: *08/09/18 11:24*
Date Received: *08/10/18*
Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	10	439		*	mg/L	1	5	08/27/18 11:45	dcm
Magnesium, dissolved	M200.7 ICP	10	2190			mg/L	2	10	08/27/18 11:45	dcm
Potassium, dissolved	M200.7 ICP	10	18			mg/L	2	10	08/27/18 11:45	dcm
Sodium, dissolved	M200.7 ICP	10	345			mg/L	2	10	08/27/18 11:45	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Chloride	SM4500Cl-E	10	256		*	mg/L	5	20	08/17/18 12:48	mss2
Conductivity @25C	SM2510B	1	7320			umhos/cm	1	10	08/17/18 20:55	emk
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	1	0.21		*	mg/L	0.02	0.1	08/22/18 1:26	pjb
Residue, Filterable (TDS) @180C	SM2540C	10	14900			mg/L	100	200	08/13/18 16:24	nmc
Sulfate	D516-02/-07 - Turbidimetric	500	8730		*	mg/L	500	2500	08/20/18 12:45	las

Report Header Explanations

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

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	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: ***L46195***

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
WG454778													
WG454778ICV	ICV	08/27/18 10:28	II180727-1	100		98.4	mg/L	98	95	105			
WG454778ICB	ICB	08/27/18 10:34				U	mg/L		-0.3	0.3			
WG454778LFB	LFB	08/27/18 10:47	II180809-4	68.16145		66.99	mg/L	98	85	115			
L46045-04AS	AS	08/27/18 11:03	II180809-4	68.16145	U	67.26	mg/L	99	85	115			
L46045-04ASD	ASD	08/27/18 11:07	II180809-4	68.16145	U	66.31	mg/L	97	85	115	1	20	
L46228-01AS	AS	08/27/18 12:08	II180809-4	68.16145	217	271.5	mg/L	80	85	115			M3
L46228-01ASD	ASD	08/27/18 12:11	II180809-4	68.16145	217	272.2	mg/L	81	85	115	0	20	M3

Chloride SM4500Cl-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG454305													
WG454305ICB	ICB	08/17/18 8:28				U	mg/L		-1.5	1.5			
WG454305ICV	ICV	08/17/18 8:28	WI180530-1	54.89		56.08	mg/L	102	90	110			
WG454305LFB	LFB	08/17/18 12:34	WI171229-5	30.03		32.43	mg/L	108	90	110			
L46192-01AS	AS	08/17/18 12:54	10XCL	30	103	139.9	mg/L	123	90	110			M1
L46188-02DUP	DUP	08/17/18 14:08			61.5	60.87	mg/L				1	20	

Conductivity @25C SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG454327													
WG454327LCSW2	LCSW	08/17/18 16:29	PCN55810	1410		1440	umhos/cm	102	90	110			
WG454327LCSW5	LCSW	08/17/18 20:23	PCN55810	1410		1360	umhos/cm	96	90	110			
L46197-02DUP	DUP	08/17/18 21:35			1780	1790	umhos/cm				1	20	
WG454327LCSW8	LCSW	08/17/18 23:46	PCN55810	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
WG454778													
WG454778ICV	ICV	08/27/18 10:28	II180727-1	100		99.43	mg/L	99	95	105			
WG454778ICB	ICB	08/27/18 10:34				U	mg/L		-0.6	0.6			
WG454778LFB	LFB	08/27/18 10:47	II180809-4	50.2933		46.39	mg/L	92	85	115			
L46045-04AS	AS	08/27/18 11:03	II180809-4	50.2933	U	46.53	mg/L	93	85	115			
L46045-04ASD	ASD	08/27/18 11:07	II180809-4	50.2933	U	46.07	mg/L	92	85	115	1	20	
L46228-01AS	AS	08/27/18 12:08	II180809-4	50.2933	27.9	72.31	mg/L	88	85	115			
L46228-01ASD	ASD	08/27/18 12:11	II180809-4	50.2933	27.9	72.41	mg/L	89	85	115	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
WG454581													
WG454581ICV	ICV	08/21/18 21:43	WI180602-1	2.416		2.374	mg/L	98	90	110			
WG454581ICB	ICB	08/21/18 21:44				U	mg/L		-0.02	0.02			
WG454585													
WG454585LFB1	LFB	08/22/18 0:27	WI180703-7	2		1.957	mg/L	98	90	110			
WG454585LFB2	LFB	08/22/18 1:08	WI180703-7	2		1.979	mg/L	99	90	110			
L46188-01AS	AS	08/22/18 1:10	WI180703-7	2	U	2.098	mg/L	105	90	110			
L46188-02DUP	DUP	08/22/18 1:13			.15	.143	mg/L				5	20	RA

