

# Rio Algom Mining LLC

March 1, 2018

ADDRESSEE ONLY

Mr. Varughese Kurian, Project Manager  
Materials Decommissioning Branch  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Two White Flint North, Mailstop T8F5  
11545 Rockville Pike  
Rockville, MD 20852

CERTIFIED MAIL

Re: **License SUA-1473, Docket No. 40-8905**  
**Semiannual Effluent Report – 2<sup>nd</sup> Half 2017**

Dear Mr. Kurian,

In accordance with license condition #19 of the above referenced radioactive material license and the Rio Algom Mining LLC (RAML) *Health Physics and Environmental Programs Manual*, please find attached the second half of 2017 Semiannual Report for the Ambrosia Lake facility.

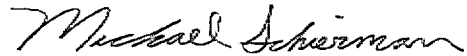
In a letter dated December 14, 2017 (ML16344A027), the Nuclear Regulatory Commission (NRC) agreed in part with a RAML proposal to terminated routine environmental monitoring tasks since the site has been mostly reclaimed. As a result, routine monitoring for sediment, vegetation, and surface soil has been discontinued and data for these media will no longer be reported. Monitoring for airborne radionuclides in particulate matter, radon-222, and external dose rate continues and results are reported herein.

The environmental airborne radionuclide sample results in this semiannual report are less than 1% of their effluent concentration in 10 CFR 20 Appendix B for each isotope, with the exception radon-222. No discernable trends from first to second quarter are apparent.

The quarterly dose rates at each monitoring location remained relatively consistent from third to fourth quarter 2017. This is expected since to reclamation of existing soil occurred and the sources of windblown radioactivity are covered.

If you have any questions or need additional information, please do not hesitate to call me at (505) 298-4224.

Regards,

A handwritten signature in cursive script that reads "Michael Schierman".

Michael Schierman  
Radiation Safety Officer

Attachment

cc: NRC (document control)  
File

---

Environmental Gamma Radiation  
2017

---

3rd Quarter		4th Quarter	
Sample Media: Gamma		Sample Media: Gamma	
Date: 7/1/2017 - 9/30/2017		Date: 10/1/2017 - 12/31/2017	
Location:	Rate (mrem/qtr)	Location:	Rate (mrem/qtr)
Substation	6.1	Substation	-0.7
Mill Diversion	10.3	Mill Diversion	6.2
Section 30W VH6	60.7	Section 30W VH6	50.4
North Fence	7.6	North Fence	7.4
Section 17 VH4	6.6	Section 17 VH4	8.4
Section 4 - #1	7.0	Section 4 - #1	10.1
Section 4 - #2	15.6	Section 4 - #2	8.4
Section 4 - #3	8.0	Section 4 - #3	6.4

Notes:  
Values are net after subtraction of control value

Environmental Radon  
 2017

3rd Quarter  
 Sample Media: Track Etch

Location:	Conc. pCi/L	Error pCi/L
Substation	0.35	0.14
Mill Diversion	1.40	0.28
Section 30W VH6	2.40	0.54
North Fence	1.55	0.42
Section 17 VH4	0.24	0.14
KGL - North	1.10	0.35
KGL - South	1.10	0.25

4th Quarter  
 Sample Media: Track Etch

Location:	Conc. pCi/L	Error pCi/L
Substation	0.41	0.11
Mill Diversion	2.80	0.38
Section 30W VH6	4.35	0.80
North Fence	3.20	0.60
Section 17 VH4	0.19	0.09
KGL - North	2.30	0.49
KGL - South	2.50	0.36

Notes: Results at Sec 30, North fence, and KGL North are averages of duplicate results.

