

January 30, 2019

M. Joseph Mackenzie  
Chair - Wek'èezhii Land and Water Board  
#1, 4905-48th Street  
Yellowknife, NT  
X1A 3S3

M. Mackenzie,

**Re: Surveillance Network Program (SNP) December 2018 Monthly Report for Water Licence W2012L2-0001**

As per Part "B" of the Surveillance Network Program for the Water Licence W2012L2-0001, please find enclosed the Surveillance Network Program (SNP) Monthly Report for December 2018.

We trust this report meets with your requirements. Please contact the undersigned at (403) 910-1933 ext 2403 should you have any questions or comments.

Sincerely,



Annie Larrivee, P.Eng.  
Acting Team Lead – Environment LOM

for

Lukas Novy, M.Sc., P.Eng.  
Acting Superintendent Environment

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## 1. Sampling Summary for Licence W2012L2-0001

In accordance with the requirements of Water Licence W2012L2-0001, there were 4 samples collected in the month of December 2018. Please refer to Figure 1 – Surveillance Network Monitoring Stations for locations of all Ekati sampling stations.

Lab Number	Sample ID	Collection Date	Comments
L2212371-3	1616-30a	18-Dec-2018	
L2212371-2	1616-303	18-Dec-2018	Duplicate for 1616-30a
L2212371-1	1616-121	18-Dec-2018	Field Blank for 1616-30a
L2212371-4	1616-494	18-Dec-2018	Travel Blank for 1616-30a

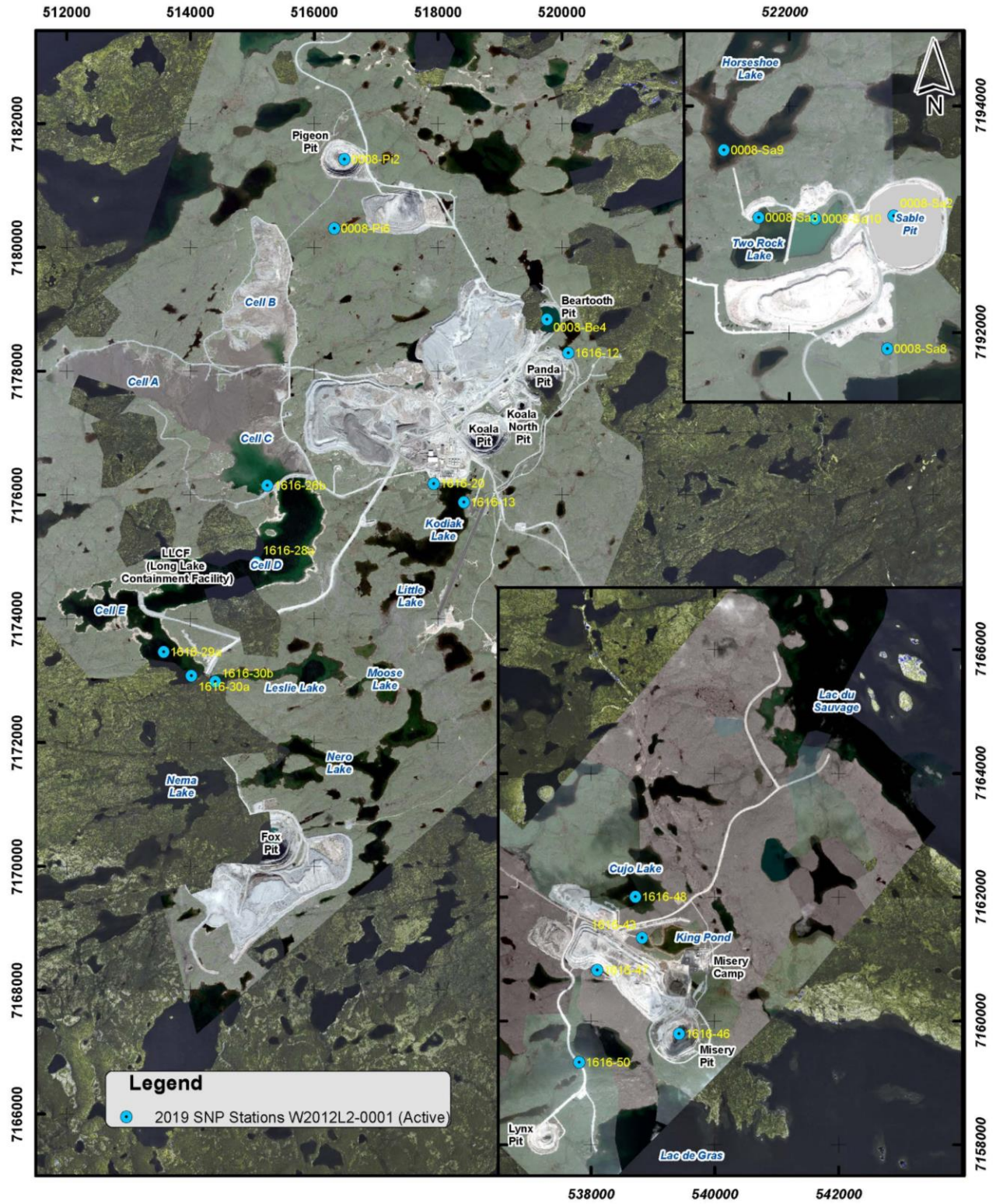
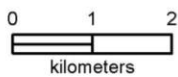


