



MEADOWBANK DIVISION

**Monitoring Program Summary Report**  
**December 2017**

Type A Water License 2AM-MEA1525

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## **SECTION 1 • BACKGROUND**

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As required under Part I, Item 20 of Type A Water License 2AM-MEA1525, this report documents the water management and monitoring activities at the mine site for the month. This includes water usage, Vault Attenuation Pond discharge water quality, East Dike Seepage discharge water quality, RSF Seepage, Central Dike Seepage, Assay Road Seepage, and sewage treatment plant discharge water quality (which are directed to the onsite storm water management pond).

In addition, a summary of spills/actions for the month is reported.

## SECTION 2 • WATER MANAGEMENT

### 2.1 WATER USAGE

Fresh and reclaim water usage for December 2017 is summarized in Table 2-1 below.

**Table 2-1: Freshwater Usage (m<sup>3</sup>)**

Water Location	Source Lake	Jan	Feb	March	April	May	June	July
Camp	Third Portage Lake	3,623	3,144	3,444	3,490	3,692	3,697	3,818
Mill (freshwater tank)	Third Portage Lake	45,068	41,345	33,328	53,001	53,152	39,661	43,494
Emulsion plant	No-name Lake	86	97	97	96	101	100	129
<b>Total Freshwater Usage (m<sup>3</sup>)</b>		<b>48,777</b>	<b>44,586</b>	<b>36,869</b>	<b>56,587</b>	<b>56,944</b>	<b>43,459</b>	<b>47,441</b>
<b>Reclaim Water Usage (m<sup>3</sup>)</b>	Tailings Pond	252,232	232,324	247,396	227,667	246,007	247,131	251,549

Water Location	Source Lake	Aug	Sept	Oct	Nov	Dec	Total
Camp	Third Portage Lake	3,433	3,389	3,522	3248.00	3,605	<b>42,105</b>
Mill (freshwater tank)	Third Portage Lake	38,174	34,107	30,883	35270	37,365	<b>484,848</b>
Emulsion plant	No-name Lake	123	98	97.6	92.4	104	<b>1,219</b>
<b>Total Freshwater Usage (m<sup>3</sup>)</b>		<b>41,730</b>	<b>37,594</b>	<b>34,503</b>	<b>38,610</b>	<b>41,074</b>	<b>528,171</b>
<b>Reclaim Water Usage (m<sup>3</sup>)</b>	Tailings Pond	257,421	241,498	250,866	254,845	<b>262,157</b>	<b>2,971,093</b>

### 2.2 WASTE ROCK STORAGE FACILITY SEEPAGE

In December, no water was pumped back to the North Cell TSF from the ST-16 sump. No water was transferred from the WEP1 and WEP2 sumps respectively to the ST-16 sump. Total year to date pumped from ST-16 sump is 50,553m<sup>3</sup>.

Inspections/Monitoring as per the Freshet Action Plan will resume in 2018 Freshet. As well, sampling at WEP1 (Station ST-30), WEP2 (Station ST-31), ST-16, NP2, and the downstream lakes required under the Freshet Action Plan will resume in 2018 Freshet.

NP2- Winter water sampling through ice into NP-2 Lake has been done in December.

### 2.3 CENTRAL DIKE SEEPAGE

In December, 251,796m<sup>3</sup> of water was pumped from the ST-S-5 sump back into the South Cell TSF. Total year to date is 4,366,869 m<sup>3</sup>. In December, Agnico didn't pump a part of the Central Dike seepage water into Goose Pit. A total year to date of 332,177m<sup>3</sup>.

Sampling was conducted monthly at ST-S-5 and the South Cell TSF (ST-21) as per the requirements of the NWB water license.

Daily visual inspections were also completed by the Engineering Department.

## 2.4 ASSAY ROAD SEEPAGE

In December, no water was pumped back from the trench to the mill due to frozen conditions. Weekly inspections of the area were conducted this month.

## 2.5 SEEPAGE AND RUNOFF FROM THE LANDFILL

The landfill was inspected weekly and no seepage or runoff was observed.

## 2.6 SEEPAGE AT PIT WALL AND PIT WALL FREEZE/THAW AND PERMAFROST AGGRADATION

In December, no water was pumped out from Vault Pit to the Vault Attenuation Pond. No water was pumped out from Portage Pit North to the South Cell TSF. No water was pumped out from the Portage Pit South.

## 2.7 SEWAGE TREATMENT PLANT

One (1) effluent wastewater sample was collected at the onsite sewage treatment plant (STP) in December.

The Seprotech STP results are shown in Table 2.7.1 below; the LJ-Mix STP results are shown in Table 2.7.2. The effluent is discharged to the Stormwater Management pond which is pumped to the South Cell TSF during summer months. In December, no water has been discharged from the Stormwater Management pond to the South Cell TSF.

