95 Wellington Street West
Suite 1010, P.O. Box 44
Toronto Dominion Centre
Toronto, Ontario M5J 2N7
416-628-021

Sent by Email

July 30, 2018

Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU
X0B 1J0

Re: June 2018 – Monthly Monitoring Report for Water Licence 2AM-DOH1323

This report is comprised of monitoring requirements as set out in Part J and Schedule J of water licence 2AM-DOH1323 Amendment 1, and additional requirements from CIRNAC.

During the subject period of this report the focus of activities at Doris North was underground mining, construction, ore processing, water management and environmental compliance. Sampling locations monitored under this licence (seasonally or when facilities are operational) are provided in Figure 4 at the end of this report.

Site Wide Water Quality Monitoring Program (Part J Items 3, 8, and Schedule J)

Water quality sampling was conducted in June at monitoring stations identified in Schedule J of the licence (ST-1 through ST-13, TL-1 through TL-12). Water quality samples were not collected for monitoring stations that were inactive during the month being reported (e.g., facilities that had not yet been constructed, were frozen during the month, or were not operationally active). All parameters were compared to the applicable effluent quality limits outlined in Part G of the licence.

Water quality samples collected at the Doris Tank Farm (ST-5), Robert's Bay Single Tank Farm (ST-6A) and Robert's Bay 3x 5ML Tank Farm (ST-6B) exceeded the tundra discharge criteria for Total Suspended Solids (TSS); no other parameters in these samples exceeded the discharge criteria. Water accumulating in these facilities was transported to the Tailings Impoundment Area. On June 20, 2018, the Inspector granted permission to use this water for dust suppression on site roads as TSS was the only parameter to exceed the allowable discharge limits. No water from these facilities was used for dust suppression in June.

No other exceedances of effluent quality limits were observed in any samples collected this month.

A water quality sample was collected from the Landfarm facility (ST-4) on June 18, however the laboratory was unable to complete analysis for Benzene, Ethylbenzene

and Toluene as incorrect sample bottles had inadvertently been submitted for this sample. No discharge occurred from this facility in June. A second sample was collected in July to confirm effluent quality prior to discharge from this facility; results of this sample will be reported in the July SNP report.

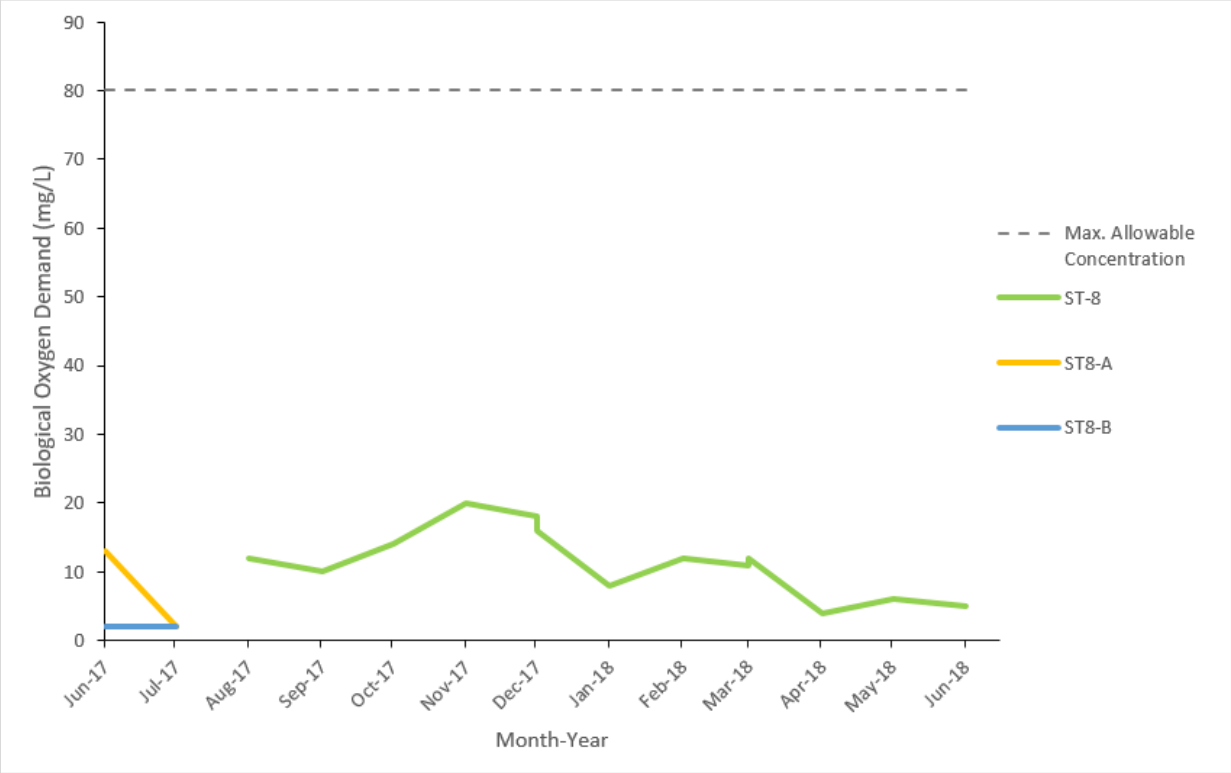
In June, a visual inspection of the backfilled stopes underground was conducted to identify seepage from the stopes. Underground stopes have been backfilled in ten locations at this time; one seep was identified emanating from one backfilled stope. A flow measurement could not be completed due to the low volume of this seep. A sample was collected at this location (TL-11) and submitted for analysis.

