

# Rio Algom Mining LLC

January 12, 2010

Certified Mail  
Return Receipt (7001 1940 0000 5346 4570)

Mr. Jerry Schoeppner  
Groundwater Quality Section  
New Mexico Environment Department  
P.O. Box 26110  
Santa Fe, NM 87502

Re: **Discharge Plan - 71**  
**Analytical Results – 4th Quarter 2009**

Dear Mr. Schoeppner,

Please find attached the 4th quarter groundwater monitoring report for the Section 4 lined evaporation ponds at the Ambrosia Lake mill facility. This report includes the quarterly reporting requirements for discharge permit DP-71.

If you have any questions or need additional information, please call me at 505-287-8851, ext 15.

Regards,



Chuck Wentz  
Environmental Department Supervisor  
Radiation Safety Officer

Attachment: As stated

xc: NRC (Mr. Tom McLaughlin)  
NRC (document control)  
file

**RIO ALGOM MINING LLC  
AMBROSIA LAKE  
FACILITY**

**Discharge Permit  
DP-71**

**4th Quarter 2009**

**January 12, 2009**

## Discharge Permit DP-71

---

### Summary of Activities

This report presents the results of the monitoring and sampling requirements associated with discharge permit DP-71 for the period encompassing the 4<sup>th</sup> quarter of 2009. DP-71 permit renewal was approved on December 1, 2003 and monitoring requirements were expanded from previous monitoring commitments listed in the permit. This has resulted in acquiring data that was not obtained in past monitoring programs.

Activities associated with the Section 4 lined evaporation ponds consisted of sampling of soil from beneath the former liner areas. Hauling of sediments was initiated in December 2005 following construction of a highway overpass. As of November 30, 2007, 100% of the estimated pond sediments have been relocated to the disposal cell at the main mill facility. There were no spills or related problems with the former lined pond areas during the reporting period.

All wells associated with the permit were dry or contained insufficient water for sample collection except for two wells. These wells were MW-22 and MW-32. Laboratory/analytical results for the quarterly sample events were provided by ACZ Laboratories. A table summarizing the data is attached and copies of the laboratory reports are included with this submittal.

Hydrographs and time versus concentration plots for the chemical constituents chloride, sulfate, and TDS are attached for MW-22, MW-26, and MW-32. Since all other wells continue to be dry, Rio Algom wishes to incorporate the hydrographs for the other wells associated with DP-71 that were included within the April 3, 2006 submittal.

Due to the lack of any water in the alluvium in the Section 4 Pond area, development of a potentiometric map for the alluvium was not undertaken. Since mine dewatering from mines northeast of the Section 4 Ponds ceased in 1985, the alluvium in the vicinity of the Section 4 Ponds has drained, which is reflected in the historical water level data obtained from the monitoring wells associated with the Section 4 Ponds.

Analytical Data

DP-71

RIO ALGOM MINING LLC  
DISCHARGE PERMIT - DP-71  
MONITORING RESULTS - Fourth QUARTER 2009

Date	Location	Depth to Water (ft)	Total Depth (ft)	WELL STATUS	pH (s.u.)	Temp. ( C)	Spec. Cond. (uS)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Nitrate (mg/L)	Arsenic (mg/L)	Selenium (mg/L)	Uranium (mg/L)
11/17/2009	MW-12		12.92	NS										
11/17/2009	MW-13		29.28	NS										
11/16/2009	MW-22	35.40	36.84		7.16	11.5	5250	130	2800	4500	17.1	0.004	0.119	0.0326
11/17/2009	MW-23		41.73	NS										
11/17/2009	MW-24		50.12	NS										
11/1/2009	MW-25		29.61	NS										
11/17/2009	MW-26		35.25	NS										
11/17/2009	MW-27		27.90	NS										
11/17/2009	MW-28		32.48	NS										
11/17/2009	MW-29		29.30	NS										
11/17/2009	MW-30		40.99	NS										
11/17/2009	MW-31		50.51	NS										
11/16/2009	MW-32	68.23	71.62		7.13	12.9	5150	110	2800	4570	50.7	0.009	0.178	0.0744
11/17/2009	MW-33		59.32	NS										

Notes

- 1 - Well status listed as "NS" indicates the well was either dry or contained insufficient water for sample collection.
- 2 - Monitor wells MW-1 through MW-11, MW-14 through MW-21 plugged and abandoned for the lined pond relocation project.

RIO ALGOM MINING LLC  
DISCHARGE PERMIT - DP-71  
MONITORING RESULTS - 4TH QUARTER 2009  
SEMI-ANNUAL REPORT

Date	Location	WELL STATUS	HCO3 (mg/L)	CO3 (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	F (mg/L)	Al (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	Cu (mg/L)
11/17/2009	MW-12	NS												
11/17/2009	MW-13	NS												
11/16/2009	MW-22		251.00	<2	554.00	381	475	7	0.6	<0.2	<0.03	<0.05	<0.05	<0.05
11/17/2009	MW-23	NS												
11/17/2009	MW-24	NS												
11/17/2009	MW-25	NS												
11/17/2009	MW-26	NS												
11/17/2009	MW-27	NS												
11/17/2009	MW-28	NS												
11/17/2009	MW-29	NS												
11/17/2009	MW-30	NS												
11/17/2009	MW-31	NS												
11/16/2009	MW-32		355.00	<2	483.00	270	687	6	0.9	<0.2	<0.03	<0.05	<0.05	<0.05
11/17/2009	MW-33	NS												

Notes

1 -

Well status listed as "NS" indicates the well was either dry or contained insufficient water for sample collection.

RIO ALGOM MINING LLC  
DISCHARGE PERMIT - DP-71  
MONITORING RESULTS - 4TH QUARTER 2007  
SEMI-ANNUAL REPORT

Date	Location	Fe (mg/L)	Pb (mg/L)	Mn (mg/L)	Mo (mg/L)	Ni (mg/L)	TKN (mg/L)	Ag (mg/L)	Zn (mg/L)	Ra-226 & Ra-228 (pCi/L)
11/17/2009	MW-12									
11/17/2009	MW-13									
11/16/2009	MW-22	<0.1	<0.0005	0.49	<0.05	<0.05	1.9	<0.05	0.1	0.42 & 0.47
11/17/2009	MW-23									
11/17/2009	MW-24									
11/17/2009	MW-25									
11/17/2009	MW-26									
11/17/2009	MW-27									
11/17/2009	MW-28									
11/17/2009	MW-29									
11/17/2009	MW-30									
11/17/2009	MW-31									
11/16/2009	MW-32	0.1	<0.0005	0.94	<0.05	<0.05	0.1	0.1	<0.05	0.57 & 0.73
11/17/2009	MW-33									