**Table 2.7.1: Seprotech Effluent Results**

Parameters	Units	December 11 <sup>th</sup> , 2017
Ammonia (NH <sub>3</sub> )	mg N/L	1.39
Ammonia-Nitrogen (NH <sub>3</sub> -NH <sub>4</sub> )	mg N/L	55.6
Total Kjeldahl Nitrogen	mg N/L	57.4
BOD-5	mg/L	11
COD	mg/L	86
Total Suspended Solids	mg/L	26
Nitrate	mg N/L	2.85
Nitrite	mg N/L	1.14
pH*	Units	7.1
Fecal Coliform	UFC/100 mL	30
Total Coliform	UFC/100 mL	90 000

\*Parameter measured by STP operators

**Table 2.7.2: LJ-Mix Effluent Results**

Parameters	Units	December 11 <sup>th</sup> , 2017
Ammonia (NH <sub>3</sub> )	mg N/L	0.04
Ammonia-Nitrogen (NH <sub>3</sub> -NH <sub>4</sub> )	mg N/L	6.56
Total Kjeldahl Nitrogen	mg N/L	13.5
BOD-5	mg/L	25
COD	mg/L	106
Total Suspended Solids	mg/L	31
Nitrate	mg N/L	6.72
Nitrite	mg N/L	1.43
pH*	Units	6
Fecal Coliform	UFC/100 mL	3 800
Total Coliform	UFC/100 mL	30 000

\*Parameter measured by STP operators

## 2.8 VAULT ATTENUATION POND EFFLUENT

No discharge occurred from the Vault Attenuation Pond into Wally Lake in December. Total year to date is 715,606m<sup>3</sup>.

## 2.9 EAST DIKE SEEPAGE EFFLUENT

Discharge from the East Dike Seepage occurred from for the entire month. A total of 15,870m<sup>3</sup> was discharged into Second Portage Lake in December 2017. Total year to date is 99,798m<sup>3</sup>.

Four (4) weekly effluent samples were collected at ST-8 in December 2017. TSS monitoring results are presented in Table 2.9.1.below. No exceedance in relation to the water license was recorded.

**Table 2.9.1: East Dike Seepage Results for TSS**

Parameters	Units	Dec. 4 <sup>th</sup> , 2017	Dec. 11 <sup>th</sup> , 2017	Dec. 19 <sup>th</sup> , 2017	Dec. 27 <sup>th</sup> , 2017	Maximum Average concentration
Total Suspended Solids	mg/L	8	10	2	4	6

Monthly regular sampling pursuant to the Water License was also conducted at this location. Results are shown in Table 2.9.2 below. There have been no exceedances of MMER for those criteria.

**Table 2.9.2 December 2017 Monthly Monitoring Results**

Parameters	Units	December 4th, 2017
Aluminum	mg/L	0.054
Sulphate	mg/L	6.8
Arsenic	mg/L	<0.0005
Copper	mg/L	0.0018
Nickel	mg/L	0.0006
Lead	mg/L	<0.0003
Zinc	mg/L	<0.001
Radium 226	mg/L	Not needed this month
Total Cyanide	mg/L	<0.001

