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August 31, 2019

Licensing
Nunavut Water Board
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Re: July 2019 – Monthly Monitoring Report for Water Licence 2AM-DOH1335

This report is comprised of the monitoring requirements set out in Part I and Schedule I of water licence 2AM-DOH1335 Amendment 2, 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.

Construction of the Madrid North Contact Water Pond (MMS-1) and overburden stripping of the Naartok East Crown Pillar Recovery Trench continued under this licence in July. Drill and blast activities began in the Naartok East Crown Pillar Recovery Trench this month. Figure 1 below shows progress of construction of the Madrid North Contact Water Pond. Figure 2 below shows progress of overburden stripping at the Naartok East Crown Pillar Recovery Trench. Monitoring locations associated with Madrid infrastructure (MMS) will be established with the Inspector as per Part I Item 3 as construction of Madrid facilities are completed.

Sampling locations monitored under this licence (seasonally or when facilities are operational) are provided in Figure 9 at the end of this report.

Figure 1. Construction Progress of Madrid North Contact Water Pond (MMS-1), July 2019

Figure 2. Overburden Stripping at Naartok East Crown Pillar Recovery Trench, July 2019

Site Wide Water Quality Monitoring Program (Part I Item 3 and Schedule I)

Water quality sampling was conducted in July at monitoring stations identified in Schedule I of the licence (ST-1 through ST-13, TL-1 through TL-12 and MMS-1 through MMS-10). 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 D and Part F of the licence.

Water quality sampling was also conducted at the Robert's Bay Single 5ML Tank Farm (ST-6A) and the Robert's Bay Fuel Storage Area (ST-6B) facilities this month. No exceedances of discharge criteria outlined in Part F Item 18(b) were observed for the the Robert's Bay Single 5ML Tank Farm and water from this facility was discharged to tundra or used as dust suppression for site roads as approved by the Inspector. Water quality results for the Robert's Bay Fuel Storage Area (ST-6B) exceeded the discharge criteria for Total Suspended Solids (TSS). Water from this facility was transferred to the Tailings Impoundment Area.

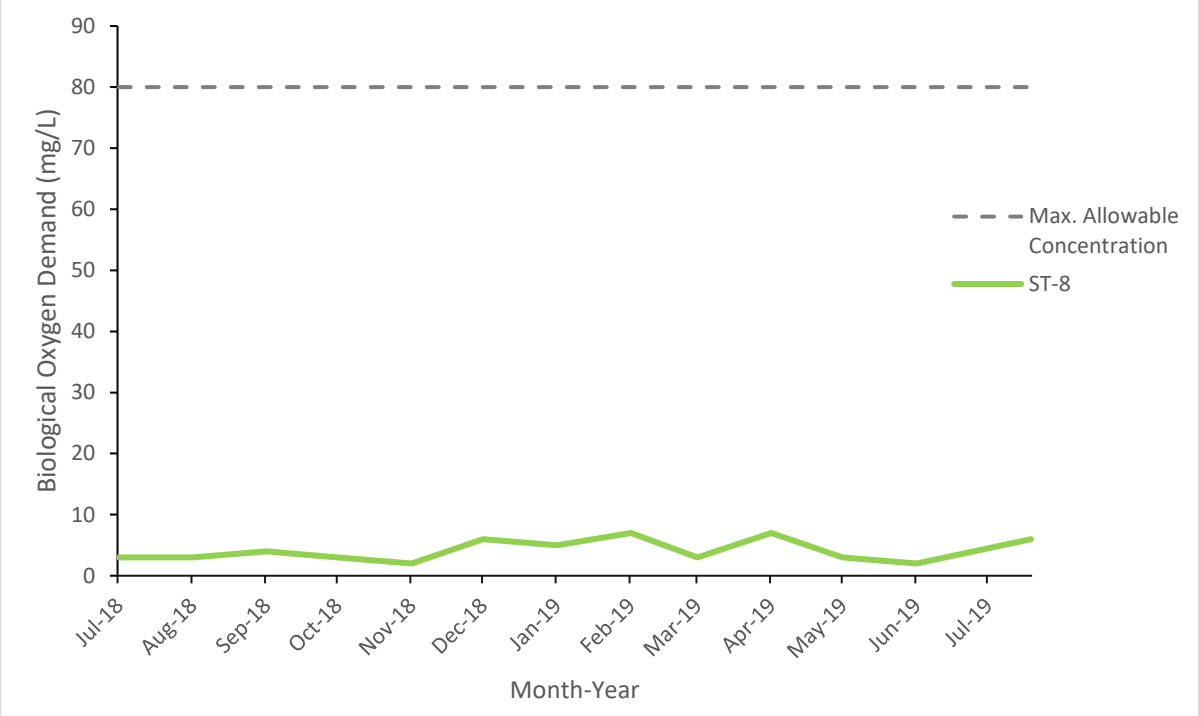
Sampling of surface runoff from the Madrid Overburden Stockpile storage area and Naartok East Crown Pillar Recovery trench was completed in July (total of three locations). One sample (MMS9-G) collected from runoff at the Overburden Stockpile storage area on July 7 exceeded the allowable *Maximum Concentration of Any Grab Sample* for Total Suspended Solids identified in Part D Item 9 of the licence; all other samples were below this criteria and there was no exceedance of the *Maximum Average Concentration* for these samples.