Groundwater inflow accumulating underground from mine development occurring in the Doris Connector zone continued to be discharged to the Tailings Impoundment Area in June. Water quality samples of this effluent (TL-12) were collected from the discharge line and submitted for analysis.

Results of all water quality monitoring are provided in Appendix A attached to this report.

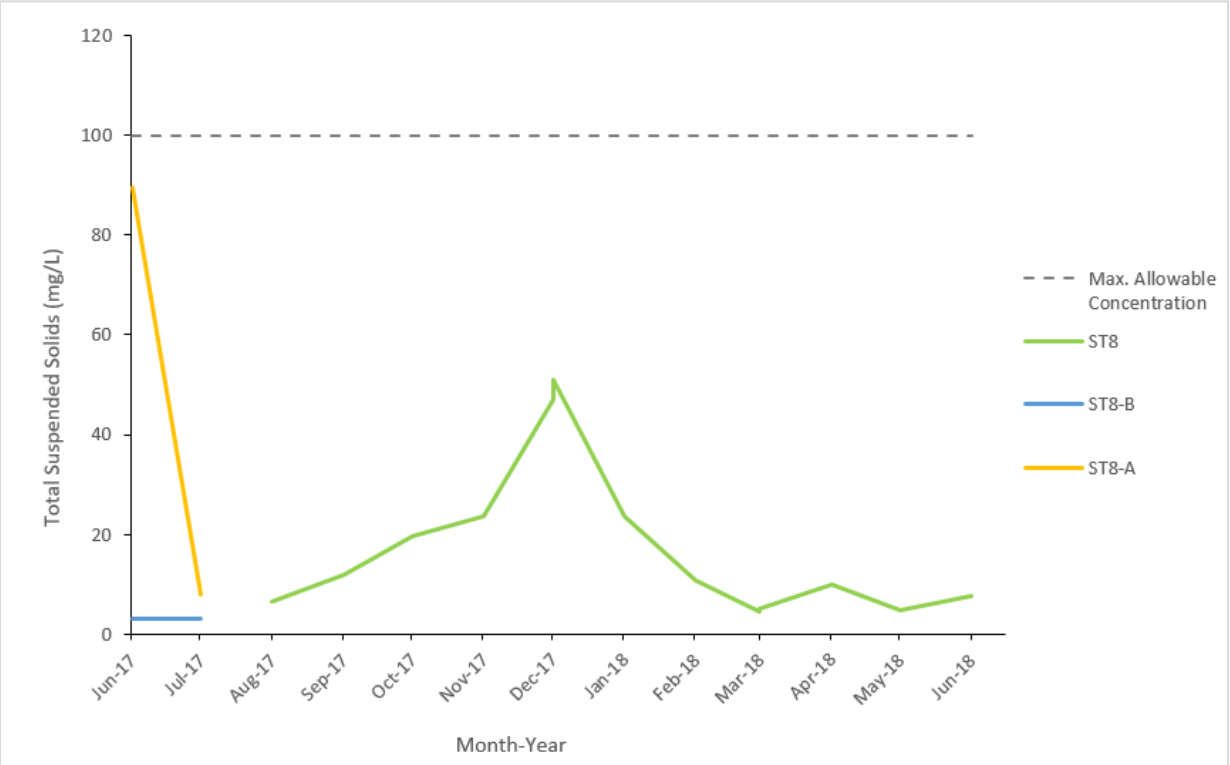
Figure 1 and 2 illustrates effluent quality characteristics for parameters of interest at select monitoring stations.