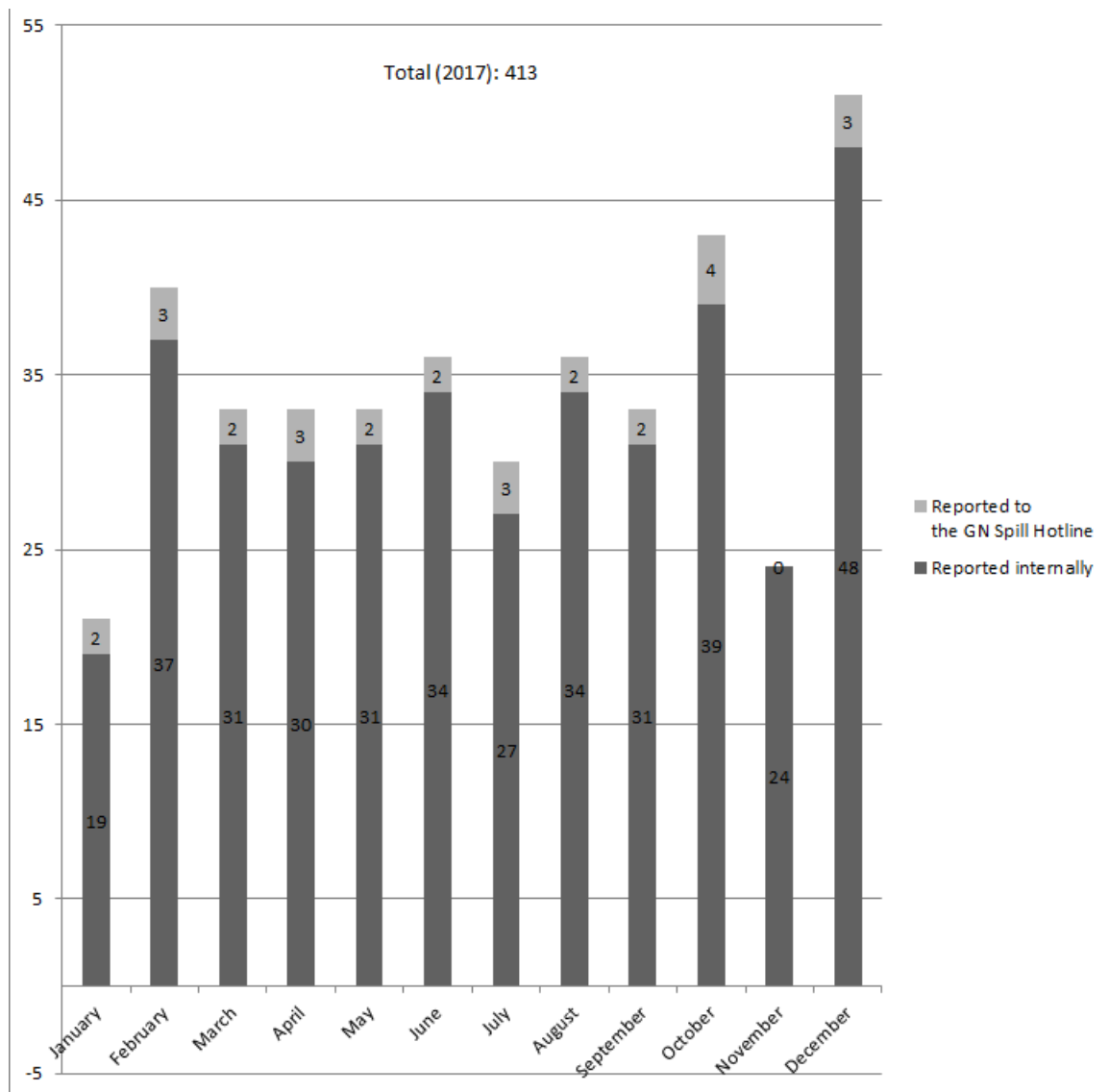
## **2.10 NON CONTACT WATER**

No water samplings were conducted at ST-5 and ST-6 in December due to frozen condition.

### SECTION 3 • SPILL MANAGEMENT

Figure 3.1 shows reported and non-reported spills for 2017 broken down per month and Table 3.1 summarizes Agnico spill reports for December 2017. All spills reported internally (48) and to regulators (3) were managed appropriately on site according to Agnico's spill contingency plan. Spills were contained and cleaned, contaminated material was disposed to the appropriate area (landfarm, TSF if required), and the clean-up actions were monitored closely by the Environment Department. There was no off site impact to any watercourses.

**Figure 3.1 2017 Reported and Non-Reported Spills (Without Amaruq Exploration Access Road)**



**Table 3.1: Summary of Agnico Eagle Internal Spill Reports, December 2017**

Spill Description						
Date of Spill	Hazardous Material	Qty	Units (L / Kg)	Location	Cause of spill	Clean-up action taken
Dec 1 <sup>st</sup> , 2017	Glycol	15	L	Maintenance	Broken radiator hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 2 <sup>nd</sup> , 2017	Steering oil	50	L	Waste dump	Broken hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 2 <sup>nd</sup> , 2017	Hydraulic fluid	23	L	Maintenance shop	Leak	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 5 <sup>th</sup> , 2017	Coolant	70	L	Camp	Overfilled	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 6 <sup>th</sup> , 2017	Hydraulic fluid	20	L	Vault parking	Broken quick attach hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 8 <sup>th</sup> , 2017	Coolant	20	L	Primary crusher	Busted coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 9 <sup>th</sup> , 2017	Hydraulic Oil	90	L	Vault Pit	Hydraulic hose failure	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 9 <sup>th</sup> , 2017	Hydrex Oil	200	L	Oil pad	Punctured tote when manipulated with forklift due to uneven ground	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 9 <sup>th</sup> , 2017	Engine Oil	5	L	Auxiliary Equipment Meadow bank	Broken hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 9 <sup>th</sup> , 2017	Coolant	30	L	Vault pit	Broken hose	Spill was contained and contaminated soil picked up and disposed of appropriately.