Figure 1. W2012L2-0001 Surveillance Network Monitoring Stations



1:80,000  
Imagery Acquired July / August 2018



## 2. Part B. Flow and Volume Measurement Requirements

### B(2.) Volume of Water Obtained from Grizzly, Little, Falcon, Thinner and Sable Lakes

Lake Name	Current Month (m <sup>3</sup> )	Year to Date (m <sup>3</sup> )
Grizzly Lake	7,713	104,008
Little Lake	0	0
Falcon Lake	0	320
Thinner Lake	0	0

Note: Sable Pit is in production and Sable Lake doesn't exist anymore

### B(3.) Lake Level Elevation Metres above Sea Level

Lake Name	Lake Elevation (masl)
Grizzly Lake	Frozen
Little Lake	Frozen
Upper/North Panda Lake	Frozen
Falcon Lake	Frozen
Thinner Lake	Frozen
Cell E LLCF	447.77*
King Pond	Frozen

Note: Cell E lake elevation taken through ice.

### B(4.) Source and Volume of Recycled Water Used

Plant	Source	Current Month (m <sup>3</sup> )	Year to Date (m <sup>3</sup> )
Process	LLCF	432,286	4,664,812

### B(5.) Volume of Water or Waste Discharged to Containment Facilities

Location	Current Month (m <sup>3</sup> )	Year to Date (m <sup>3</sup> )
<b>Into Long Lake Containment Facility</b>		
Process Plant Liquids	606,281	5,995,091
Process Plant Solids	82,624	1,082,087
Minewater	21,408	2,016,125
Other Wastes	0	6,177
<b>Into Beartooth Pit</b>		
Minewater	0	19,520
<b>Into Two Rock Sedimentation Pond</b>		
Minewater	0	44,507
Other Wastes	0	640
<b>Into King Pond Settling Facility</b>		
Minewater	0	47,989
Other Wastes	0	756

Notes: "Other Wastes" include camp sumps not associated with minewater;

Year to Date Process Plant fine liquids to the LLCF is underreported due to a down totalizer which was repaired mid-August.