In response to the high Total Suspended Solids and turbidity observed on July 7, additional material was added to the rock berm which had been constructed to manage runoff from the overburden as well as silt fencing immediately downstream of the observed runoff. No additional turbid runoff following this enhancement of the rock berm and the location was dry at the time of the next sampling event.

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

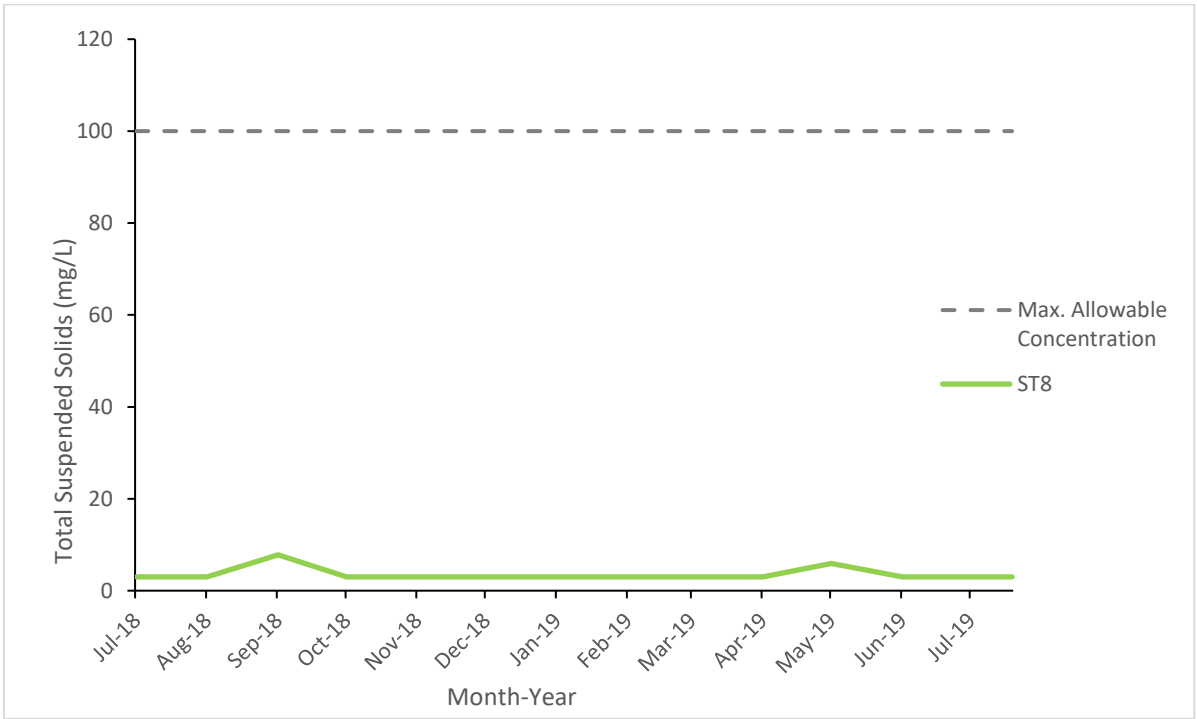
Figure 3 and 4 illustrates effluent quality characteristics for parameters of interest at select monitoring stations.