Rio Algom Mining Company ACZ Project ID: ***L46195***

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
WG454778													
WG454778ICV	ICV	08/27/18 10:28	II180727-1	20		19.69	mg/L	98	95	105			
WG454778ICB	ICB	08/27/18 10:34				U	mg/L		-0.6	0.6			
WG454778LFB	LFB	08/27/18 10:47	II180809-4	101.3833		97.45	mg/L	96	85	115			
L46045-04AS	AS	08/27/18 11:03	II180809-4	101.3833	U	97.73	mg/L	96	85	115			
L46045-04ASD	ASD	08/27/18 11:07	II180809-4	101.3833	U	96.85	mg/L	96	85	115	1	20	
L46228-01AS	AS	08/27/18 12:08	II180809-4	101.3833	4	101.4	mg/L	96	85	115			
L46228-01ASD	ASD	08/27/18 12:11	II180809-4	101.3833	4	101.6	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
WG453813													
WG453813PBW	PBW	08/11/18 9:15				U	mg/L		-20	20			
WG453813LCSW	LCSW	08/11/18 9:18	PCN56037	260		266	mg/L	102	80	120			
L46165-04DUP	DUP	08/11/18 10:02			658	640	mg/L				3	10	
L46195-07DUP	DUP	08/11/18 10:45			13900	14600	mg/L				5	10	
WG453909													
WG453909PBW	PBW	08/13/18 15:50				U	mg/L		-20	20			
WG453909LCSW	LCSW	08/13/18 15:52	PCN56037	260		258	mg/L	99	80	120			
L46195-05DUP	DUP	08/13/18 16:21			13300	13000	mg/L				2	10	
L46211-08DUP	DUP	08/13/18 16:50			504	508	mg/L				1	10	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG454778													
WG454778ICV	ICV	08/27/18 10:28	II180727-1	100		98.59	mg/L	99	95	105			
WG454778ICB	ICB	08/27/18 10:34				U	mg/L		-0.6	0.6			
WG454778LFB	LFB	08/27/18 10:47	II180809-4	100.8796		96.6	mg/L	96	85	115			
L46045-04AS	AS	08/27/18 11:03	II180809-4	100.8796	U	96.54	mg/L	96	85	115			
L46045-04ASD	ASD	08/27/18 11:07	II180809-4	100.8796	U	95.51	mg/L	95	85	115	1	20	
L46228-01AS	AS	08/27/18 12:08	II180809-4	100.8796	51.2	143.7	mg/L	92	85	115			
L46228-01ASD	ASD	08/27/18 12:11	II180809-4	100.8796	51.2	144.2	mg/L	92	85	115	0	20	

Sulfate D516-02/-07 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG454405													
WG454405ICB	ICB	08/20/18 10:39				U	mg/L		-3	3			
WG454405ICV	ICV	08/20/18 10:39	WI180809-9	20		19.3	mg/L	97	90	110			
WG454405LFB	LFB	08/20/18 12:04	WI180726-1	10		9.2	mg/L	92	90	110			
L46164-01DUP	DUP	08/20/18 12:13			581	535	mg/L				8	20	
L46164-02AS	AS	08/20/18 12:13	SO4TURB50X	10	1120	1130	mg/L	100	90	110			
L46202-04AS	AS	08/20/18 12:21	SO4TURB50X	10	1010	1040	mg/L	300	90	110			M3
L46202-03DUP	DUP	08/20/18 12:54			11200	11700	mg/L				4	20	