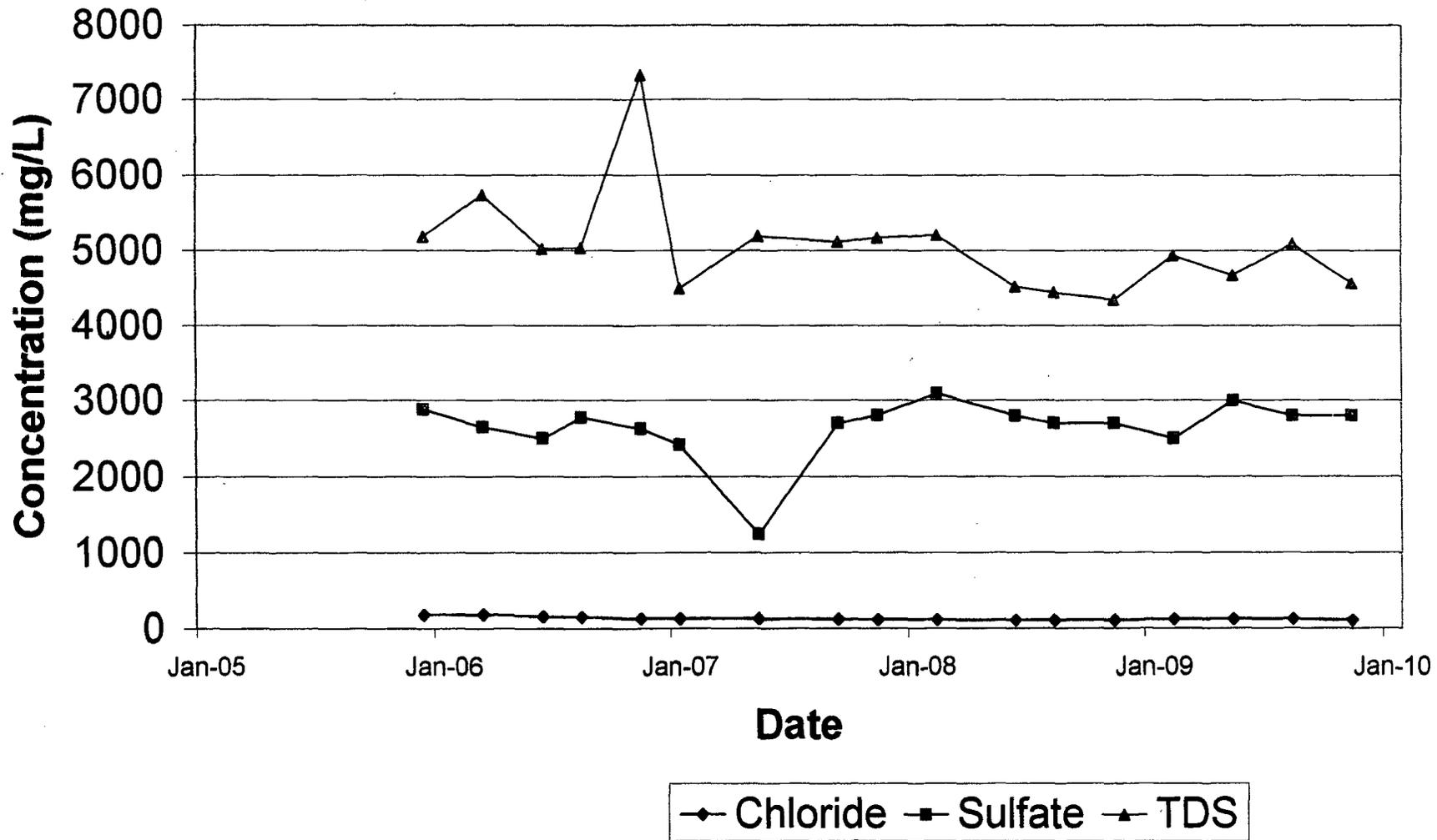
Notes

1 - Well status listed as "NS" indicates the well was either dry or contained insufficient water for sample collection.