Figure 1. Biological Oxygen Demand Results Consistently Below Discharge Criteria for Wastewater Treatment Plant (ST8, ST8A, ST8B)



Note: Maximum Average Concentration as per Part G Item 4(b).

Figure 2. Total Suspended Solids Results Consistently Below Discharge Criteria for Wastewater Treatment Plant (ST8, ST8A, ST8B)



Note: Maximum Average Concentration as per Part G Item 4(b).

Flow and Volume Measurements (Part J Items 11, 12, and Schedule J)

Table 1. Effluent discharge, June 2018

Facility	Station Code	Discharge Volume (m^3)	Exceedances of Discharge Criteria	Discharge Location	Licence Reference
Sedimentation Pond	ST-1	11,725	N/A	Tailings Impoundment Area	Schedule J Table 2
Pollution Control Pond #1	ST-2	3,905	N/A	Tailings Impoundment Area	Schedule J Table 2
Landfill Sump	ST-3	0	0	Facility not constructed	Part G Item 23 (a, b, g)
Landfarm Sump	ST-4	0	0	Tundra Discharge 13W 432450 7559600	Part G Item 23 (c, d, g)
Doris Tank Farm	ST-5	735	1	Tailings Impoundment Area	Part G Item 23 (e, f, g)
Rob Bay 5ML Tank Farm	ST-6a	734	1	Tailings Impoundment Area	Part G Item 23 (e, f, g)
Rob Bay Three 5ML Tank Farm	ST-6b	283	1	Tailings Impoundment Area	Part G Item 23 (e, f, g)
Wastewater Treatment Plant, Effluent	ST-8	1,111	0	Tundra Discharge 13W 432933 7559057	Part G Item 4 (b-d)
Wastewater Treatment Plant, Sewage Sludge	N/A	30.3	N/A	Tailings Impoundment Area	Part J Item 11 (g)
Reagent and Cyanide Storage Facility Sump	ST-11	0	0	Tailings Impoundment Area	Schedule J Table 2
Pollution Control Pond #2	ST-13	0	0	Facility not constructed	Schedule J Table 2
Mine Water Discharge	TL-12	9,749	N/A	Tailings Impoundment Area	Schedule J Table 2

Records of visual monitoring of discharge to tundra are maintained on file as per Part J Item 18.

Table 2. Discharge from TIA to Doris Creek, June 2018

Month	Number of days of discharge	Discharge Volume (m^3)	Exceedances of Discharge Criteria*
January	0	0	0
February	0	0	0
March	0	0	0
April	0	0	0
May	0	0	0
June	0	0	0
Annual Cumulative	**0**	**0**	**0**

* Discharge criteria outlined in Part G Items 29, 30, 31 and Part J Item 8.