Figure 3. Biological Oxygen Demand Results Consistently Below Discharge Criteria for Wastewater Treatment Plant (ST8)



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

Figure 4. Total Suspended Solids Results Consistently Below Discharge Criteria for Wastewater Treatment Plant (ST8)



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

Flow and Volume Measurements (Part F, Part I and Schedule I)

Table 1. Effluent discharge, July 2019

Facility	Station Code	Discharge Volume (m^3)	Exceedances of Discharge Criteria	Discharge Location	Licence Reference
Doris Sedimentation Pond	ST-1	71,813 *	N/A	Tailings Impoundment Area	Part F Item 17
Doris Contact Water Pond #1	ST-2	1,844	N/A	Tailings Impoundment Area	Part F Item 17, 18(a)
Non-Hazardous Landfill Sump	ST-3	0	0	Facility not constructed	Part F Item 18(a)
Landfarm Sump	ST-4	48	0	Tailings Impoundment Area	Part F Item 18(b)
Doris Plant Site Fuel Storage Area	ST-5	352	0	Tailings Impoundment Area	Part F Item 18(b)
Rob Bay Single 5ML Fuel Storage Area	ST-6a	55	0	Tundra Discharge 13W 432904 7563494; used as dust suppression on site roads	Part F Item 18(b)
Rob Bay Fuel Storage and Containment Berm	ST-6b	56	5	Tailings Impoundment Area	Part F Item 18(b)
Doris Sewage Treatment Plant, Effluent	ST-8	1,307	0	Tundra Discharge 13W 432933 7559057	Part F Item 5(b-c)
Doris Sewage Treatment Plant, Sludge	N/A	26.7	N/A	Tailings Impoundment Area	Part I Item 5(f)
Doris Reagent and Cyanide Storage Facility Sump	ST-11	0	N/A	Tailings Impoundment Area	Part F Item 17
Doris Contact Water Pond #2	ST-13	0	N/A	Facility not constructed	Part F Item 17
Doris Mine Water Discharge	TL-12	28,347	N/A	Tailings Impoundment Area	
Madrid North Contact Water Pond	MMS-1	0	0	Facility under construction	Part F Item 17, 18(a)
Madrid South Primary Contact Water Pond	MMS-2	0	N/A	Facility not constructed	Part F Item 17, 18(a)
Madrid South Secondary Contact Water Pond	MMS-3	0	N/A	Facility not constructed	Part F Item 17, 18(a)
Madrid South Fuel Storage Facility	MMS-5	0	0	Facility not constructed	Part F Item 18(b)
Madrid Brine Mixing Facility	MMS-6	0	N/A	Facility not constructed	
Madrid North Connector	MMS-7	0	N/A	No mining occurring at this time	
Madrid North Fuel Storage Facility	MMS-8	0	0	Facility not constructed	Part F Item 18(b)
Madrid Mine Water Discharge	MMS-10	0	N/A	Facility not constructed	

Records of visual monitoring of discharge to tundra are maintained on file as per Part I Item 11.

* Note: Volume reported includes effluent transferred the Doris Contact Water Pond #1, Landfarm Sump, Doris Plant Site Fuel Storage Area, Rob Bay Fuel Storage and Containment Berm and Doris Mine Water Discharge.

