

Rio Algom Mining LLC

August 9, 2012

ADDRESSEE ONLY

Mr. Tom McLaughlin, Project Manager
U.S. Nuclear Regulatory Commission
Mail Stop T-8F5
Washington, DC 20555

CERTIFIED MAIL

Return Receipt No. 7010 1870 0000 3702 9641

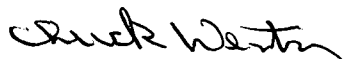
Re: **License SUA-1473, Docket No. 40-8905**
Semiannual Effluent Report – 1st Half 2012

Dear Mr. McLaughlin,

In accordance with license condition #19 of the above referenced source material license and the NRC approved *Health Physics and Environmental Programs Manual*, please find attached the first half 2012 Semiannual Report for the Ambrosia Lake facility.

If you have any questions or need additional information, please do not hesitate to call me at (505) 287-8851, extension 15.

Regards,



Chuck Wentz
Environmental Department Supervisor
Radiation Safety Officer

Attachment

cc: NRC (document control)
File

FSMEZ1

Rio Algom Mining LLC
Ambrosia Lake Facility

License SUA-1473
Docket Number 40-8905

Crushing Circuit Stack Emissions

Mill building demolition of the conventional mill circuit was successfully completed in February 2004.

Rio Algom Mining LLC
Ambrosia Lake Facility

License SUA-1473
Docket Number 40-8905

Yellowcake Dryer Stack Emissions

Mill building demolition of the conventional mill circuit was successfully completed in February 2004.

Environmental Gamma Radiation

Date: 1st Quarter 2012
Sample Media: Gamma

Location	Rate (mRem/qtr)
Substation	0
Mill Diversion	0
Section 30W VH6	7.9
North Fence	0
Section 17 VH4	0
Section 4 - #1	0
Section 4 - #2	0
Section 4 - #3	0

Date: 2nd Quarter 2012
Sample Media: Gamma

Location	Rate (mRem/qtr)
Substation	0
Mill Diversion	0
Section 30W VH6	13.5
North Fence	4.3
Section 17 VH4	0
Section 4 - #1	0
Section 4 - #2	4.7
Section 4 - #3	0

Notes:

- 1 - Section 4 sample locations added as part of lined pond relocation project.
 - 2 - Values represent net values after subtraction of site control dosimeter.
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Environmental Radon

Date: 1st Quarter 2012
Sample Media: Track Etch

Location	Rate pCi/L	Error pCi/L
Substation	< 0.3	< 0.1
Mill Diversion	1.9	0.1
Section 30W VH6	2.8	0.2
North Fence	2.3	0.1
Section 17 VH4	1.4	0.1
KGL-North	2.1	0.1
KGL-South	1.7	0.1

Date: 2nd Quarter 2012
Sample Media: Track Etch

Location	Rate pCi/L	Error pCi/L
Substation	0.6	0.1
Mill Diversion	2.8	0.2
Section 30W VH6	2.6	0.2
North Fence	2.5	0.1
Section 17 VH4	1.0	0.1
KGL-North	2.3	0.1
KGL-South	1.7	0.1

Notes:

1 - KGL sample locations added as part of lined pond relocation project.

High Volume Environmental Air Samples
1st Half 2012

1st Quarter 2012					Substation	2nd Quarter 2012				
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit		Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	0.0E+00	0.0E+00	2.2E-18	< 1.0		U-nat	0.0E+00	0.0E+00	2.6E-18	< 1.0
Th-230	4.8E-18	4.9E-18	7.1E-18	< 1.0		Th-230	1.2E-17	7.8E-18	9.4E-18	< 1.0
Ra-226	-6.5E-20	2.5E-18	4.1E-18	< 1.0		Ra-226	2.3E-19	2.5E-18	4.6E-18	< 1.0
Pb-210	1.5E-15	4.9E-17	7.7E-17	< 1.0		Pb-210	1.3E-15	7.8E-17	1.3E-16	< 1.0

1st Quarter 2012					Section 17 VH 4	2nd Quarter 2012				
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit		Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	0.0E+00	0.0E+00	3.4E-18	< 1.0		U-nat	0.0E+00	0.0E+00	3.5E-18	< 1.0
Th-230	1.5E-17	6.7E-18	9.3E-18	< 1.0		Th-230	1.3E-18	1.0E-17	1.3E-17	< 1.0
Ra-226	3.6E-18	2.7E-18	8.2E-18	< 1.0		Ra-226	2.9E-18	5.6E-18	9.8E-18	< 1.0
Pb-210	1.4E-15	5.5E-17	9.3E-17	< 1.0		Pb-210	9.2E-16	7.5E-17	1.4E-16	< 1.0