A comparison of flows between TL-4 and TL-2 as per Part G Item 32 of the licence was not conducted as no water was discharged from the Tailings Impoundment Area to Doris Creek this month.

Table 3. Water usage, June 2018

Month	Windy Lake (ST-7A)	Doris Lake (ST-7)					Mine Inflow	Total Usage
	Domestic Water* (m^3)	Domestic Water* (m^3)	Surface Exploration (m^3)	Industrial Usage** (m^3)	Dust Suppression (m^3)	Winter Track (m^3)	Industrial Usage ^ (m^3)	
January	1,051	0	0	0	0	119	433	1,603
February	1,277	0	0	34	0	136	0	1,447
March	1,231	0	0	29	0	0	0	1,260
April	1,208	0	0	74	0	0	0	1,282
May	1,224	0	93	46	0	0	0	1,363
June	1,115	0	4 [A]	45	669	0	0	1,833
Annual Total	7,106	0	97	228	669	255	433	8,788
Annual Allowance	**22,995**							**480,000**

* As permitted by water licences 2BE-HOP1222 and 2AM-DOH1323

** Includes industrial uses such as underground drilling, core processing, concrete batching, etc.

^ Discharge of groundwater inflow from mine development in the Doris Connector zone to the Tailings Impoundment Area began in February. Mine water inflow is no longer being recycled into underground sumps for use in mining activities. The volume of inflow discharged to the TIA is presented in Table 1 above.

[A] No surface exploration occurred in the 2AM-DOH1323 licence area in June. 4 m^3 of water was trucked from Doris Lake and used to support surface exploration drills operating in the 2BE-HOP1222 licence area. This was the result of operator error and was immediately addressed with the water truck operator to ensure no further water was taken from Doris Lake for this use.

Table 4. Volume of Reclaim Water from the TIA, June 2018

Month	Reclaim Water (m^3) *
January	82,577
February	69,744
March	78,864
April	74,638
May	76,444
June	69,120
Annual Cumulative	**451,387**

* As per Part J Item 11(d)
Numbers rounded to the nearest cubic meter.

Table 5. Waste Rock and Process Volumes, June 2018

Month	Waste Rock Management					Underground Void Space			Ore Processing and Tailings Management		
	Produced from Mining Activity (tonnes)*	Backfilled Directly to Underground Stopes (tonnes)*	Returned Underground from Temporary Waste Rock Pile* (tonnes)	Moved to Temporary Waste Rock Pile (tonnes)*	Cumulative on Temporary Waste Rock Pile (tonnes)	Volume Created from Mining Activities (tonnes)	Cumulative Volume Available for Backfill (tonnes)	Cumulative Volume Available for Backfill (m^3)	Quantity of Ore Processed** (tonnes)	Total Dry Tailings Placed in TIA** (tonnes)	Total Dry Cyanide Leach Tailings Placed Underground** (tonnes)
December Balance	-	-	-	-	542,884	-	774,674	277,762	-	-	-
January	22,951	25,584	0	0	542,884	16,558	790,728	283,496	25,219	23,916	1,304
February	21,415	20,308	0	1,107	543,991	22,438	813,166	291,510	27,036	25,615	1,434
March	27,092	20,360	0	6,732	550,723	13,547	826,713	296,348	31,375	30,366	1,008
April	25,068	17,536	0	7,532	558,255	22,069	848,783	304,230	33,619	32,209	1,403
May	34,829	9,392	0	25,437	583,692	40,314	889,096	318,628	28,869	27,692	1,150
June	26,985	16,856	0	10,129	593,821	31,176	930,962	333,580	25,826	24,527	1,296
Cumulative Total	158,340	110,036	0	50,937	593,821	156,791	930,962	333,580	171,944	164,325	7,595

* As per Part J Item 11(e, f)

** As per Part J Item 12.

Note: Void space created from mining activities is determined as the sum of the initial void space as calculated in March 2017 and void space created each month from mining activities. A negative volume of void space created in a month indicates that a higher volume of waste rock and dry cyanide leach tailings was returned underground compared to the volume of void space created from new mining activities.

