

November 30, 2015

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

Re: October 2015 – 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, and additional requirements from AANDC. Licence items include:

- Part E (Conditions applying to Water Use) Item 1;
- Part G (Conditions Applying to Waste Management and Waste Management Plans) Items 1, 3(b) and 23 (a), 24 (c, e), 28, 29, 30, 32;
- Part J (Conditions Applying to General and Aquatic Effects Monitoring) Items 4(a), 8, 12 (a, d, g), 14, 15, 16, 20 and 21(e, f).

Other monitoring requirements stipulated in the licence refer to facilities that have not been constructed. During the subject period of this report the focus of activities at Doris North was surface exploration drilling, underground test work, water management and environmental compliance. Sampling locations monitored under this licence (seasonally or when facilities are operational) are provided in Figure 1.

Part E: Conditions Applying to Water Use

Item 1: Water Usage and Part J, Item 12(a) Water Volume

A total of 518 m³ of water was extracted from Windy Lake for domestic use this month as permitted by water licences 2BE-HOP1222 and 2AM-DOH1323. A total of 278 m³ of water was used under the 2AM-DOH1323 licence for surface drilling in support of the Doris North mine this month. Water used for surface drilling in September in support of the Regional Exploration program is reported under 2BE-HOP1222. 67 m³ of water was used for underground drilling and other industrial purposes in support of the Doris North mine development. No water was used for dust suppression on site roads this month. Water usage is presented in Table 1.

Table 1: Water usage, in cubic meters, October 2015

Water Usage	Domestic Water Use from Windy Lake ST-7a (m ³)	All Other Water Use* (m ³)	Total (m ³)
Monthly Total	518	345	863
Annual Cumulative	3427	2312	5739

**Includes industrial uses such as surface and underground drilling, dust suppression, concrete batching, etc.*

Schedule J: Water Quality Monitoring at Water Intake

Monthly water quality samples were taken from monitoring stations ST-7 (Doris Lake raw water) and ST-7a (Windy Lake raw water) in accordance with the Schedule J requirements of the licence. Water quality results are presented in Table 2 below.

Table 2: Monthly Compliance Sample Results for ST-7 and ST-7a, October 2015

Sample ID			ST7-20OCT15	ST7A-06OCT15	ST7A-06OCT15^
ALS ID			L1690953-1	L1684218-1	L1684218-2
Date Sampled			10/20/2015 9:10:00 AM	10/6/2015 8:55:00 AM	10/6/2015 8:55:00 AM
Parameter	Units	Detection Limit	Water	Water	Water
Hardness (as CaCO ₃)	mg/L	0.5	48.8	71.6	70.5
pH	pH	0.1	8	7.87	7.88
Total Suspended Solids	mg/L	3	4.1	5.4	5.6
Ammonia, Total (as N)	mg/L	0.005	<0.0050	<0.0050	<0.0050
Nitrate (as N)	mg/L	0.005	<0.0050	<0.0050	<0.0050
Nitrite (as N)	mg/L	0.001	<0.0010	<0.0010	<0.0010
Orthophosphate-Dissolved (as P)	mg/L	0.001	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total	mg/L	0.002	0.0161	0.0085	0.009
Cyanide, Total	mg/L	0.005	<0.0050	<0.0050	<0.0050
Cyanide, Free	mg/L	0.005	<0.0050	<0.0050	<0.0050
Fecal Coliforms	CFU/100mL	1	<1	<1*	-
Total cyanobacterial cell count	cells/mL	1	115000	1*	-
Aluminum (Al)-Total	mg/L	0.005	0.0299	0.291	0.307
Antimony (Sb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050
Arsenic (As)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050
Barium (Ba)-Total	mg/L	0.02	<0.020	<0.020	<0.020
Beryllium (Be)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010
Boron (B)-Total	mg/L	0.1	<0.10	<0.10	<0.10
Cadmium (Cd)-Total	mg/L	0.00001	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Total	mg/L	0.1	8.7	12.6	12.3
Chromium (Cr)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010
Cobalt (Co)-Total	mg/L	0.0003	<0.00030	<0.00030	<0.00030
Copper (Cu)-Total	mg/L	0.001	0.0017	0.0013	0.0015
Iron (Fe)-Total	mg/L	0.03	0.588	0.267	0.288
Lead (Pb)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050
Lithium (Li)-Total	mg/L	0.005	0.0032	0.0034	0.0032
Magnesium (Mg)-Total	mg/L	0.1	6.59	9.78	9.67
Manganese (Mn)-Total	mg/L	0.0003	0.0102	0.00601	0.00596
Mercury (Hg)-Total	mg/L	0.00001	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010
Nickel (Ni)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010
Potassium (K)-Total	mg/L	2	2.5	4	3.9
Selenium (Se)-Total	mg/L	0.0001	<0.000050	<0.000050	<0.000050
Silver (Ag)-Total	mg/L	0.00002	<0.000020	<0.000020	<0.000020
Sodium (Na)-Total	mg/L	2	33	52.9	52.5
Thallium (Tl)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020
Tin (Sn)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050
Titanium (Ti)-Total	mg/L	0.01	<0.010	0.014	0.016
Uranium (U)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020
Vanadium (V)-Total	mg/L	0.001	<0.00050	0.00068	0.00073
Zinc (Zn)-Total	mg/L	0.005	<0.0050	<0.0050	<0.0050
Biochemical Oxygen Demand	mg/L	2	2	<2.0	<2.0
Oil and Grease	mg/L	5	<5.0	<5.0	<5.0
Oil And Grease (Visible Sheen)		n/a	NO	NO	NO
Microcystin	ug/L	0.2	-	<0.20*	-