Time versus Concentration Plots

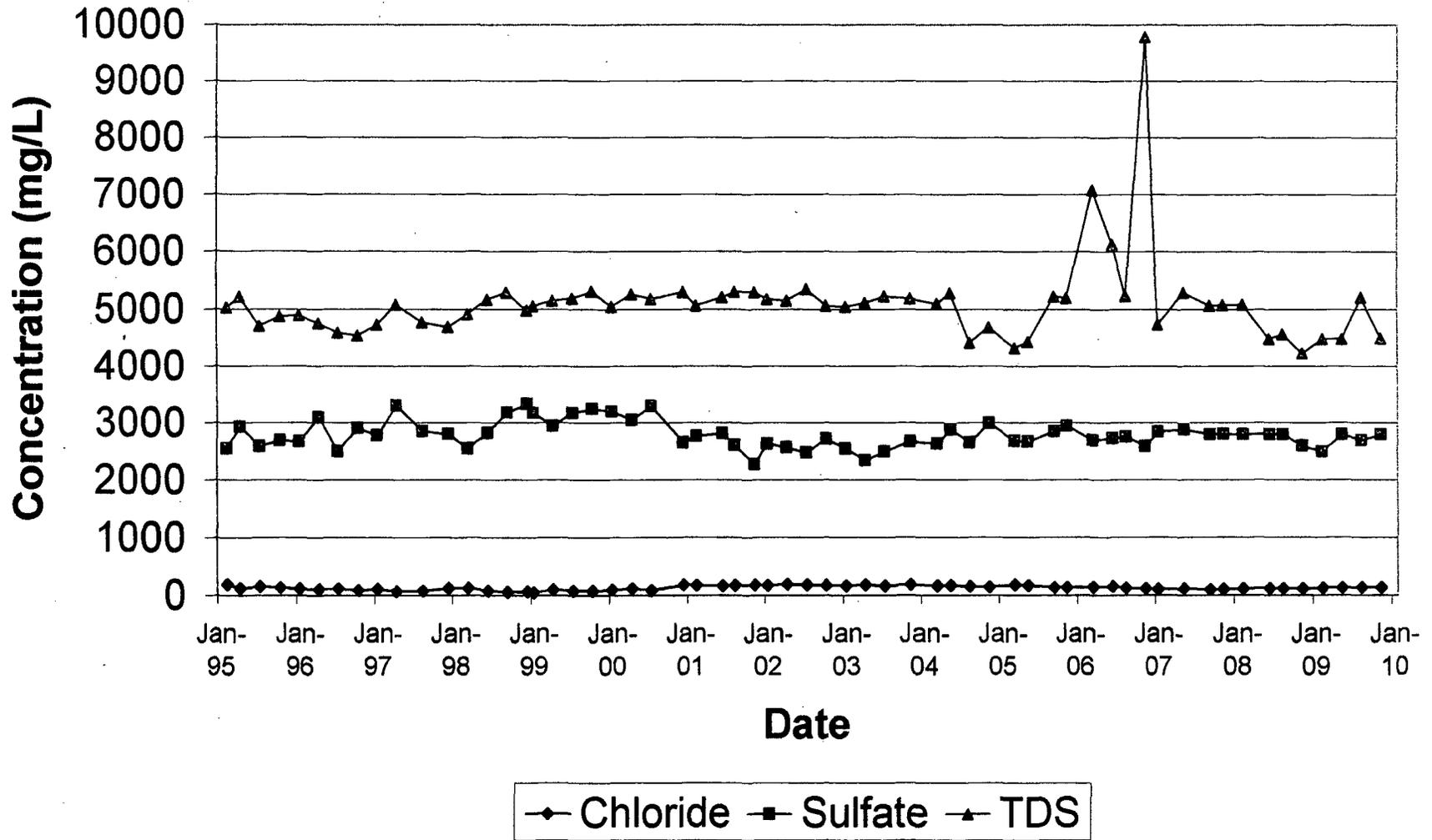
MW-22, MW-26, and MW-32

# MW-32 Time Versus Concentration



# MW-22

## Time Versus Concentration



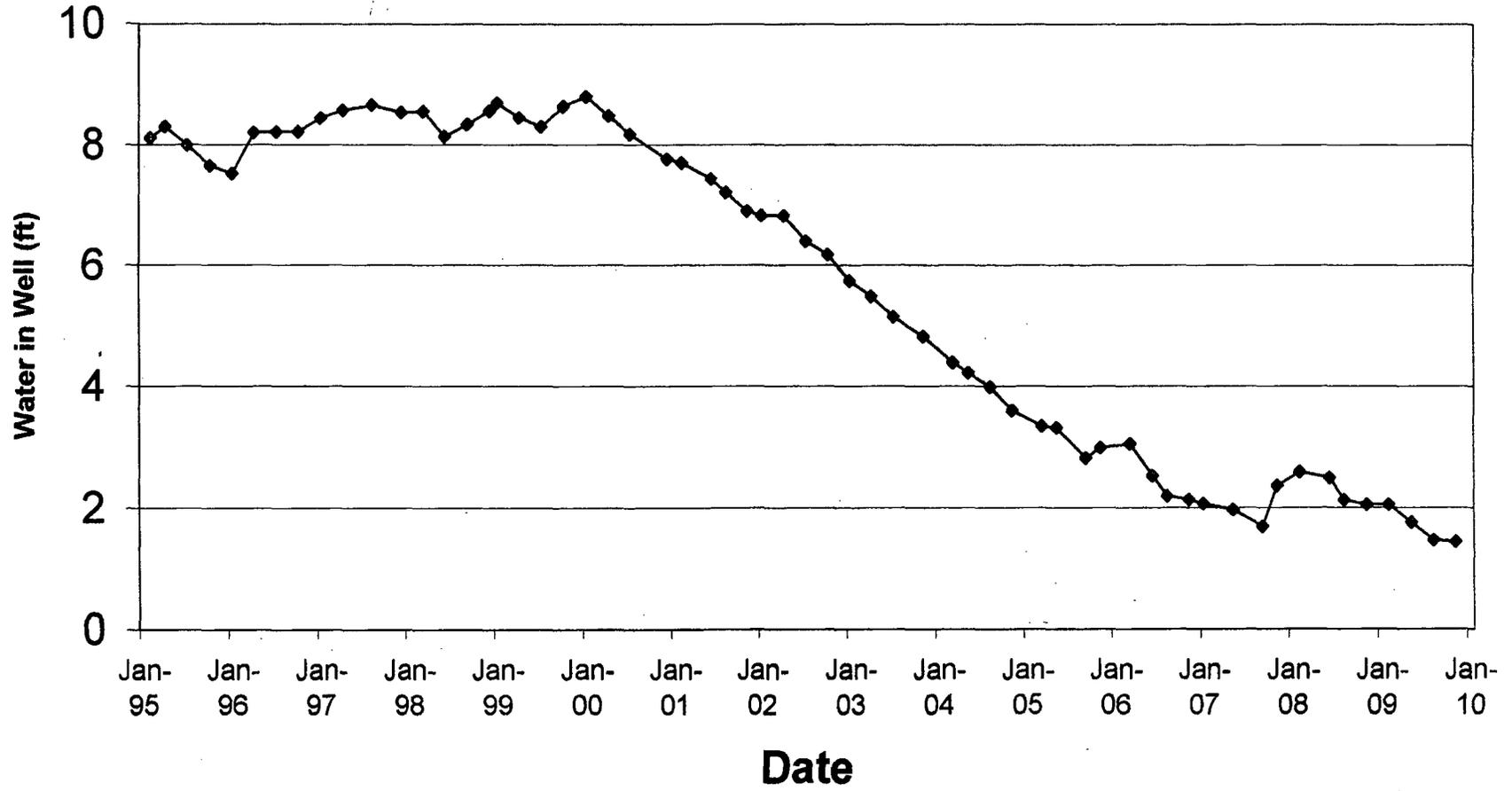
## Hydrographs

### DP-71 Well Network

MW-22, MW-26, and MW-32

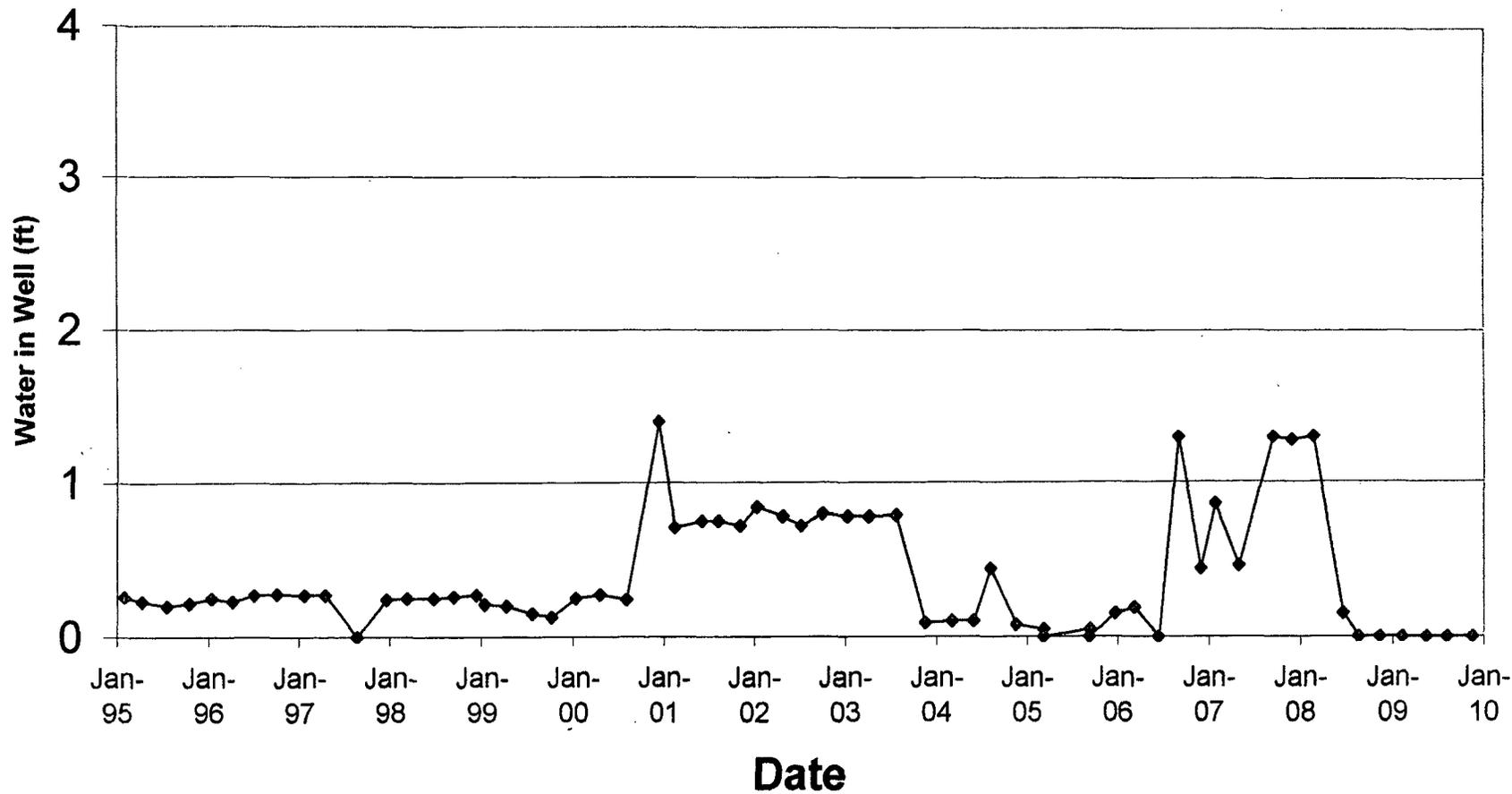
Since all other wells continue to be dry, Rio Algom wishes to incorporate the hydrographs for the other wells associated with DP-71 that were included within the April 3, 2006 submittal as part of this submittal.