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Dec. 9 <sup>th</sup> , 2017	Coolant	30	L	Vault pit	Broken hose clamp	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 10 <sup>th</sup> , 2017	Engine oil	60	L	Vault RSF	Leak	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 11 <sup>th</sup> , 2017	Coolant	400	L	Open Pit Meadow bank	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 11 <sup>th</sup> , 2017	Hydraulic oil	85	L	Vault Pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 12 <sup>th</sup> , 2017	Engine oil	20	L	Phaser pit	Breather vent frozen	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 14 <sup>th</sup> , 2017	Windshield washer	150	L	Vault coverall	Broken valve	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 14 <sup>th</sup> , 2017	Hydraulic oil	60	L	Vault parking	O'ring failure	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 15 <sup>th</sup> , 2017	Oil	12	L	Lube station	Overfilled	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 16 <sup>th</sup> , 2017	Hydraulic oil	30	L	Primary Crusher	O'ring failure	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 17 <sup>th</sup> , 2017	Coolant	20	L	Vault parking	Leak on the radiator core	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 17 <sup>th</sup> , 2017	Hydraulic oil	30	L	Vault kitchen	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 18 <sup>th</sup> , 2017	Engine oil	15	L	Vault parking	Drain plug wear under flywheel housing	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 18 <sup>th</sup> , 2017	Hydraulic oil	15	L	Mine Meadow bank	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 18 <sup>th</sup> , 2017	Hydraulic oil	30	L	Tear Drop Lake	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of

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				Road		appropriately.
Dec. 19 <sup>th</sup> , 2017	Hydraulic oil	20	L	Mine Meadow bank	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 19 <sup>th</sup> , 2017	Coolant	35	L	Pushback parking	Leak on the radiator core	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 20 <sup>th</sup> , 2017	Hydraulic oil	10	L	Phaser pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 20 <sup>th</sup> , 2017	Hydraulic oil	10	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 21 <sup>st</sup> , 2017	Hydraulic oil	10	L	Vault parking	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 21 <sup>st</sup> , 2017	Hydraulic oil	10	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 22 <sup>nd</sup> , 2017	Coolant	10	L	Primary crusher ramp	Broken coolant hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 23 <sup>rd</sup> , 2017	Hydraulic oil	15	L	Portage pit-E	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 22 <sup>nd</sup> , 2017	Engine oil	10	L	Waste dump	Oil leak	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 23 <sup>rd</sup> , 2017	Engine oil	40	L	Primary crusher	Breather was plugged so engine oil spilled over the loader and onto the ground.	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 23 <sup>rd</sup> , 2017	Coolant	50	L	Portage pit	Coolant leak	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 23 <sup>rd</sup> , 2017	Hydraulic oil	10	L	Vault	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 23 <sup>rd</sup> , 2017	Hydraulic	15	L	Portage pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of

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						appropriately.
Dec. 24 <sup>th</sup> , 2017	Fuel	40	L	Phaser pit	Leak coming out of the breather	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 24 <sup>th</sup> , 2017	Hydraulic oil	50	L	Vault	Broken hydraulic cap	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 24 <sup>th</sup> , 2017	Hydraulic oil	10	L	Vault parking	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 24 <sup>th</sup> , 2017	Hydraulic oil	5	L	Vault parking	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 24 <sup>th</sup> , 2017	Coolant	10	L	Vault parking	Broken coolant line	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 24 <sup>th</sup> , 2017	Fuel	20	L	Vault	Leak	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 25 <sup>th</sup> , 2017	Coolant	25	L	Vault parking	Broken coolant line	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 25 <sup>th</sup> , 2017	Fuel	20	L	Vault	Leak	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 27 <sup>th</sup> , 2017	Engine oil	5	L	Portage parking	Loose engine oil filter	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 28 <sup>th</sup> , 2017	Hydraulic oil	75	L	Phaser	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 29 <sup>th</sup> , 2017	Hydraulic fluids	60	L	Winter parking	Failed wheel seal during cold start up	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 29 <sup>th</sup> , 2017	Hydraulic	50	L	Vault pit	Broken hydraulic hose	Spill was contained and contaminated soil picked up and disposed of appropriately.
Dec. 29 <sup>th</sup> , 2017	Coolant	50	L	Phaser	Coolant hose failure	Spill was contained and contaminated soil picked up and disposed of appropriately.

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Dec. 30 <sup>th</sup> , 2017	Hydraulic oil	80	L	Close to Vault Parking	Broken steering cylinder. (HAUL TRUCK 21 was loaded with H.G and he was hauling on vault road towards the crusher at meadowbank . Just after the vault kitchen,the truck driver did not do the curve and went straight in the tundra .)	Spill was contained and contaminated soil picked up and disposed of appropriately.
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