* results on Lab Work Order L1684280-1 for Potable Water Station PDC10 (same location as ST-7a)

^ Duplicate sample.

Part G: Conditions Applying to Waste Management and Waste Management Plans.**Item 1: Condition to Provide Notice of a Planned Discharge**

Notification of planned discharges from facilities under this licence was provided to the Inspector on May 13, 2015.

Item 3(b): Conditions Applying to Sewage Effluent Quality and Schedule J, Table 2 Monitoring Requirements: Discharge from Wastewater Treatment Plant in cubic metres.

Monthly compliance samples were taken from monitoring station ST-8 (Wastewater Treatment Plant Effluent) in accordance with the Schedule J requirements of the licence (Table 3). All parameters were in compliance with discharge criteria.

Table 3: Monthly Compliance Sample Results for ST-8B, October 2015

Sample ID			ST8B-13OCT15	Part G Item 3(b)	
ALS ID			L1687214-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			10/13/2015 8:37:00 AM		
Parameter	Units	Detection Limit	Water		
pH	pH	0.1	8.06	6.0 - 9.0	9.0
Total Suspended Solids	mg/L	3	<3.0	100	100
Fecal Coliforms	CFU/100mL	1	<1	10,000	10,000
Biochemical Oxygen Demand (BOD ₅)	mg/L	1	<2.0	80	80
Oil and Grease	mg/L	5	<5.0	5	10
Oil And Grease (Visible Sheen)		n/a	NO	No Visible Sheen	No Visible Sheen

Bold/shading indicates exceedance of Part G Item 3(b) Maximum Concentration in a Grab Sample.

This month, 486 m³ of treated effluent was discharged from the sewage treatment plant.

Schedule J, Table 2 Monitoring Requirements: Runoff from Waste Water Treatment Plant Discharge (ST-9)

No water was available for sampling at location ST-9 (prior to entry into Glenn Lake) due to freezing conditions.

Item 23(a): Water Discharged from the Sedimentation Pond (ST-1) and Reagent and Cyanide Storage Facility Sumps (ST-11) and Schedule J, Table 2 Monitoring Requirements

Water quality samples were collected from monitoring station ST-1 in accordance with Schedule J of the licence. Results are provided in Table 4 below. Levels of ammonia and zinc exceeded the criteria for discharge to tundra in Part G Item 23(a), though water is not discharged to tundra from this facility. No water was discharged from the Sedimentation Pond (ST-1) to the Tailings Impoundment Area (TIA) this month in accordance with Part G Item 23(d) of the licence. The pumping of water from the ST-1 to the TIA was concluded on September 26, 2015.

In October, 23 m³ of water was pumped from the Pollution Control Pond (ST-2) to ST-1. Monitoring was undertaken at the Pollution Control Pond (ST-2) this month in accordance with the requirements of Schedule J, Table 2 of the licence. Results are presented in Table 5 below. The pumping of water from the Pollution Control Pond to the Sedimentation Pond was concluded on October 5, 2015.

Table 4: Monthly Compliance Sample Results for ST-1, October 2015

Sample ID			ST1-05OCT15	Part G Item 23(a)	
ALS ID			L1684307-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			10/5/2015 10:24:00 AM		
Parameter	Units	Detection Limit	Water		
Hardness (as CaCO ₃)	mg/L	0.5	2430		
pH	pH	0.1	7.8	6.0 - 9.0	9.0
Total Suspended Solids	mg/L	3	6.1	15.0	30.0
Alkalinity, Total (as CaCO ₃)	mg/L	1	135		
Ammonia, Total (as N)	mg/L	0.005	30.9	2.0	4.0
Bromide (Br)	mg/L	0.5	4		
Chloride (Cl)	mg/L	5	2620		