Table 7. Doris Lake Water Level (ST-12), June 2018

Month	Minimum Water Level (masl)	Maximum Water Level (masl)	Mean Water Level (masl)	Monthly Water Level Variation (masl)**	Comparison of Mean Water Level from Month to Month (masl)^	Low Action Level Trigger (masl)*
January	21.672	21.689	21.679	0.017	0.003	21.346
February	21.674	21.689	21.681	0.015	0.002	21.346
March	21.681	21.694	21.686	0.013	0.005	21.346
April	21.680	21.692	21.687	0.012	0.001	21.346
May	21.703	21.711	21.707	0.008	0.020	21.346
June	21.709	22.389	22.073	0.680	0.366	21.346

* Low action level trigger is relative to the average water level value (September 10-30, 2017) measured in Doris Lake. Low action level trigger (-0.42 m) outlined in Section 5.4 of the Doris Aquatic Effects Monitoring Plan, September 2016.

** Monthly Water Level Variation is calculated as the difference between the Maximum Water Level and the Minimum Water Level measured during the month.

^ Comparison of the change in water level from month to month. This value is calculated by subtracting the Mean Water Level of the current month from the Mean Water Level of the previous month (e.g. February Mean Water level - January Mean Water level). A positive value from this calculation indicates a rise in water level since the previous month; a negative value from this calculation indicates a drop in water level since the previous month.

Note: Water level surveys were performed in June to calibrate the two pressure transducer stations installed in Doris Lake. Based on these surveys there was an adjustment of +2.0cm to the constant added to the data to determine the water elevation. This has resulted in a 2cm step increase between the data from April and May.

Summary of Assessments of Water Balance and Water Quality Model (Part G Item 34)

Average monthly water quality, hydrologic, and climatic monitoring data were collected while in operations during June. Data will contribute to the assessment of the water and load balance model, and will be compared to the predicted water quality and elevation within the TIA and will be reported in the annual report for 2018.

Thermal Monitoring (Part J Items 13 and 14)

Thermal monitoring undertaken as per Part J Items 13, 14 and Schedule J is reported in the annual Geotechnical Report.

Doris North Camp Diversion Berm Effectiveness (Part J Item 19(d))

Visual monitoring was conducted during June to evaluate the diversion berm's efficacy of diverting runoff away from the camp pad. The diversion berm was observed to be functioning as per its design purpose.

Incident Reporting

Spill #18-234 – On June 15, 2018 an estimated 50L of leached slurry containing approximately 37.5 grams of cyanide in solution was released to the camp pad surface outside the mill building. A leach filter feed pump had leaked slurry due to the failure of the gland seal and pump sleeve. The slurry sprayed onto the adjacent wall, which lacked an adequate seal between the concrete retaining wall and the exterior cladding to prevent the material from escaping the mill. As a result, some of the material spilled out onto the camp pad.

Photos of the spill and completed clean-up are provided in Figure 3 below.

Root Cause:

- Failure of gland seal and pump sleeve

Corrective Actions:

- A barrier has been placed between the pump and the exterior cladding as a temporary measure;
- The gland seal and pump sleeve were replaced and the preventative maintenance schedule modified to match wear time for both parts;
- Mechanical seals will be investigated as a better application for the environment the pump is located in; and
- The gap between the concrete retaining wall and the exterior cladding will be sealed to prevent another spill occurrence.

Figure 3. Spill location prior to (left) and post cleanup (right).

Should there be any questions regarding this monthly report, please contact enviro@tmacresources.com.

Yours sincerely,

Sarah Warnock
Environmental Supervisor
Hope Bay Project
(867) 988-6882

cc. Eva Paul, Water Resources Officer, CIRNAC
Jonathan Mesher, Resource Management Officer, CIRNAC

Figure 4. 2AM-DOH-1323 SNP Monitoring Locations