# MW-22 Amount of Water in Well



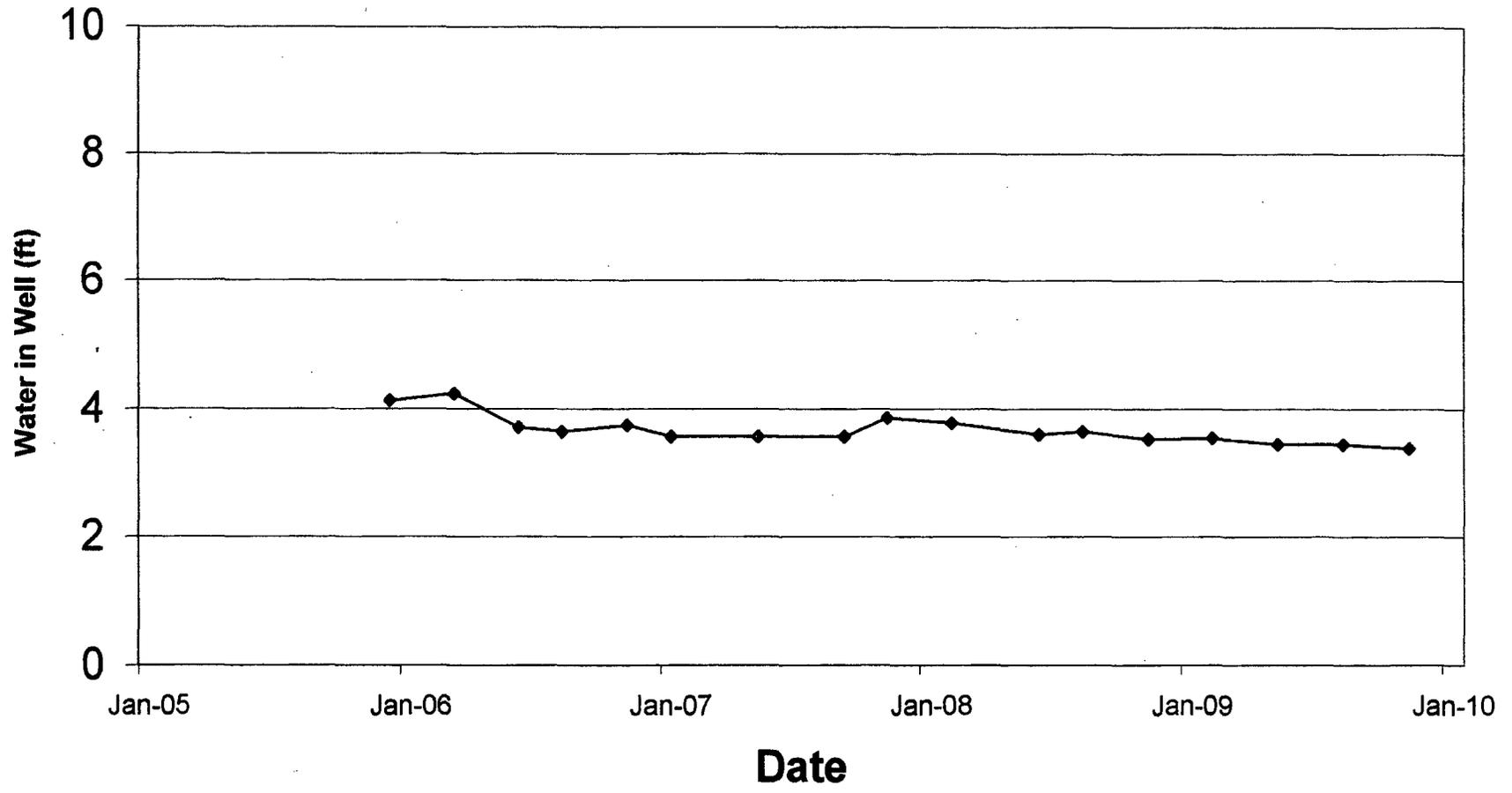
◆ Water in Well

# MW-26 Amount of Water in Well



◆ Water in Well

# MW-32 Amount of Water in Well



—◆— Water in Well

Laboratory Reports

DP-71

December 22, 2009

Report to:  
Chuck Wentz  
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

Project ID: 58077  
ACZ Project ID: L79525

Chuck Wentz:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on November 19, 2009. This project has been assigned to ACZ's project number, L79525. 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 L79525. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

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

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

All samples and sub-samples associated with this project will be disposed of after January 22, 2010. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/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 reports for five 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

December 22, 2009

Project ID: 58077

ACZ Project ID: L79525

**Sample Receipt**

ACZ Laboratories, Inc. (ACZ) received 2 ground water samples from Rio Algom Mining Company on November 19, 2009. 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 L79525. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

**Holding Times**

All analyses were performed within EPA recommended holding times.

**Sample Analysis**

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

1. The Radium 228 results have been qualified with the N1 flag on the extended qualifier report. The chemist noted that the samples were run on a detector that did not have passing initial control samples. Closing control and bracketing backgrounds passed control. All samples below detection limits. No significant impact expected.

**Rio Algom Mining Company**

Project ID: 58077  
 Sample ID: MW-32

ACZ Sample ID: L79525-01  
 Date Sampled: 11/16/09 12:25  
 Date Received: 11/19/09  
 Sample Matrix: Ground Water

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor							11/23/09 14:35	skg

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.2	0.8	11/30/09 23:23	ear
Arsenic, dissolved	M200.8 ICP-MS	0.009	B		mg/L	0.003	0.01	12/02/09 21:03	msh
Cadmium, dissolved	M200.7 ICP		U		mg/L	0.03	0.08	11/30/09 23:23	ear
Calcium, dissolved	M200.7 ICP	483		*	mg/L	1	5	11/30/09 23:23	ear
Chromium, dissolved	M200.7 ICP		U		mg/L	0.05	0.3	11/30/09 23:23	ear
Cobalt, dissolved	M200.7 ICP		U		mg/L	0.05	0.3	11/30/09 23:23	ear
Copper, dissolved	M200.7 ICP		U		mg/L	0.05	0.3	12/02/09 1:32	ear
Iron, dissolved	M200.7 ICP		U		mg/L	0.1	0.3	11/30/09 23:23	ear
Lead, dissolved	M200.8 ICP-MS		U		mg/L	0.0005	0.003	12/02/09 21:03	msh
Magnesium, dissolved	M200.7 ICP	270			mg/L	1	5	11/30/09 23:23	ear
Manganese, dissolved	M200.7 ICP	0.94		*	mg/L	0.03	0.1	11/30/09 23:23	ear
Molybdenum, dissolved	M200.7 ICP		U		mg/L	0.05	0.3	11/30/09 23:23	ear
Nickel, dissolved	M200.7 ICP		U	*	mg/L	0.05	0.3	11/30/09 23:23	ear
Potassium, dissolved	M200.7 ICP	6	B		mg/L	2	8	12/02/09 1:32	ear
Selenium, dissolved	M200.8 ICP-MS	0.1780			mg/L	0.0005	0.003	12/02/09 21:03	msh
Silver, dissolved	M200.7 ICP	0.10			mg/L	0.05	0.1	12/02/09 1:32	ear
Sodium, dissolved	M200.7 ICP	687		*	mg/L	2	8	11/30/09 23:23	ear
Uranium, dissolved	M200.8 ICP-MS	0.0744			mg/L	0.0005	0.003	12/02/09 21:03	msh
Zinc, dissolved	M200.7 ICP		U	*	mg/L	0.05	0.3	11/30/09 23:23	ear

**Rio Algom Mining Company**

Project ID: 58077  
 Sample ID: MW-32

ACZ Sample ID: L79525-01  
 Date Sampled: 11/16/09 12:25  
 Date Received: 11/19/09  
 Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		355			mg/L	2	20	11/25/09 0:00	abm
Carbonate as CaCO3			U		mg/L	2	20	11/25/09 0:00	abm
Hydroxide as CaCO3			U		mg/L	2	20	11/25/09 0:00	abm
Total Alkalinity		355		*	mg/L	2	20	11/25/09 0:00	abm
Cation-Anion Balance	Calculation								
Cation-Anion Balance		5.3			%			12/21/09 0:00	calc
Sum of Anions		69.0			meq/L	0.1	0.5	12/21/09 0:00	calc
Sum of Cations		76.7			meq/L	0.1	0.5	12/21/09 0:00	calc
Chloride	SM4500Cl-E	110		*	mg/L	10	50	12/09/09 11:57	aml
Fluoride	SM4500F-C	0.9			mg/L	0.1	0.5	11/24/09 15:24	abm
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	50.7			mg/L	0.6	3	12/04/09 21:11	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	0.1	B	*	mg/L	0.1	0.5	11/30/09 18:36	jws
Residue, Filterable (TDS) @180C	SM2540C	5130		*	mg/L	10	20	11/20/09 22:13	jjc
Sulfate	375.4 - Turbidimetric	2800		*	mg/L	100	500	12/01/09 18:15	aml
TDS (calculated)	Calculation	4570			mg/L	10	50	12/21/09 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.12						12/21/09 0:00	calc

**Rio Algom Mining Company**

Project ID: 58077  
 Sample ID: MW-22

ACZ Sample ID: L79525-02  
 Date Sampled: 11/16/09 13:45  
 Date Received: 11/19/09  
 Sample Matrix: Ground Water

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Nitrogen, total Kjeldahl	M351.2 - Block Digestor							11/23/09 15:15	skg