Table 2. Discharge from TIA, July 2019

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
July	0	0	0
Annual Cumulative	**0**	**0**	**0**

* Discharge criteria as outlined in *Metal and Diamond Mining Effluent Regulations*.
Acute Lethality testing conducted as outlined in Part F Item 22 and Part I Item 14

Table 3. Water usage, July 2019

Month	Windy Lake (ST-7A)	Doris Lake (ST-7)					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)	
January	1,438	0	0	16	0	432	1,886
February	1,341	0	0	48	0	275	1,664
March	1,403	0	0	77	0	0	1,480
April	1,422	0	0	20	0	2	1,444
May	1,513	0	0	51	0	0	1,564
June	1,374	0	0	30	96	0	1,500
July	1,340	0	0	33	0	0	1,373
Annual Total	9,831	0	0	275	96	709	10,911
Annual Allowance	**43,800**			**1,930,000**		**60,000**	**2,033,800**

As permitted by water licence 2AM-DOH1335 Part E Item 1 and Part I Item 5(a)(b).
* Includes industrial uses such as mining, core processing, concrete batching, etc. I

Table 4. Volume of Reclaim Water from the TIA for Process Water, July 2019

Month	Reclaim Water (m^3) *
January	64,572
February	57,207
March	69,824
April	60,913
May	61,908
June	57,603
July	69,389
Annual Cumulative	**441,417**

* As per Part E Item 5 and Part I Item 5(c)
Numbers rounded to the nearest cubic meter.

Table 5. Doris Waste Rock and Ore Volumes, July 2019

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 Detoxified Tailings Placed Underground** (tonnes)
December Balance	-	-	-	-	838,227	-	1,287,608	510,092	-	-	-
January	37,535	29,226	8,326	8,309	838,210	27,861	1,259,747	523,016	45,387	44,133	1,054
February	34,681	29,440	76,020	5,241	767,431	-27,625	1,287,372	540,300	47,479	46,178	1,261
March	35,005	22,895	82,592	12,110	696,949	-31,976	1,319,347	558,377	52,083	50,519	1,576
April	33,999	39,184	54,683	-5,185	637,081	-38,889	1,280,458	564,018	40,046	38,750	773
May	35,786	35,769	7,320	17	629,778	8,405	1,288,863	569,634	61,969	59,998	1,945
June	39,331	12,018	320	27,313	656,771	40,354	1,329,217	584,160	56,316	54,565	1,551
July	40,833	18,405	260	22,428	678,939	57,152	1,386,369	604,664	43,908	42,578	1,276
Cumulative Total	257,170	262,445	229,521	469,200	679,939	35,281	1,386,369	604,664	347,188	336,721	9,436

* As per Part I Item 5(d)(e)

** As per Part I Item 6

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 detoxified tailings was returned underground compared to the volume of void space created from new mining activities.

Table 6. Madrid North Waste Rock and Ore Volumes, July 2019

Month	Waste Rock Management						Underground Void Space			Ore Processing
	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)*	Used for Construction (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)
December Balance	-	-	-	-	-	-	-	-	-	-
January	0	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0	0	0
July	18,562	3,640	0	0	840	0	13,830	13,830	4,939	0
Cumulative Total	18,562	3,640	0	0	840	0	13,830	13,830	4,939	0

* As per Part I Item 5(d)(e)

** As per Part I Item 6

Note: Void space created from mining activities is determined as the sum of the initial 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 was returned underground compared to the volume of void space created from new mining activities.

Table 7. Doris Lake Water Level (ST-12), June 2019

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	21.726	21.747	21.739	0.011	0.019	21.347
February	21.725	21.743	21.736	0.018	-0.003	21.347
March	21.723	21.743	21.733	0.020	-0.003	21.347
April	21.735	21.757	21.751	0.022	0.018	21.347
May	21.748	21.756	21.752	0.008	0.001	21.347
June	21.758	22.659	22.176	0.901	0.424	21.347
July	22.040	22.449	22.236	0.409	0.060	21.347

As per Part I Item 1 and outlined in the *Hope Bay Project Aquatic Effects Monitoring Plan*.

* Low action level trigger is relative to the average water level value (September 10-30, 2018) 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.

Waste Management (Part F Item 10 and 11)

Empty cargo aircraft were utilized in July for waste backhaul from the Doris Camp. Table 8 below summarizes the type and volume of waste shipped offsite during this month. All waste was transported to KBL Environmental in Yellowknife to arrange for final remediation and/or disposal.