Rio Algom Mining Company ACZ Project ID: ***L46195***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L46195-01	WG454305	Chloride	SM4500Cl-E	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG454327	Conductivity @25C	SM2510B	ZW	Method deviation. The sample was centrifuged prior to analysis due to high solid content.
	WG454585	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).
	WG453813	Residue, Filterable (TDS) @180C	SM2540C	RO	The duplicate originally assigned to this sample was not used for precision assessment because residue density exceeded the method limits. Another duplicate in the batch was used to assess precision. Method required duplicate frequency was not met.
L46195-02	WG454305	Chloride	SM4500Cl-E	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG454585	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).
	WG453813	Residue, Filterable (TDS) @180C	SM2540C	RO	The duplicate originally assigned to this sample was not used for precision assessment because residue density exceeded the method limits. Another duplicate in the batch was used to assess precision. Method required duplicate frequency was not met.
	WG454405	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.
L46195-03	WG454305	Chloride	SM4500Cl-E	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG454585	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).
	WG453813	Residue, Filterable (TDS) @180C	SM2540C	RO	The duplicate originally assigned to this sample was not used for precision assessment because residue density exceeded the method limits. Another duplicate in the batch was used to assess precision. Method required duplicate frequency was not met.
	WG454405	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.
L46195-04	WG454778	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG454305	Chloride	SM4500Cl-E	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG454585	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).
	WG453813	Residue, Filterable (TDS) @180C	SM2540C	RO	The duplicate originally assigned to this sample was not used for precision assessment because residue density exceeded the method limits. Another duplicate in the batch was used to assess precision. Method required duplicate frequency was not met.
	WG454405	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: ***L46195***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L46195-05	WG454778	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG454305	Chloride	SM4500Cl-E	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG454585	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).
	WG454405	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.
L46195-06	WG454778	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG454305	Chloride	SM4500Cl-E	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG454585	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).
	WG453813	Residue, Filterable (TDS) @180C	SM2540C	RO	The duplicate originally assigned to this sample was not used for precision assessment because residue density exceeded the method limits. Another duplicate in the batch was used to assess precision. Method required duplicate frequency was not met.
	WG454405	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.
L46195-07	WG454778	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG454305	Chloride	SM4500Cl-E	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG454585	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).
	WG454405	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.

Certification Qualifiers

Rio Algom Mining Company

ACZ Project ID: ***L46195***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Rio Algom Mining Company
4506946843

ACZ Project ID: L46195
Date Received: 08/10/2018 10:54
Received By:
Date Printed: 8/13/2018

Receipt Verification

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

A change was made in the Sample ID: Line 5 section prior to ACZ custody.

Samples/Containers

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

Some parameters were received past hold time.

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
4491	2.4	<=6.0	15	N/A
4656	1.7	<=6.0	15	N/A

Was ice present in the shipment container(s)?

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

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Rio Algom Mining Company
4506946843

ACZ Project ID: L46195
Date Received: 08/10/2018 10:54
Received By:
Date Printed: 8/13/2018

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).

ACZ Laboratories, Inc.

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

L46195

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: Michaella Gorospe/Clark Short
Company: INTERA, INC.
E-mail: See remarks
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: C. SHORT 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 FORMATION

Quote #: 58759
PO#: 4502696254
Reporting state for compliance testing:
Check box if samples include NRC licensed material? ☐

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SAP-GW	DP-609						
S-61	08/09/2018 1301	GW	4	☐	☒	☐	☐	☐	☐	☐	☐
32-58	08/08/2018 1011	GW	4	☐	☒	☐	☐	☐	☐	☐	☐
23-85	08/08/2018 1105	GW	4	☐	☒	☐	☐	☐	☐	☐	☐
S-9	08/08/2018 1110	GW	4	☐	☒	☐	☐	☐	☐	☐	☐
32-60	08/08/2018 1654	GW	4	☐	☒	☐	☐	☐	☐	☐	☐
S-12	08/08/2018 1045	GW	4	☐	☒	☐	☐	☐	☐	☐	☐
32-72	08/09/2018 1124	GW	4	☐	☒	☐	☐	☐	☐	☐	☐
				☐	☐	☐	☐	☐	☐	☐	☐
				☐	☐	☐	☐	☐	☐	☐	☐
				☐	☐	☐	☐	☐	☐	☐	☐

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

REMARKS

RAML COC#: 1802. Note different COC's may have different PO's. Shipment of 4 Coolers.

Please CC report to: cshort@intera.com, apersico@intera.com, Michaella.Gorospe@bhpbilliton.com

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

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
[signature]	8/9/18 1300	[signature]	8/10/18 10:55

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

L46195 Chain of Custod