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.2	0.8	11/30/09 23:26	ear
Arsenic, dissolved	M200.8 ICP-MS	0.004	B		mg/L	0.003	0.01	12/02/09 21:07	msh
Cadmium, dissolved	M200.7 ICP		U		mg/L	0.03	0.08	11/30/09 23:26	ear
Calcium, dissolved	M200.7 ICP	554		*	mg/L	1	5	11/30/09 23:26	ear
Chromium, dissolved	M200.7 ICP		U		mg/L	0.05	0.3	11/30/09 23:26	ear
Cobalt, dissolved	M200.7 ICP		U		mg/L	0.05	0.3	11/30/09 23:26	ear
Copper, dissolved	M200.7 ICP		U		mg/L	0.05	0.3	12/02/09 1:35	ear
Iron, dissolved	M200.7 ICP		U		mg/L	0.1	0.3	11/30/09 23:26	ear
Lead, dissolved	M200.8 ICP-MS		U		mg/L	0.0005	0.003	12/02/09 21:07	msh
Magnesium, dissolved	M200.7 ICP	381			mg/L	1	5	11/30/09 23:26	ear
Manganese, dissolved	M200.7 ICP	0.49		*	mg/L	0.03	0.1	11/30/09 23:26	ear
Molybdenum, dissolved	M200.7 ICP		U		mg/L	0.05	0.3	11/30/09 23:26	ear
Nickel, dissolved	M200.7 ICP		U	*	mg/L	0.05	0.3	11/30/09 23:26	ear
Potassium, dissolved	M200.7 ICP	7	B		mg/L	2	8	12/02/09 1:35	ear
Selenium, dissolved	M200.8 ICP-MS	0.1190			mg/L	0.0005	0.003	12/02/09 21:07	msh
Silver, dissolved	M200.7 ICP		U		mg/L	0.05	0.1	12/02/09 1:35	ear
Sodium, dissolved	M200.7 ICP	475		*	mg/L	2	8	11/30/09 23:26	ear
Uranium, dissolved	M200.8 ICP-MS	0.0326			mg/L	0.0005	0.003	12/02/09 21:07	msh
Zinc, dissolved	M200.7 ICP	0.10	B	*	mg/L	0.05	0.3	11/30/09 23:26	ear

**Rio Algom Mining Company**

Project ID: 58077  
 Sample ID: MW-22

ACZ Sample ID: L79525-02  
 Date Sampled: 11/16/09 13:45  
 Date Received: 11/19/09  
 Sample Matrix: Ground Water

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		251			mg/L	2	20	11/25/09 0:00	abm
Carbonate as CaCO3			U		mg/L	2	20	11/25/09 0:00	abm
Hydroxide as CaCO3			U		mg/L	2	20	11/25/09 0:00	abm
Total Alkalinity		251		*	mg/L	2	20	11/25/09 0:00	abm
Cation-Anion Balance	Calculation								
Cation-Anion Balance		8.5			%			12/21/09 0:00	calc
Sum of Anions		67.5			meq/L	0.1	0.5	12/21/09 0:00	calc
Sum of Cations		80.1			meq/L	0.1	0.5	12/21/09 0:00	calc
Chloride	SM4500Cl-E	130		*	mg/L	10	50	12/09/09 11:57	aml
Fluoride	SM4500F-C	0.6			mg/L	0.1	0.5	11/24/09 15:28	abm
Nitrate/Nitrite as N	M353.2 - H2SO4 preserved	17.1			mg/L	0.2	1	12/04/09 21:14	pjb
Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	1.9		*	mg/L	0.1	0.5	11/30/09 18:37	jws
Residue, Filterable (TDS) @180C	SM2540C	4950		*	mg/L	10	20	11/19/09 20:54	jic
Sulfate	375.4 - Turbidimetric	2600		*	mg/L	100	500	12/01/09 18:12	aml
TDS (calculated)	Calculation	4500			mg/L	10	50	12/21/09 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.10						12/21/09 0:00	calc

**Note: Suspected analytes were retested to verify the Cation-Anion Balance.**

### 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. 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, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, 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.
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.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995 & 20th edition (1998).

### 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.

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: L79525

Project ID: 58077

**Alkalinity as CaCO3** SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274815</b>													
WG274815PBW1	PBW	11/25/09 17:46				U	mg/L		-20	20			
WG274815LCSW2	LCSW	11/25/09 17:59	WC091114-1	820		850.4	mg/L	103.7	90	110			
L79526-08DUP	DUP	11/25/09 23:59			1150	1149.5	mg/L				0	20	
WG274815PBW2	PBW	11/26/09 1:24				U	mg/L		-20	20			
WG274815LCSW5	LCSW	11/26/09 1:38	WC091114-1	820		821.7	mg/L	100.2	90	110			
WG274815PBW3	PBW	11/26/09 4:54				U	mg/L		-20	20			
WG274815LCSW8	LCSW	11/26/09 5:08	WC091114-1	820		825.5	mg/L	100.7	90	110			
WG274815PBW4	PBW	11/26/09 8:33				U	mg/L		-20	20			
WG274815LCSW11	LCSW	11/26/09 8:47	WC091114-1	820		841.9	mg/L	102.7	90	110			
WG274815LCSW14	LCSW	11/26/09 9:20	WC091114-1	820		837.3	mg/L	102.1	90	110			

**Aluminum, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274890</b>													
WG274890ICV	ICV	11/30/09 22:06	II091007-1	2		1.973	mg/L	98.7	95	105			
WG274890ICB	ICB	11/30/09 22:10				U	mg/L		-0.09	0.09			
WG274890LFB	LFB	11/30/09 22:22	II091124-2	1		1.009	mg/L	100.9	85	115			
L79611-01AS	AS	11/30/09 23:38	II091124-2	1		.908	mg/L	90.8	85	115			
L79611-01ASD	ASD	11/30/09 23:41	II091124-2	1		.935	mg/L	93.5	85	115	2.93	20	

**Arsenic, dissolved** M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG275061</b>													
WG275061ICV	ICV	12/02/09 19:46	MS091105-2	.05		.05015	mg/L	100.3	90	110			
WG275061ICB	ICB	12/02/09 19:50				U	mg/L		-0.0011	0.0011			
WG275061LFB	LFB	12/02/09 19:56	MS091124-2	.05005		.0497	mg/L	99.3	85	115			
L79521-03AS	AS	12/02/09 20:45	MS091124-2	.5005	.009	.508	mg/L	99.7	70	130			
L79521-03ASD	ASD	12/02/09 20:48	MS091124-2	.5005	.009	.5015	mg/L	98.4	70	130	1.29	20	

**Cadmium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274890</b>													
WG274890ICV	ICV	11/30/09 22:06	II091007-1	2		2.0146	mg/L	100.7	95	105			
WG274890ICB	ICB	11/30/09 22:10				U	mg/L		-0.015	0.015			
WG274890LFB	LFB	11/30/09 22:22	II091124-2	.5		.5424	mg/L	108.5	85	115			
L79611-01AS	AS	11/30/09 23:38	II091124-2	.5	U	.5448	mg/L	109	85	115			
L79611-01ASD	ASD	11/30/09 23:41	II091124-2	.5	U	.5621	mg/L	112.4	85	115	3.13	20	

**Calcium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274890</b>													
WG274890ICV	ICV	11/30/09 22:06	II091007-1	100		100.3	mg/L	100.3	95	105			
WG274890ICB	ICB	11/30/09 22:10				U	mg/L		-0.6	0.6			
WG274890LFB	LFB	11/30/09 22:22	II091124-2	68.0028		71.51	mg/L	105.2	85	115			
L79611-01AS	AS	11/30/09 23:38	II091124-2	68.0028	456	507.03	mg/L	75	85	115			M3
L79611-01ASD	ASD	11/30/09 23:41	II091124-2	68.0028	456	511.17	mg/L	81.1	85	115	0.81	20	M3

Rio Algom Mining Company

ACZ Project ID: L79525

Project ID: 58077

**Chloride** SM4500Cl-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG275349</b>													
WG275349ICB	ICB	12/09/09 11:03				U	mg/L		-3	3			
WG275349ICV	ICV	12/09/09 11:03	WI091019-2	54.835		58	mg/L	105.8	90	110			
WG275349LFB1	LFB	12/09/09 11:43	WI091019-4	30		30.3	mg/L	101	90	110			
L79521-04AS	AS	12/09/09 11:45	WI091019-4	30	72	96	mg/L	80	90	110			M2
L79521-05DUP	DUP	12/09/09 11:45			82	83.9	mg/L				2.3	20	
WG275349LFB2	LFB	12/09/09 11:47	WI091019-4	30		31.5	mg/L	105	90	110			

**Chromium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274890</b>													
WG274890ICV	ICV	11/30/09 22:06	II091007-1	2		2.04	mg/L	102	95	105			
WG274890ICB	ICB	11/30/09 22:10				U	mg/L		-0.03	0.03			
WG274890LFB	LFB	11/30/09 22:22	II091124-2	.5		.548	mg/L	109.6	85	115			
L79611-01AS	AS	11/30/09 23:38	II091124-2	.5	U	.556	mg/L	111.2	85	115			
L79611-01ASD	ASD	11/30/09 23:41	II091124-2	.5	U	.551	mg/L	110.2	85	115	0.9	20	