High Volume Environmental Air Samples  
2017

Substation									
3rd Quarter					4th Quarter				
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	2.7E-18	1.4E-16	2.7E-18	<1%	U-nat	2.5E-18	9.1E-17	2.5E-18	<1%
Th-230	7.9E-19	5.3E-18	7.3E-18	<1%	Th-230	7.5E-18	4.5E-18	7.3E-18	<1%
Ra-226	3.3E-19	1.8E-18	6.1E-18	<1%	Ra-226	3.8E-18	1.6E-18	8.2E-19	<1%
Pb-210	1.2E-15	4.0E-17	6.3E-17	<1%	Pb-210	1.2E-15	3.4E-17	6.2E-17	<1%

Section 17 VH4									
3rd Quarter					4th Quarter				
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	3.0E-18	1.6E-16	3.0E-18	<1%	U-nat	5.1E-18	1.3E-16	5.1E-18	<1%
Th-230	-1.6E-18	1.3E-17	2.0E-17	<1%	Th-230	-6.5E-19	1.3E-17	1.7E-17	<1%
Ra-226	5.2E-18	2.2E-18	1.5E-18	<1%	Ra-226	1.2E-17	6.2E-18	1.0E-17	<1%
Pb-210	1.1E-15	3.8E-17	6.0E-17	<1%	Pb-210	1.5E-15	5.5E-17	1.1E-16	<1%

Mill Diversion									
3rd Quarter					4th Quarter				
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	3.9E-18	2.0E-16	3.9E-18	<1%	U-nat	4.3E-18	1.3E-16	4.3E-18	<1%
Th-230	1.3E-17	8.3E-18	1.2E-17	<1%	Th-230	9.2E-18	6.8E-18	1.0E-17	<1%
Ra-226	5.2E-18	3.0E-18	6.9E-18	<1%	Ra-226	5.6E-18	3.4E-18	4.6E-18	<1%
Pb-210	1.5E-15	5.1E-17	8.4E-17	<1%	Pb-210	1.6E-15	4.8E-17	9.3E-17	<1%

Section 30 West VH6									
3rd Quarter					4th Quarter				
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	8.1E-18	2.5E-15	8.1E-18	<1%	U-nat	9.3E-18	1.7E-15	9.3E-18	<1%
Th-230	2.4E-17	1.9E-17	2.5E-17	<1%	Th-230	1.4E-18	1.5E-17	3.3E-17	<1%
Ra-226	8.4E-18	7.2E-18	6.0E-18	<1%	Ra-226	-1.8E-17	5.5E-18	1.9E-17	<1%
Pb-210	1.2E-15	9.6E-17	2.4E-16	<1%	Pb-210	1.1E-15	8.7E-17	2.6E-16	<1%

High Volume Environmental Air Samples  
 2017

North Fence									
3rd Quarter					4th Quarter				
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	8.1E-18	2.5E-15	8.1E-18	<1%	U-nat	9.3E-18	1.7E-15	9.3E-18	<1%
Th-230	1.8E-17	1.8E-17	2.4E-17	<1%	Th-230	-2.8E-18	1.1E-17	2.8E-17	<1%
Ra-226	9.6E-18	7.2E-18	7.2E-18	<1%	Ra-226	1.8E-17	1.1E-17	2.8E-17	<1%
Pb-210	1.2E-15	1.1E-16	3.0E-16	<1%	Pb-210	1.7E-15	8.8E-17	2.3E-16	<1%

KGL - North									
3rd Quarter					4th Quarter				
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	2.8E-18	1.4E-16	2.8E-18	<1%	U-nat	2.6E-18	9.3E-17	2.6E-18	<1%
Th-230	8.1E-18	6.3E-18	8.8E-18	<1%	Th-230	3.8E-18	9.2E-18	7.1E-18	<1%
Ra-226	4.1E-18	2.8E-18	1.6E-18	<1%	Ra-226	4.5E-18	4.0E-18	4.7E-18	<1%
Pb-210	1.2E-15	3.7E-17	5.8E-17	<1%	Pb-210	1.3E-15	3.4E-17	6.0E-17	<1%

KGL - South									
3rd Quarter					4th Quarter				
Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit	Nuclide	Conc. (uCi/ml)	Error (uCi/ml)	LLD (uCi/ml)	% Limit
U-nat	1.1E-17	3.4E-16	1.1E-17	<1%	High volume motor failed during fourth quarter 2017. Motor will be replaced if future monitoring is required.				
Th-230	2.9E-17	4.2E-17	3.4E-17	<1%					
Ra-226	8.4E-18	6.8E-18	7.0E-18	<1%					
Pb-210	1.9E-15	1.3E-16	2.9E-16	<1%					