High Volume Environmental Air Samples
1st Half 2012

1st Quarter 2012					Mill Diversion	2nd Quarter 2012				
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit		Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	9.5E-18	9.9E-19	2.4E-18	< 1.0		U-nat	1.5E-17	7.8E-19	2.8E-18	< 1.0
Th-230	2.3E-16	2.0E-17	7.7E-18	1.1		Th-230	8.1E-16	3.9E-17	9.2E-18	4.0
Ra-226	1.1E-17	3.2E-18	5.1E-18	< 1.0		Ra-226	1.9E-17	3.5E-18	3.5E-18	< 1.0
Pb-210	1.3E-15	4.9E-17	8.5E-17	< 1.0		Pb-210	1.3E-15	8.2E-17	1.3E-16	< 1.0

High Volume Environmental Air Samples
1st Half 2012

1st Quarter 2012					Section 30 West VH 6					2nd Quarter 2012				
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	2.4E-18	2.4E-19	2.4E-18	< 1.0	U-nat	2.6E-18	1.3E-19	2.6E-18	< 1.0	U-nat	2.6E-18	1.3E-19	2.6E-18	< 1.0
Th-230	1.9E-18	4.0E-18	7.6E-18	< 1.0	Th-230	1.1E-17	6.0E-18	8.5E-19	< 1.0	Th-230	1.1E-17	6.0E-18	8.5E-19	< 1.0
Ra-226	7.6E-18	3.2E-18	5.6E-18	< 1.0	Ra-226	4.5E-18	2.1E-18	4.0E-18	< 1.0	Ra-226	4.5E-18	2.1E-18	4.0E-18	< 1.0
Pb-210	1.5E-15	6.3E-17	1.1E-16	< 1.0	Pb-210	8.5E-16	6.5E-17	1.1E-16	< 1.0	Pb-210	8.5E-16	6.5E-17	1.1E-16	< 1.0

1st Quarter 2012					North Fence					2nd Quarter 2012				
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	4.5E-18	4.7E-19	2.3E-18	< 1.0	U-nat	1.1E-17	5.8E-19	2.8E-18	< 1.0	U-nat	1.1E-17	5.8E-19	2.8E-18	< 1.0
Th-230	2.8E-17	8.7E-18	8.7E-18	< 1.0	Th-230	4.1E-17	1.1E-17	1.0E-17	< 1.0	Th-230	4.1E-17	1.1E-17	1.0E-17	< 1.0
Ra-226	1.3E-17	4.3E-18	8.7E-18	< 1.0	Ra-226	3.8E-17	5.4E-18	8.3E-18	< 1.0	Ra-226	3.8E-17	5.4E-18	8.3E-18	< 1.0
Pb-210	1.3E-15	4.9E-17	8.1E-17	< 1.0	Pb-210	1.5E-15	9.2E-17	1.4E-16	< 1.0	Pb-210	1.5E-15	9.2E-17	1.4E-16	< 1.0

High Volume Environmental Air Samples
1st Half 2012

1st Quarter 2012					KGL-North					2nd Quarter 2012				
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	1.7E-17	1.8E-18	2.7E-18	< 1.0	U-nat	2.9E-17	1.5E-18	3.0E-18	< 1.0	U-nat	2.9E-17	1.5E-18	3.0E-18	< 1.0
Th-230	1.4E-17	1.7E-17	9.5E-18	< 1.0	Th-230	2.3E-16	2.2E-17	9.9E-18	1.1	Th-230	2.3E-16	2.2E-17	9.9E-18	1.1
Ra-226	1.1E-17	5.0E-18	6.7E-18	< 1.0	Ra-226	1.8E-17	4.6E-18	4.1E-18	< 1.0	Ra-226	1.8E-17	4.6E-18	4.1E-18	< 1.0
Pb-210	1.4E-15	5.7E-17	1.1E-16	< 1.0	Pb-210	1.2E-15	8.6E-17	1.4E-16	< 1.0	Pb-210	1.2E-15	8.6E-17	1.4E-16	< 1.0

1st Quarter 2012					KGL-South					2nd Quarter 2012				
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	0.0E+00	0.0E+00	2.6E-18	< 1.0	U-nat	8.8E-18	4.5E-19	2.9E-18	< 1.0	U-nat	8.8E-18	4.5E-19	2.9E-18	< 1.0
Th-230	9.2E-18	6.3E-18	1.0E-17	< 1.0	Th-230	1.5E-17	8.5E-18	1.0E-17	< 1.0	Th-230	1.5E-17	8.5E-18	1.0E-17	< 1.0
Ra-226	2.7E-18	1.6E-18	2.7E-18	< 1.0	Ra-226	1.2E-17	4.0E-18	9.6E-18	< 1.0	Ra-226	1.2E-17	4.0E-18	9.6E-18	< 1.0
Pb-210	2.1E-15	6.3E-17	9.2E-17	< 1.0	Pb-210	1.7E-15	9.6E-17	1.3E-16	< 1.0	Pb-210	1.7E-15	9.6E-17	1.3E-16	< 1.0