**Cobalt, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274890</b>													
WG274890ICV	ICV	11/30/09 22:06	II091007-1	2.002		1.965	mg/L	98.2	95	105			
WG274890ICB	ICB	11/30/09 22:10				U	mg/L		-0.03	0.03			
WG274890LFB	LFB	11/30/09 22:22	II091124-2	.5		.52	mg/L	104	85	115			
L79611-01AS	AS	11/30/09 23:38	II091124-2	.5	U	.537	mg/L	107.4	85	115			
L79611-01ASD	ASD	11/30/09 23:41	II091124-2	.5	U	.541	mg/L	108.2	85	115	0.74	20	

**Copper, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274921</b>													
WG274921ICV	ICV	12/02/09 0:19	II091007-1	2		1.924	mg/L	96.2	95	105			
WG274921ICB	ICB	12/02/09 0:22				U	mg/L		-0.03	0.03			
WG274921LFB	LFB	12/02/09 0:35	II091201-2	.5		.537	mg/L	107.4	85	115			
L79611-02AS	AS	12/02/09 1:51	II091201-2	.5	U	.52	mg/L	104	85	115			
L79611-02ASD	ASD	12/02/09 1:54	II091201-2	.5	U	.521	mg/L	104.2	85	115	0.19	20	

**Fluoride** SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274719</b>													
WG274719ICV	ICV	11/24/09 13:30	WC091106-1	2		1.93	mg/L	96.5	95	105			
WG274719ICB	ICB	11/24/09 13:38				U	mg/L		-0.3	0.3			
WG274719LFB1	LFB	11/24/09 13:46	WC090302-4	5		4.91	mg/L	98.2	90	110			
L79521-05AS	AS	11/24/09 15:12	WC090302-4	5	1.2	5.71	mg/L	90.2	90	110			
L79521-05DUP	DUP	11/24/09 15:16			1.2	1.16	mg/L				3.4	20	

Rio Algom Mining Company

ACZ Project ID: L79525

Project ID: 58077

**Iron, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274890</b>													
WG274890ICV	ICV	11/30/09 22:06	11091007-1	2		2.019	mg/L	101	95	105			
WG274890ICB	ICB	11/30/09 22:10				U	mg/L		-0.06	0.06			
WG274890LFB	LFB	11/30/09 22:22	11091124-2	1		1.1	mg/L	110	85	115			
L79611-01AS	AS	11/30/09 23:38	11091124-2	1	U	1.1	mg/L	110	85	115			
L79611-01ASD	ASD	11/30/09 23:41	11091124-2	1	U	1.131	mg/L	113.1	85	115	2.78	20	

**Lead, dissolved**

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG275061</b>													
WG275061ICV	ICV	12/02/09 19:46	MS091105-2	.05		.05069	mg/L	101.4	90	110			
WG275061ICB	ICB	12/02/09 19:50				U	mg/L		-0.00022	0.00022			
WG275061LFB	LFB	12/02/09 19:56	MS091124-2	.05005		.05104	mg/L	102	85	115			
L79521-03AS	AS	12/02/09 20:45	MS091124-2	.5005	.001	.5224	mg/L	104.2	70	130			
L79521-03ASD	ASD	12/02/09 20:48	MS091124-2	.5005	.001	.5208	mg/L	103.9	70	130	0.31	20	

**Magnesium, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274890</b>													
WG274890ICV	ICV	11/30/09 22:06	11091007-1	100		103.16	mg/L	103.2	95	105			
WG274890ICB	ICB	11/30/09 22:10				U	mg/L		-0.6	0.6			
WG274890LFB	LFB	11/30/09 22:22	11091124-2	50.0051		53.11	mg/L	106.2	85	115			
L79611-01AS	AS	11/30/09 23:38	11091124-2	50.0051	379	425.93	mg/L	93.9	85	115			
L79611-01ASD	ASD	11/30/09 23:41	11091124-2	50.0051	379	430.33	mg/L	102.6	85	115	1.03	20	

**Manganese, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274890</b>													
WG274890ICV	ICV	11/30/09 22:06	11091007-1	2		1.9824	mg/L	99.1	95	105			
WG274890ICB	ICB	11/30/09 22:10				U	mg/L		-0.015	0.015			
WG274890LFB	LFB	11/30/09 22:22	11091124-2	.5		.5605	mg/L	112.1	85	115			
L79611-01AS	AS	11/30/09 23:38	11091124-2	.5	.034	.6058	mg/L	114.4	85	115			
L79611-01ASD	ASD	11/30/09 23:41	11091124-2	.5	.034	.6144	mg/L	116.1	85	115	1.41	20	MA

**Molybdenum, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274890</b>													
WG274890ICV	ICV	11/30/09 22:06	11091007-1	2		2.056	mg/L	102.8	95	105			
WG274890ICB	ICB	11/30/09 22:10				U	mg/L		-0.03	0.03			
WG274890LFB	LFB	11/30/09 22:22	11091124-2	.5		.521	mg/L	104.2	85	115			
L79611-01AS	AS	11/30/09 23:38	11091124-2	.5	U	.559	mg/L	111.8	85	115			
L79611-01ASD	ASD	11/30/09 23:41	11091124-2	.5	U	.564	mg/L	112.8	85	115	0.89	20	

Rio Algom Mining Company  
 Project ID: 58077

ACZ Project ID: L79525

**Nickel, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274890</b>													
WG274890ICV	ICV	11/30/09 22:06	11091007-1	2.002		1.943	mg/L	97.1	95	105			
WG274890ICB	ICB	11/30/09 22:10				U	mg/L		-0.03	0.03			
WG274890LFB	LFB	11/30/09 22:22	11091124-2	.5		.557	mg/L	111.4	85	115			
L79611-01AS	AS	11/30/09 23:38	11091124-2	.5	.01	.586	mg/L	115.2	85	115			
L79611-01ASD	ASD	11/30/09 23:41	11091124-2	.5	.01	.606	mg/L	119.2	85	115	3.36	20	MA

**Nitrate/Nitrite as N** M353.2 - H2SO4 preserved

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG275226</b>													
WG275226ICV	ICV	12/04/09 18:45	W1090919-2	2.416		2.503	mg/L	103.6	90	110			
WG275226ICB	ICB	12/04/09 18:46				U	mg/L		-0.06	0.06			
<b>WG275231</b>													
WG275231LFB	LFB	12/04/09 20:33	W1090918-6	2		2.069	mg/L	103.5	90	110			
L79625-12AS	AS	12/04/09 20:56	W1090918-6	2	.42	2.627	mg/L	110.4	90	110			
L79625-13DUP	DUP	12/04/09 20:59			.59	.598	mg/L				1.3	20	
L79525-01AS	AS	12/04/09 21:13	W1090918-6	60	50.7	110.19	mg/L	99.2	90	110			
L79525-02DUP	DUP	12/04/09 21:15			17.1	17.32	mg/L				1.3	20	

**Nitrogen, total Kjeldahl** M351.2 - TKN by Block Digester

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274909</b>													
WG274909ICV	ICV	11/30/09 18:18	W1091112-1	3.932		3.93	mg/L	99.9	90	110			
WG274909ICB	ICB	11/30/09 18:20				U	mg/L		-0.3	0.3			
WG274909ICV1	ICV	11/30/09 18:25	W1091112-1	3.932		3.98	mg/L	101.2	90	110			
WG274909ICB1	ICB	11/30/09 18:26				U	mg/L		-0.3	0.3			
WG274619LRB	LRB	11/30/09 18:27				U	mg/L		-0.3	0.3			
L79487-01LFM	LFM	11/30/09 18:30	W1090909-7	2.5	.8	3.08	mg/L	91.2	90	110			
L79487-02DUP	DUP	11/30/09 18:32			U	U	mg/L				0	20	RA
WG274619LFB	LFB	11/30/09 18:41	W1090909-7	2.5		2.26	mg/L	90.4	90	110			

**Potassium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274921</b>													
WG274921ICV	ICV	12/02/09 0:19	11091007-1	20		19.97	mg/L	99.9	95	105			
WG274921ICB	ICB	12/02/09 0:22				U	mg/L		-0.9	0.9			
WG274921LFB	LFB	12/02/09 0:35	11091201-2	99.96112		106.42	mg/L	106.5	85	115			
L79611-02AS	AS	12/02/09 1:51	11091201-2	99.96112	4	115.11	mg/L	111.2	85	115			
L79611-02ASD	ASD	12/02/09 1:54	11091201-2	99.96112	4	117.27	mg/L	113.3	85	115	1.86	20	