Fluoride (F)	mg/L	0.2	<1.0 *		
Nitrate (as N)	mg/L	0.05	112		
Nitrite (as N)	mg/L	0.01	0.723		
Sulfate (SO4)	mg/L	5	195		
Cyanide, Total	mg/L	0.005	<0.0050	1.0	2.0
Aluminum (Al)-Total	mg/L	0.005	0.048	1.0	2.0
Antimony (Sb)-Total	mg/L	0.0005	<0.00050		
Arsenic (As)-Total	mg/L	0.0005	0.00089	0.05	0.10
Barium (Ba)-Total	mg/L	0.02	0.129		
Beryllium (Be)-Total	mg/L	0.001	<0.0010		
Boron (B)-Total	mg/L	0.1	0.41		
Cadmium (Cd)-Total	mg/L	0.00001	0.000442		
Calcium (Ca)-Total	mg/L	0.1	765		
Chromium (Cr)-Total	mg/L	0.001	<0.0010		
Cobalt (Co)-Total	mg/L	0.0003	0.00546		
Copper (Cu)-Total	mg/L	0.001	0.0065	0.02	0.30
Iron (Fe)-Total	mg/L	0.03	0.171	0.30	0.60
Lead (Pb)-Total	mg/L	0.0005	<0.00050	0.01	0.02
Lithium (Li)-Total	mg/L	0.005	0.0778		
Magnesium (Mg)-Total	mg/L	0.1	98.1		
Manganese (Mn)-Total	mg/L	0.0003	1.46		
Molybdenum (Mo)-Total	mg/L	0.001	0.0042		
Nickel (Ni)-Total	mg/L	0.001	0.007	0.05	0.10
Potassium (K)-Total	mg/L	2	39.2		
Selenium (Se)-Total	mg/L	0.0001	0.00213		
Silver (Ag)-Total	mg/L	0.00002	<0.000050 **		
Sodium (Na)-Total	mg/L	2	646		
Thallium (Tl)-Total	mg/L	0.0002	<0.00020		
Tin (Sn)-Total	mg/L	0.0005	<0.00050		
Titanium (Ti)-Total	mg/L	0.01	<0.010		
Uranium (U)-Total	mg/L	0.0002	0.00152		
Vanadium (V)-Total	mg/L	0.001	<0.0025 **		
Zinc (Zn)-Total	mg/L	0.005	0.2	0.01	0.02
Oil and Grease	mg/L	5	<5.0	5	10
Oil And Grease (Visible Sheen)		n/a	NO	No Visible Sheen	No Visible Sheen

Bold/shading indicates exceedance of Part G Item 23(a) Maximum Average Concentration and/or Maximum Concentration in a Grab Sample.

*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.

**Detection Limit adjusted for required dilution

Table 5: Water Quality Data Summary for ST-2, October 2015

Sample ID			ST2-05OCT15
ALS ID			L1684307-2
Date Sampled			10/5/2015 11:21:00 AM
Parameter	Units	Detection Limit	Water
Hardness (as CaCO3)	mg/L	0.5	5610
pH	pH	0.1	7.6
Total Suspended Solids	mg/L	3	270
Alkalinity, Total (as CaCO3)	mg/L	1	164
Ammonia, Total (as N)	mg/L	0.25	48.9
Bromide (Br)	mg/L	0.05	8
Chloride (Cl)	mg/L	0.5	6120
Fluoride (F)	mg/L	0.02	<2.0 *
Nitrate (as N)	mg/L	0.025	146
Nitrite (as N)	mg/L	0.001	0.94
Sulfate (SO4)	mg/L	0.5	335
Cyanide, Total	mg/L	0.005	<0.0050
Aluminum (Al)-Total	mg/L	0.006	7.1

Antimony (Sb)-Total	mg/L	0.0005	<0.0010 **
Arsenic (As)-Total	mg/L	0.0005	0.0028
Barium (Ba)-Total	mg/L	0.02	0.267
Beryllium (Be)-Total	mg/L	0.001	<0.0010
Boron (B)-Total	mg/L	0.1	0.23
Cadmium (Cd)-Total	mg/L	0.00002	0.000862
Calcium (Ca)-Total	mg/L	0.1	1940
Chromium (Cr)-Total	mg/L	0.001	0.0238
Cobalt (Co)-Total	mg/L	0.0003	0.0175
Copper (Cu)-Total	mg/L	0.001	0.0336
Iron (Fe)-Total	mg/L	0.03	14.2
Lead (Pb)-Total	mg/L	0.0005	0.00207
Lithium (Li)-Total	mg/L	0.005	0.129
Magnesium (Mg)-Total	mg/L	0.1	241
Manganese (Mn)-Total	mg/L	0.0003	5.41
Molybdenum (Mo)-Total	mg/L	0.001	0.0025
Nickel (Ni)-Total	mg/L	0.001	0.0255
Potassium (K)-Total	mg/L	2	66.9
Selenium (Se)-Total	mg/L	0.0002	0.00171
Silver (Ag)-Total	mg/L	0.00002	<0.00010 **
Sodium (Na)-Total	mg/L	2	1250
Thallium (Tl)-Total	mg/L	0.0002	0.00025
Tin (Sn)-Total	mg/L	0.0005	<0.0010 **
Titanium (Ti)-Total	mg/L	0.01	0.253
Uranium (U)-Total	mg/L	0.0002	0.00255
Vanadium (V)-Total	mg/L	0.002	0.0258
Zinc (Zn)-Total	mg/L	0.005	0.062
Oil and Grease	mg/L	5	<5.0
Oil And Grease (Visible Sheen)		n/a	NO