Vegetation

Location: Substation Date: June 2012 Sample Media: Vegetation				Location: Mill Diversion Date: June 2012 Sample Media: Vegetation			
Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)	Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	5.4E-05	2.6E-06	3.4E-05	U-nat	4.7E-05	2.3E-06	4.1E-05
Th-230	3.0E-04	1.4E-03	1.8E-03	Th-230	5.4E-03	2.4E-03	2.4E-03
Ra-226	8.2E-04	7.2E-04	3.4E-03	Ra-226	1.8E-03	9.8E-04	3.5E-03
Pb-210	6.4E-04	7.2E-03	1.8E-02	Pb-210	1.6E-02	1.2E-02	2.8E-02

Location: Section 30 West VH6 Date: June 2012 Sample Media: Vegetation				Location: North Fence Date: June 2012 Sample Media: Vegetation			
Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)	Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	1.6E-03	7.6E-05	3.4E-05	U-nat	1.0E-04	4.9E-06	4.1E-05
Th-230	-3.1E-04	1.4E-03	2.4E-03	Th-230	-6.1E-04	1.8E-03	2.9E-03
Ra-226	2.0E-03	1.0E-03	3.3E-03	Ra-226	1.1E-03	8.1E-04	3.6E-03
Pb-210	3.1E-02	6.0E-03	1.2E-02	Pb-210	5.1E-03	7.2E-03	1.7E-02

Vegetation

Location: Section 17 VH 4
Date: June 2012
Sample Media: Vegetation

Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	6.7E-04	3.2E-05	4.1E-05
Th-230	-1.9E-03	1.3E-03	1.9E-03
Ra-226	1.4E-03	8.8E-04	3.5E-03
Pb-210	1.3E-03	7.7E-03	1.9E-02

Location: KGL-North
Date: June 2012
Sample Media: Vegetation

Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	9.5E-05	4.5E-06	3.4E-05
Th-230	-7.0E-05	1.2E-03	1.9E-03
Ra-226	6.0E-04	6.9E-04	3.3E-03
Pb-210	5.6E-03	5.4E-03	1.3E-02

Location: KGL-South
Date: June 2012
Sample Media: Vegetation

Nuclide	Conc. (uCi/kg)	Error (uCi/kg)	LLD (uCi/kg)
U-nat	1.3E-04	6.1E-06	4.1E-05
Th-230	7.5E-04	1.0E-03	1.7E-03
Ra-226	2.3E-03	1.6E-03	6.1E-03
Pb-210	7.0E-03	6.5E-03	1.5E-02

Rio Algom Mining LLC
Ambrosia Lake Facility

License SUA-1473
Docket Number 40-8905

Soil

Location: Substation Date: June 2012 Sample Media: Soil				Location: Mill Diversion Date: June 2012 Sample Media: Soil			
Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)	Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)
U-nat	1.8E-06	3.6E-08	3.4E-08	U-nat	7.8E-07	1.6E-08	3.4E-08
Th-230	-9.0E-08	6.9E-07	7.1E-07	Th-230	7.9E-06	1.9E-06	5.7E-06
Ra-226	1.1E-06	3.7E-07	8.8E-07	Ra-226	1.1E-06	3.5E-07	8.1E-07
Pb-210	0.0E+00	2.1E-06	7.0E-06	Pb-210	7.9E-06	1.9E-06	5.7E-06

Location: Section 30 West VH6 Date: June 2012 Sample Media: Soil				Location: North Fence Date: June 2012 Sample Media: Soil			
Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)	Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)
U-nat	1.6E-05	3.2E-07	3.4E-08	U-nat	5.5E-07	1.1E-08	3.4E-08
Th-230	2.4E-06	7.4E-07	6.50E-07	Th-230	8.6E-07	6.1E-07	7.4E-07
Ra-226	4.2E-06	7.5E-07	1.10E-06	Ra-226	7.0E-07	2.8E-07	7.6E-08
Pb-210	4.4E-06	1.7E-06	5.40E-06	Pb-210	2.7E-06	1.7E-06	5.5E-06