Rio Algom Mining Company

ACZ Project ID: L79525

Project ID: 58077

**Residue, Filterable (TDS) @180C** SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274491</b>													
WG274491PBW	PBW	11/19/09 20:35				U	mg/L		-20	20			
WG274491LCSW	LCSW	11/19/09 20:35	PCN33552	260		264	mg/L	101.5	80	120			
L79525-02DUP	DUP	11/19/09 20:54			4950	4954	mg/L				0.1	20	
<b>WG274568</b>													
WG274568PBW	PBW	11/20/09 22:05				U	mg/L		-20	20			
WG274568LCSW	LCSW	11/20/09 22:05	PCN33552	260		260	mg/L	100	80	120			
L79543-01DUP	DUP	11/20/09 22:15			4180	4198	mg/L				0.4	20	

**Selenium, dissolved** M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG275061</b>													
WG275061ICV	ICV	12/02/09 19:46	MS091105-2	.05		.05283	mg/L	105.7	90	110			
WG275061ICB	ICB	12/02/09 19:50				U	mg/L		-0.00022	0.00022			
WG275061LFB	LFB	12/02/09 19:56	MS091124-2	.05005		.04931	mg/L	98.5	85	115			
L79521-03AS	AS	12/02/09 20:45	MS091124-2	.5005	.005	.522	mg/L	103.3	70	130			
L79521-03ASD	ASD	12/02/09 20:48	MS091124-2	.5005	.005	.5115	mg/L	101.2	70	130	2.03	20	

**Silver, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274921</b>													
WG274921ICV	ICV	12/02/09 0:19	II091007-1	1.002		.984	mg/L	98.2	95	105			
WG274921ICB	ICB	12/02/09 0:22				U	mg/L		-0.03	0.03			
WG274921LFB	LFB	12/02/09 0:35	II091201-2	.5		.505	mg/L	101	85	115			
L79611-02AS	AS	12/02/09 1:51	II091201-2	.5	.01	.39	mg/L	76	85	115			M2 ZA
L79611-02ASD	ASD	12/02/09 1:54	II091201-2	.5	.01	.414	mg/L	80.8	85	115	5.97	20	M2 ZA

**Sodium, dissolved** M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274890</b>													
WG274890ICV	ICV	11/30/09 22:06	II091007-1	100		102.37	mg/L	102.4	95	105			
WG274890ICB	ICB	11/30/09 22:10				U	mg/L		-0.9	0.9			
WG274890LFB	LFB	11/30/09 22:22	II091124-2	100.018		105.38	mg/L	105.4	85	115			
L79611-01AS	AS	11/30/09 23:38	II091124-2	100.018	995	1032.54	mg/L	37.5	85	115			M3
L79611-01ASD	ASD	11/30/09 23:41	II091124-2	100.018	995	1040.2	mg/L	45.2	85	115	0.74	20	M3

**Sulfate** 375.4 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274990</b>													
WG274990ICB	ICB	12/01/09 11:23				U	mg/L		-3	3			
WG274990ICV	ICV	12/01/09 11:23	WI091117-1	20.08		21	mg/L	104.6	90	110			
WG274990LFB1	LFB	12/01/09 17:42	WI091020-3	10		9.8	mg/L	98	90	110			
WG274990LFB2	LFB	12/01/09 17:46	WI091020-3	10		10	mg/L	100	90	110			
L79519-06AS	AS	12/01/09 18:07	SO4TURB50	10	1930	1782	mg/L	-1480	90	110			M3
L79380-03DUP	DUP	12/01/09 18:18			4000	4350	mg/L				8.4	20	

Rio Algom Mining Company  
Project ID: 58077

ACZ Project ID: L79525

**Uranium, dissolved**

M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG275061</b>													
WG275061ICV	ICV	12/02/09 19:46	MS091105-2	.05		.05268	mg/L	105.4	90	110			
WG275061ICB	ICB	12/02/09 19:50				U	mg/L		-0.00022	0.00022			
WG275061LFB	LFB	12/02/09 19:56	MS091124-2	.05		.05141	mg/L	102.8	85	115			
L79521-03AS	AS	12/02/09 20:45	MS091124-2	.5	.356	.8751	mg/L	103.8	70	130			
L79521-03ASD	ASD	12/02/09 20:48	MS091124-2	.5	.356	.8841	mg/L	105.6	70	130	1.02	20	

**Zinc, dissolved**

M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
<b>WG274890</b>													
WG274890ICV	ICV	11/30/09 22:06	11091007-1	2		1.968	mg/L	98.4	95	105			
WG274890ICB	ICB	11/30/09 22:10				U	mg/L		-0.03	0.03			
WG274890LFB	LFB	11/30/09 22:22	11091124-2	.5		.528	mg/L	105.6	85	115			
L79611-01AS	AS	11/30/09 23:38	11091124-2	.5	U	.591	mg/L	118.2	85	115			M1
L79611-01ASD	ASD	11/30/09 23:41	11091124-2	.5	U	.588	mg/L	117.6	85	115	0.51	20	M1

Rio Algom Mining Company

ACZ Project ID: L79525

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L79525-01	WG274890	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.
		Manganese, 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.
		Nickel, 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	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.
		Zinc, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG275349	Chloride	SM4500Cl-E	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG274909	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG274568	Residue, Filterable (TDS) @180C	SM2540C	ZO	Concentration is based on a final residue greater than 200 mg.
	WG274990	Sulfate	375.4 - 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.
	WG274815	Total Alkalinity	SM2320B - Titration	QA	Sample container with preservation type specified by the method was not available for analysis. Alternate sample container was used.
L79525-02	WG274890	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.
		Manganese, 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.
		Nickel, 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	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.
		Zinc, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG275349	Chloride	SM4500Cl-E	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG274909	Nitrogen, total Kjeldahl	M351.2 - TKN by Block Digester	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG274491	Residue, Filterable (TDS) @180C	SM2540C	ZO	Concentration is based on a final residue greater than 200 mg.
	WG274990	Sulfate	375.4 - 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.
	WG274815	Total Alkalinity	SM2320B - Titration	QA	Sample container with preservation type specified by the method was not available for analysis. Alternate sample container was used.

**Rio Algom Mining Company**

Project ID: 58077  
 Sample ID: MW-32  
 Locator:

ACZ Sample ID: **L79525-01**  
 Date Sampled: 11/16/09 12:25  
 Date Received: 11/19/09  
 Sample Matrix: Ground Water

Radium 226, dissolved  
 M903.1

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error (%)	Lab	Units	XQ	Analysis
Radium 226, dissolved	12/15/09 9:43		0.57	0.1	0.2	pCi/L		mwm

Radium 228, dissolved  
 M9320

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error (%)	Lab	Units	XQ	Analysis
Radium 228, dissolved	12/14/09 18:56		0.73	0.61	1.7	pCi/L	*	mwm

**Rio Algom Mining Company**

Project ID: 58077  
 Sample ID: MW-22  
 Locator:

ACZ Sample ID: **L79525-02**  
 Date Sampled: 11/16/09 13:45  
 Date Received: 11/19/09  
 Sample Matrix: Ground Water

Radium 226, dissolved  
 M903.1

Prep Method:

Sample	Measure Date	Prep Date	Result	Energy (keV)	Std	Units	XO	Analyte
Radium 226, dissolved	12/15/09 9:44		0.42	0.11	0.21	pCi/L		mwm

Radium 228, dissolved  
 M9320

Prep Method:

Sample	Measure Date	Prep Date	Result	Energy (keV)	Std	Units	XO	Analyte
Radium 228, dissolved	12/14/09 18:56		0.47	0.63	1.7	pCi/L	*	mwm

### Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Error(+/-)	Calculated sample specific uncertainty
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
LCL	Lower Control Limit, in % (except for LCSS, mg/Kg)
LLD	Calculated sample specific Lower Limit of Detection
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RER	Relative Error Ratio, calculation used for Dup. QC taking into account the error factor.
UCL	Upper Control Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

### QC Sample Types

DUP	Sample Duplicate	MS/MSD	Matrix Spike/Matrix Spike Duplicate
LCSS	Laboratory Control Sample - Soil	PBS	Prep Blank - Soil
LCSW	Laboratory Control Sample - Water	PBW	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.
R	Poor spike recovery accepted because the other spike in the set fell within the given limits.
T	High Replicate Error Ratio (RER) accepted because sample concentrations are less than 10x the MDL.
U	No nuclides detected above the Lower Limit of Detection (LLD)
V	High blank data accepted because sample concentration is 10 times higher than blank concentration
X	QC is out of control. See Case Narrative.
Z	Poor spike recovery is accepted because sample concentration is four times greater than spike concentration.