*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.

**Detection Limit adjusted for required dilution.

The Reagent and Cyanide Storage Facility Sumps (ST-11) is not constructed.

Items 24(c): Landfarm Sump (ST-4) and Schedule J, Table 2 Monitoring Requirements

Compliance samples were not required from monitoring station ST-4 (Landfarm Sump) in accordance with the Schedule J requirements of the licence as no water was discharged from this facility during the month.

Items 24(e): Fuel Storage and Containment Facility Sumps (ST-5, ST-6a and ST-6b) and Schedule J, Table 2 Monitoring Requirements

Compliance monitoring samples were not collected at the Doris Tank Farm (ST-5) and Roberts Bay tank farms (ST-6a and ST-6b) in October as no water was discharged from these facilities.

Item 28, 29, 30 and Part J Item 8: Water Quality Discharged from Tailings Impoundment Area (TL-1, TL-2, TL-3 or TL-4.)

Due to freezing conditions all discharge from the TIA to Doris Creek was concluded on September 23, 2015. Compliance water sampling was not conducted this month at the four stations associated with the TIA discharge (TL-1 through TL-4) as no water was discharged from this facility.

Item 32: Tailings Impoundment Area Discharge Volume – Comparison of Flows at TL-4 and TL-2

Water was discharged from the TIA starting June 30, 2015 and continued to September 23, 2015 at which time freezing conditions prevented ongoing pumping. No water was discharged from the TIA to Doris Creek this month; a comparison of flows was not conducted.

Schedule J: Tailings Impoundment Area Water Quality (TL-10)

Monitoring at TL-10 is conducted annually prior to the deposition of tailings into the Tailings Impoundment Area. This monitoring was conducted on August 7, 2015 and results were presented in the August monthly SNP report.

Part J: Conditions Applying to General and Aquatics Effects Monitoring

Item 4(a): TIA Discharge Quality – Water Quality Comparison/Deviations

No water was discharged from the TIA this month and no water quality comparisons were made.

Item 8 and Schedule J, Monitoring Requirements: Acute Lethality Testing (TL-1 and TL-4)

No acute lethality testing was conducted during the month. Acute lethality testing was conducted prior to the start of TIA dewatering and once during the discharge period earlier in the season.

Item 12d: Tonnages of Waste Rock Stored on the Temporary Waste Rock Pad

Underground test mining restarted in April 2015 and modifications to the existing vent raise were also started. The waste rock produced from the test mining program was stored underground until October 2015 when waste rock began to be hauled to surface and stored on the temporary waste rock pad. The volume of waste rock brought to surface in October was 6390 tonnes. The current total volume of waste rock on the temporary waste rock pad is 195,997 tonnes.

Item 12g: Tail Lake Ice Thickness

Ice thickness measurement on the TIA is only required following deposition of tailings.

Item 14, 15, 16 and Schedule J, Monitoring Requirements: Thermal Monitoring

Thermal monitoring undertaken under this part is reported in the annual Geotechnical Inspection Report.

Item 20: Daily Visual Monitoring of Discharges to Tundra

No discharges to tundra occurred during this period. During periods of discharge monitoring observations will be documented.

Item 21 (e) Daily Visual Assessment of Suspended Sediment at TIA

The TIA was frozen during this month. No visual assessments were conducted.

Item 21 (f) Doris North Camp Diversion Berm Effectiveness

An assessment of effectiveness was not conducted on the Diversion Berm this month due to freezing conditions.

Incident Reporting

No incidents pertaining to this licence occurred during this month.

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

Yours sincerely,



M. John Roberts
Vice President, Environmental Affairs
Hope Bay Project
(416) 628-0216

cc. Eva Paul, Water Resources Officer, AANDC

Figure 1. 2AM-DOH-1323 SNP Monitoring Locations