Table 8. Waste Backhaul Summary, July 2019

Waste Type Shipped	Volume Shipped (m^3)
Waste Leachate (Used Glycol)	2
Waste Leachate (Used Oil)	2
Waste Leachate (Used Oil and Water)	1

Summary of Assessments of Water Balance and Water Quality Model (Part F Item 24 and Part I Item 12 c)

Average monthly water quality, hydrologic, and climatic monitoring data were collected while in operations during July. 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 2019.

Thermal Monitoring (Part I Items 7, 8 and Schedule I)

Thermal monitoring undertaken as per Part I Items 7, 8 and Schedule I is reported in the annual Geotechnical Report.

Site Freshet and Precipitation Conditions (Part I Item 12(d))

Visual monitoring was conducted during major rain events and periods of sustained precipitation in July.

The Diversion Berm and associated check dam were observed to be functioning as designed and diverting non-contact water around the Doris site infrastructure. The maximum flow observed during July was 0.282 m/s on July 11. Photos of this infrastructure are provided in Figures 5 and 6 below.

Inspections were completed of site culverts throughout the month of June. No issues were identified with these water management structures. Figure 7 and 8 below shows the upstream and downstream conditions of culverts located at the Doris Connector Vent Raise access road and the Madrid All-Weather road.

Figure 5. Diversion berm dry during July (left) towards culverts (right)

Figure 6. Diversion Berm culverts. Reduced flow observed in July compared to June

Figure 7. Culvert at Doris Connector Vent Raise access road upstream (left) and downstream (right)

Figure 8. Culvert at Madrid All-Weather Road upstream (left, middle) and downstream (right)

Incident Reporting

Spill #19-295 – On July 22, 2019, an operator working near the Madrid Naartok East Crown Pillar Recovery Trench (CPRT) identified a trail of fluid from a 780 haul truck while operating near the CPRT. The operator parked the truck at the equipment line up laydown and placed spill pads on the ground to soak up coolant. Mechanics identified that the hose line had split resulting in a release of 50L of ethylene glycol coolant to the gravel road surface. The mechanic deemed the failure to be the result of normal wear and tear of the hose line.

The hose line was replaced in the field and contaminated gravel was excavated from the road surface and taken to the Robert's Bay Waste Management facility to be stored for offsite disposal.

The operator had been using the haul truck to transport overburden material from the Naartok East CPRT to the overburden dump. He had conducted a pre-operational check prior to using the equipment, however dirt that had accumulated on the truck during the previous shift is believed to have prevented him from identifying the worn hose line.

TMAC internally reviewed the incident and identified the following preventative actions in order to reduce the likelihood of a reoccurrence:

- Continue to conduct pre-operational checks on all equipment prior to use to identify potential issues;
- Continue performing preventative maintenance programs on all equipment at the recommended interval (every 500 operating hours); and
- Ensure equipment is routinely washed to allow thorough checks of hose line integrity during pre-operational and preventative maintenance checks.

Spill #19-305 - On June 30, 2019, an equipment operator was relocating a portable fuel transfer pump from the west tank farm to the east tank farm located at Roberts Bay. While exiting the west tank farm, water contained within portable fuel transfer pump's secondary containment tray spilled over the wall of the tray contaminating the crush below. The slope of the ramp and the sharp turn conducted by the operator were contributing factors to the spill incident.

The equipment operator and a waste management worker promptly responded to clean up the spill. Approximately 1.5m^3 of contaminated crush was excavated from the area for remediation.

The incident investigation concluded with the following preventative actions for future overburden stripping in order to reduce the likelihood of a reoccurrence:

- Ensure portable secondary containments are completely dewatered prior to relocating;

- Provide additional training to personnel and reinforce the importance of conducting risk assessments prior to commencing assigned work.

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

Yours sincerely,

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Cc:
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Dan Gagnon, Mine General Manager, TMAC

Figure 9. 2AM-DOH1335 SNP Monitoring Locations