**B(6.) Volume of Water or Waste Discharged from Containment Facilities**

Location	Current Month (m <sup>3</sup> )	Year to Date (m <sup>3</sup> )
<b>From LLCF</b>		
To Leslie Lake	0	0
For Road Watering	0	0
<b>From King Pond</b>		
To Cujo Lake	0	142,375
For Road Watering	0	2,320
<b>From Two Rock Sedimentation Pond</b>		
To Horseshoe Lake	0	339,154
For Road Watering	0	25,200

**B(7.) Quantities of Minewater Pumped from each Open Pit and Underground Mines**

Origin	Destination							
	LLCF (m <sup>3</sup> )		Beartooth (m <sup>3</sup> )		Two Rock (m <sup>3</sup> )		King Pond (m <sup>3</sup> )	
	Monthly	YTD	Monthly	YTD	Monthly	YTD	Monthly	YTD
Koala & Panda Pits	0	274,677						
Underground	21,408	262,918						
Pigeon Open Pit	0	15,760	0	19,520				
Beartooth Open Pit	0	1,462,770						
Misery & Lynx Pits							0	47,989
Sable Open Pit					0	44,507		
<b>Total</b>			<b>0</b>	<b>19,520</b>	<b>0</b>	<b>44,507</b>	<b>0</b>	<b>47,989</b>

*Note: Quantities of underground mine water are recycled for use in the underground service water system. Total Underground Minewater includes water from Koala, Koala North and Panda Underground. YTD = Year to Date.*

*Underground Minewater was underreported in Nov 2018 by 4,690 m<sup>3</sup> due to a spreadsheet error. The volume for Underground Minewater for Dec 2018 is overreported by an unknown quantity because the flowmeter was not read until 17-Jan-2019.*

**B(8.) and (9.) Quantity of Sewage Effluent Discharged and Sewage Solids Removed from the Sewage Treatment Plant (STP)**

From STP	Current Month (m <sup>3</sup> )	Year to Date (m <sup>3</sup> )
Sewage Solids	114	1,363
Sewage Effluent	6,868	81,140

**B(10.) Quantity of Sewage Delivered to STP from Sable and Pigeon Developments**

Location Name	Current Month (m <sup>3</sup> )	Year to Date (m <sup>3</sup> )
Pigeon Development	1.55	18.25
Sable Development	1.55	18.25

**B(12.) Quantity of Minewater Pumped from the Pigeon, Sable and Beartooth open pits**

Please refer to Table B(7.) Quantities of Minewater Pumped from Open Pit and Underground Mines.

### 3. Part C. Other Monitoring Requirements

#### C(1.) Precipitation Data from Koala Met Station

Month	Precipitation (mm)	Year to Date (mm)
December	2.9	166.3

*Note: Monthly adjusted values account for wind undercatch of the Geonor precipitation gauge as explained further in the 2016 Aquatic Effects Monitoring Report.*

#### C(4.) Quantity of Ore Produced

Material (tonnes)	Current Month	Year to Date
Processed Ore	349,195	3,652,128

*Note: Quantity reported represents all operating open pit and underground mines.*

#### C(5a.) Quantity of Waste Rock and Coarse Processed Kimberlite Produced

Material (tonnes)	Current Month	Year to Date
Waste Rock Produced	3,010,004	29,023,893
Coarse Processed Kimberlite	105,214	1,231,614

*Note: Quantities of coarse processed kimberlite and waste rock reported represents all operating open pit and underground mines.*

#### C(5b.) Waste Rock Disposal Locations

Origin	Destination	Waste Rock Produced
Pigeon Pit	Pigeon WRSA	456,533
Lynx Pit	Lynx WRSA	530,117
Koala UG	Beartooth WSA	2,202
Sable Pit	Sable South WRSA	1,999,658
Misery UG	Misery WRSA	21,494
<b>December 2018 Total</b>		<b>3,010,004</b>

*Note: All values are in metric tonnes. This table summarizes waste rock from all active pits and underground mines.*