### Method Prefix Reference

M	EPA methodology, including those under SDWA, CWA, and RCRA
SM	Standard Methods for the Examination of Water and Wastewater, 19th edition (1995) & 20th edition (1998).
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.

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: L79525

Project ID: 58077

**Radium 226, dissolved**

M903.1

pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec	Lower	Upper	RPD/RER	Limit	Qual
<b>WG275776</b>																
WG275341PBW	PBW	12/15/09						.04	0.09	0.19					0.38	
WG275341LCSW	LCSW	12/15/09	RC090709-1	23.92				18	0.44	0.15	75.3	44	128			
L79592-01DUP	DUP-RER	12/15/09			0.01	0.09	0.22	.13	0.09	0.29					0.94	2
L79617-01DUP	DUP-RER	12/15/09			0.09	0.08	0.18	-.07	0.08	0.23					1.41	2
L79616-01MS	MS	12/15/09	RC090709-1	23.92	0.04	0.06	0.16	23	0.72	0.3	96	44	128			

**Radium 228, dissolved**

M9320

pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec	Lower	Upper	RPD/RER	Limit	Qual
<b>WG275710</b>																
WG275694PBW	PBW	12/14/09						.17	0.23	0.63					1.26	N1
WG275694LCSW	LCSW	12/14/09	RC081219-1	13.37				10	0.88	1.3	74.8	49	132			
L79521-05DUP	DUP-RER	12/14/09			0.65	0.59	1.7	.38	0.61	1.6					0.32	2
L79458-02DUP	DUP-RER	12/14/09			0.56	0.48	1.3	1.5	0.66	1.7					1.15	2
L79521-04MS	MS	12/15/09	RC081219-1	13.36	0.68	0.6	1.7	10	0.86	1.3	69.7	49	132			

Rio Algom Mining Company

ACZ Project ID: L79525

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L79525-01	WG275710	Radium 228, dissolved	M9320	N1	See Case Narrative.
L79525-02	WG275710	Radium 228, dissolved	M9320	N1	See Case Narrative.

**Rio Algom Mining Company**

ACZ Project ID: **L79525**

No certification qualifiers associated with this analysis

**Rio Algom Mining Company**  
 58077

ACZ Project ID: L79525  
 Date Received: 11/19/09 0:00  
 Received By: gac  
 Date Printed: 11/20/2009

**Receipt Verification**

- 1) Does this project require special handling procedures such as CLP protocol?
- 2) Are the custody seals on the cooler intact?
- 3) Are the custody seals on the sample containers intact?
- 4) Is there a Chain of Custody or other directive shipping papers present?
- 5) Is the Chain of Custody complete?
- 6) Is the Chain of Custody in agreement with the samples received?
- 7) Is there enough sample for all requested analyses?
- 8) Are all samples within holding times for requested analyses?
- 9) Were all sample containers received intact?
- 10) Are the temperature blanks present?
- 11) Are the trip blanks (VOA and/or Cyanide) present?
- 12) Are samples requiring no headspace, headspace free?
- 13) Do the samples that require a Foreign Soils Permit have one?

YES	NO	NA
		X
X		
		X
X		
X		
X		
X		
X		
		X
		X
		X
		X

**Exceptions: If you answered no to any of the above questions, please describe**

N/A

**Contact (For any discrepancies, the client must be contacted)**

N/A

**Shipping Containers**

Cooler Id	Temp (°C)	Rad (µR/hr)
NA9815	2.7	14

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

**Notes**

Rio Algom Mining Company  
 58077

ACZ Project ID: L79525  
 Date Received: 11/19/09 0:00  
 Received By: gac

**Sample Container Preservation**

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T > 12	N/A	RAD	ID
L79525-01	MW-32		Y		Y							
L79525-02	MW-22		Y		Y							

**Sample Container Preservation Legend**

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

\* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: gac



Laboratories, Inc. 679525

CHAIN of CUSTODY

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

Report to:

Name: CHUCK WEATZ
Company: Rio Algom Mining LLC
E-mail:

Address: P.O. Box 218
Grants, N.M. 87020
Telephone: 505-287-8851

Copy of Report to:

Name:
Company:

E-mail:
Telephone:

Invoice to:

Name:
Company:
E-mail:

Address:
Telephone:

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.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Table with columns for Quote #, Project/PO #, Reporting state, Sampler's Name, Matrix, and # of Containers. Includes handwritten entries for MW-32 and MW-22.

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

REMARKS/ SAMPLE DISCLOSURES

RAM COC# 09-96 SHIPMENT OF 1
Please return RAM's Red/White Color!
# DP-71S See Attached Sheet!

PAGE 1 of 1

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

Table with columns for RELINQUISHED BY, DATE:TIME, RECEIVED BY, DATE:TIME. Includes handwritten signatures and dates.

RIO ALGOM MINING LLC - PROJECT CODES

ACL-ALL	ACL-TRB	ACL-TRA	ACL-KD	DP-71-Q	SEC 4 PONDS <sup>see note</sup>	DP-71-S
50/year	30/year	15/year	35/year	10/year	20/year	10/year
Chloride	Chloride	Chloride	Chloride	Chloride	Chloride	Chloride
Sulfate	Sulfate	Sulfate	Sulfate	Sulfate	Sulfate	Sulfate
TDS	TDS	TDS	TDS	TDS	TDS	TDS
Nitrate + Nitrite	Nitrate + Nitrite	Nitrate + Nitrite	Nitrate + Nitrite	Nitrate + Nitrite	Nitrate + Nitrite	Nitrate + Nitrite
<del>Molybdenum</del>	<del>Cyanide</del>	<del>Cyanide</del>	<del>Antimony</del>	<del>Arsenic</del>	Arsenic	Arsenic
<del>Nickel</del>	<del>Molybdenum</del>	<del>Molybdenum</del>	<del>Arsenic</del>	<del>Selenium</del>	Selenium	Selenium
<del>Selenium</del>	<del>Nickel</del>	<del>Nickel</del>	<del>Beryllium</del>	<del>Uranium</del>	Uranium	Uranium
<del>Gross Alpha</del>	<del>Selenium</del>	<del>Selenium</del>	<del>Cadmium</del>		Carbonate (CO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )
<del>Radium-226</del>	<del>Gross Alpha</del>	<del>Gross Alpha</del>	<del>Cyanide</del>		Bicarbonate (HCO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )
<del>Radium-228</del>	<del>Radium-226</del>	<del>Radium-226</del>	<del>Lead</del>		Calcium	Calcium
<del>Thorium-230</del>	<del>Radium-228</del>	<del>Radium-228</del>	<del>Molybdenum</del>		Potassium	Potassium
<del>Lead-210</del>	<del>Thorium-230</del>	<del>Thorium-230</del>	<del>Nickel</del>		Magnesium	Magnesium
<del>Uranium</del>	<del>Lead-210</del>	<del>Lead-210</del>	<del>Selenium</del>		Sodium	Sodium
	<del>Uranium</del>	<del>Uranium</del>	<del>Gross Alpha</del>		Lead	Lead
			<del>Radium-226</del>		Nickel	Nickel
			<del>Radium-228</del>		Silver	Silver
			<del>Thorium-230</del>		Iron	Iron
			<del>Lead-210</del>		Molybdenum	Molybdenum
			<del>Uranium</del>		Zinc	Zinc
					Manganese	Manganese
					Copper	Copper
					Cobalt	Cobalt
					Chromium	Chromium
					Cadmium	Cadmium
					Aluminum	Aluminum
					Fluoride	Fluoride
					Radium-226	Radium-226
					Radium-228	Radium-228
					Total Kjeldal nitrogen	Total Kjeldal nitrogen