Rio Algom Mining LLC
Ambrosia Lake Facility

License SUA-1473
Docket Number 40-8905

Soil

Location: Section 17 VH 4
Date: June 2012
Sample Media: Soil

Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)
U-nat	8.8E-07	1.8E-08	3.4E-08
Th-230	3.8E-07	5.4E-07	7.4E-07
Ra-226	1.1E-06	3.6E-07	8.2E-07
Pb-210	4.3E-06	1.8E-06	5.5E-06

Location: KGL-North
Date: June 2012
Sample Media: Soil

Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)
U-nat	1.5E-06	3.0E-08	3.4E-08
Th-230	9.8E-07	6.0E-07	7.4E-07
Ra-226	5.6E-07	3.8E-07	9.5E-07
Pb-210	3.9E-06	1.4E-06	5.4E-06

Location: KGL-South
Date: June 2012
Sample Media: Soil

Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)
U-nat	3.8E-06	7.7E-08	3.4E-08
Th-230	2.0E-06	7.0E-07	7.0E-07
Ra-226	2.9E-06	7.5E-07	1.6E-06
Pb-210	9.0E-07	2.1E-06	7.2E-06

Rio Algom Mining LLC
Ambrosia Lake Facility

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Sediment

Location: P-0 Date: June 2012 Sample Media: Sediment				Location: P-1 Date: June 2012 Sample Media: Sediment			
Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)	Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)
U-nat	9.5E-06	6.1E-07	3.4E-08	U-nat	6.8E-06	4.4E-07	3.4E-08
Th-230	1.1E-05	1.3E-06	7.1E-07	Th-230	2.7E-05	2.1E-06	7.4E-07
Ra-226	2.5E-05	1.5E-06	7.7E-07	Ra-226	7.4E-06	8.6E-07	8.3E-07
Pb-210	2.5E-05	2.9E-06	7.7E-06	Pb-210	1.1E-05	2.1E-06	6.0E-06

Location: P-2 Date: June 2012 Sample Media: Sediment				Location: P-3 Date: June 2012 Sample Media: Sediment			
Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)	Nuclide	Conc. (uCi/g)	Error (uCi/g)	LLD (uCi/g)
U-nat	2.8E-05	1.8E-06	3.4E-08	U-nat	1.6E-07	1.0E-08	3.4E-08
Th-230	6.9E-05	3.2E-06	7.3E-07	Th-230	1.9E-07	4.3E-07	7.2E-07
Ra-226	6.7E-05	2.5E-06	8.1E-07	Ra-226	2.1E-07	2.5E-07	8.9E-07
Pb-210	4.2E-05	2.7E-06	5.5E-06	Pb-210	5.4E-06	1.6E-06	4.9E-06

Treated Mine Discharge Water

Sample: Treated Mine Water

Date: 1st Quarter 2012

Location	Uranium			Radium-226 (soluble)			Radium-226 (insoluble)		
	Conc. (mg/L)	Error (mg/L)	LLD (mg/L)	Conc. (pCi/L)	Error (pCi/L)	LLD (pCi/L)	Conc. (pCi/L)	Error (pCi/L)	LLD (pCi/L)
P-8	dry	dry	dry	dry	dry	dry	dry	dry	dry
P-10	dry	dry	dry	dry	dry	dry	dry	dry	dry
P-12	dry	dry	dry	dry	dry	dry	dry	dry	dry
P-14	dry	dry	dry	dry	dry	dry	dry	dry	dry
P-16	dry	dry	dry	dry	dry	dry	dry	dry	dry
P-18	dry	dry	dry	dry	dry	dry	dry	dry	dry

Sample: Treated Mine Water

Date: 2nd Quarter 2012

Location	Uranium			Radium-226 (soluble)			Radium-226 (insoluble)		
	Conc. (mg/L)	Error (mg/L)	LLD (mg/L)	Conc. (pCi/L)	Error (pCi/L)	LLD (pCi/L)	Conc. (pCi/L)	Error (pCi/L)	LLD (pCi/L)
P-8	dry	dry	dry	dry	dry	dry	dry	dry	dry
P-10	dry	dry	dry	dry	dry	dry	dry	dry	dry
P-12	dry	dry	dry	dry	dry	dry	dry	dry	dry
P-14	dry	dry	dry	dry	dry	dry	dry	dry	dry
P-16	dry	dry	dry	dry	dry	dry	dry	dry	dry
P-18	dry	dry	dry	dry	dry	dry	dry	dry	dry

Mine water treatment discharge subject to NPDES permit limitations at outfall location.

Limits: Total Uranium = 4 mg/L (max); soluble Ra-226 = 10 pCi/L (max); total Ra-226 = 30 pCi/L (max)