## **Appendix A**

### **Field Parameters for W2012L2-0001 Water Licence**



Station Point		1616-30A	1616-303	1616-121	1616-494
Date Sampled		18-Dec-2018	18-Dec-2018	18-Dec-2018	18-Dec-2018
Time Sampled		11:43	11:53	11:44	11:45
ALS Sample ID		L2212371-3	L2212371-2	L2212371-1	L2212371-4
Parameter	Units				
Depth of Sample (m)	m	0.1	0.1	0.1	0.1
pH Field	pH	6.07	6.07	6.07	6.07
Specific Conductivity Field	µs/cm	1238	1238	1238	1238
Water Colour		Colourless	Colourless	Colourless	Colourless
Water Temperature	°C	1.252	1.252	1.252	1.252
Air Temperature	°C	-13.4	-13.4	-13.4	-13.4
Weather		Overcast	Overcast	Overcast	Overcast
Wind Direction	Degrees	130	130	130	130
Wind Speed	km/hr	22.2	22.2	22.2	22.2

## **Appendix B**

### **Analytical Results for W2012L2-0001 Water Licence**

Client Sample ID		1616-30A	1616-303	1616-121	1616-494
Date Sampled		18-Dec-2018	18-Dec-2018	18-Dec-2018	18-Dec-2018
Time Sampled		11:43	11:53	11:44	11:45
ALS Sample ID		L2212371-3	L2212371-2	L2212371-1	L2212371-4
Parameter	Units				
<b>Physical Tests (Water)</b>					
Hardness (as CaCO3)	mg/L	191	198	<0.50	
pH	pH	7.60	7.59	5.41	5.37
Total Suspended Solids	mg/L	<3.0	<3.0	<3.0	<3.0
<b>Anions and Nutrients (Water)</b>					
Ammonia, Total (as N)	mg/L	<0.050	<0.050	<0.050	<0.050
Nitrate and Nitrite (as N)	mg/L	2.57	2.54	<0.050	<0.050
Nitrate (as N)	mg/L	2.57	2.54	<0.020	<0.020
Nitrite (as N)	mg/L	<0.050	<0.050	<0.010	<0.010
Total Kjeldahl Nitrogen	mg/L	0.81	0.97	<0.20	<0.20
Orthophosphate-Dissolved (as P)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050
Phosphorus (P)-Total Dissolved	mg/L	<0.020	<0.020	<0.020	<0.020
Phosphorus (P)-Total	mg/L	<0.0050	<0.0050	<0.0050	<0.0050
Silicate (as SiO2)	mg/L	<0.50	<0.50	<0.50	<0.50
<b>Organic / Inorganic Carbon (Water)</b>					
Total Carbon	mg/L	21.4	19.9	<1.1	<1.1
Total Inorganic Carbon	mg/L	16.5	15.2	<0.50	<0.50
Total Organic Carbon	mg/L	4.9	4.8	<1.0	<1.0
<b>Bacteriological Tests (Water)</b>					
MPN - E. Coli	MPN/100mL	<1	<1	<1	<1
MPN - Total Coliforms	MPN/100mL	<1	<1	<1	<1
<b>Dissolved Metals (Water)</b>					
Calcium (Ca)-Dissolved	mg/L	40.9	42.3	<0.10	
Magnesium (Mg)-Dissolved	mg/L	21.5	22.3	<0.10	
<b>Aggregate Organics (Water)</b>					
Oil and Grease	mg/L	<5.0	<5.0	<5.0	<5.0
<b>Volatile Organic Compounds (Water)</b>					
Benzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050
Ethylbenzene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050
Styrene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050
Toluene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050
o-Xylene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050
m+p-Xylene	mg/L	<0.00050	<0.00050	<0.00050	<0.00050
Xylenes	mg/L	<0.00071	<0.00071	<0.00071	<0.00071
TVH (C5-C10)	mg/L	<0.10	<0.10	<0.10	<0.10
4-Bromofluorobenzene	%	77	82.2	86.9	84.5
3,4-Dichlorotoluene	%	87	99.8	79.8	88.8
1,4-Difluorobenzene	%	94.9	95.3	94.3	94.5
<b>Hydrocarbons (Water)</b>					
TEH (C10-C30)	mg/L	<0.25	<0.25	<0.25	<0.25
TPH5-30	mg/L	<0.27	<0.27	<0.27	<0.27