



95 Wellington Street West
Suite 1010
P.O. Box 44
Toronto,
Ontario
M5J 2N7

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

Re: May 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, 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

312 m³ of water was extracted from Windy Lake for Doris Camp domestic use this month as permitted by water licences 2BE-HOP1222 and 2AM-DOH1323. Water was not used under the 2AM-DOH1323 licence for drilling in support of the Doris North mine this month. Water used for surface drilling in May in support of the Regional Exploration program is reported under 2BE-HOP1222. 105 m³ of water was used for core processing and underground drilling in support of the Doris North mine development. Compliant berm discharge water was used for dust suppression. No water from Windy Lake or Doris Lake was used for dust suppression this month. Water usage is presented in Table 1.

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

Water Usage	Domestic Water Use from Windy Lake ST-7a (m ³)	All Other Water Use* (m ³)	Total (m ³)
Monthly Total	312	105	417
Annual Cumulative	961	143	1104

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

No water was applied for ice road development during the month.

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, May 2015

Sample ID			ST7-12MAY15	ST7A-20MAY15
ALS ID			L1610745-1	L1614177-1
Date Sampled			05/12/2015 8:50	5/20/2015 8:25:00 AM
Parameter	Units	Detection Limit	Water	Water
Hardness (as CaCO ₃)	mg/L	0.5	55.8	87.8
pH	pH	0.1	7.12	7.93
Total Suspended Solids	mg/L	3	4.2	<3.0
Ammonia, Total (as N)	mg/L	0.005	0.286	<0.0050
Nitrate (as N)	mg/L	0.005	<0.0050	<0.0050
Nitrite (as N)	mg/L	0.001	<0.0010	<0.0010
Orthophosphate-Dissolved (as P)	mg/L	0.001	0.0042	<0.0010
Phosphorus (P)-Total	mg/L	0.002	0.0188	0.004
Cyanide, Total	mg/L	0.005	<0.0050	<0.0050
Cyanide, Free	mg/L	0.005	<0.0050	<0.0050
Fecal Coliforms	CFU/100mL	1	<1	<1
Total cyanobacterial cell count	cells/mL	1	120	<1*
Aluminum (Al)-Total	mg/L	0.005	0.015	0.0077
Antimony (Sb)-Total	mg/L	0.0005	<0.00050	<0.00050
Arsenic (As)-Total	mg/L	0.0005	<0.00050	<0.00050
Barium (Ba)-Total	mg/L	0.02	<0.020	<0.020
Beryllium (Be)-Total	mg/L	0.001	<0.0010	<0.0010
Boron (B)-Total	mg/L	0.1	<0.10	<0.10
Cadmium (Cd)-Total	mg/L	0.00001	<0.0000050	<0.0000050
Calcium (Ca)-Total	mg/L	0.1	10.1	15.5
Chromium (Cr)-Total	mg/L	0.001	<0.0010	<0.0010
Cobalt (Co)-Total	mg/L	0.0003	<0.00030	<0.00030
Copper (Cu)-Total	mg/L	0.001	0.0115	<0.0010
Iron (Fe)-Total	mg/L	0.03	2.34	<0.030
Lead (Pb)-Total	mg/L	0.0005	0.00321	<0.00050
Lithium (Li)-Total	mg/L	0.005	0.004	0.0032
Magnesium (Mg)-Total	mg/L	0.1	7.44	11.9
Manganese (Mn)-Total	mg/L	0.0003	0.0555	0.0007
Mercury (Hg)-Total	mg/L	0.00001	<0.0000050	<0.0000050
Molybdenum (Mo)-Total	mg/L	0.001	<0.0010	<0.0010
Nickel (Ni)-Total	mg/L	0.001	0.0015	<0.0010
Potassium (K)-Total	mg/L	2	2.9	5.1
Selenium (Se)-Total	mg/L	0.0001	<0.000050	<0.000050
Silver (Ag)-Total	mg/L	0.00002	<0.000020	<0.000020
Sodium (Na)-Total	mg/L	2	39.3	65.9
Thallium (Tl)-Total	mg/L	0.0002	<0.00020	<0.00020
Tin (Sn)-Total	mg/L	0.0005	<0.00050	<0.00050
Titanium (Ti)-Total	mg/L	0.01	<0.010	<0.010
Uranium (U)-Total	mg/L	0.0002	<0.00020	<0.00020
Vanadium (V)-Total	mg/L	0.001	<0.00050	<0.00050
Zinc (Zn)-Total	mg/L	0.005	0.0093	<0.0050
Biochemical Oxygen Demand	mg/L	2	<2.0	<2.0
Oil and Grease	mg/L	5	<5.0	<5.0
Oil And Grease (Visible Sheen)		n/a	no	NO
Microcystin	ug/L	0.2	-	<0.20*

* results on Lab Work Order L1614198-1 for Potable Water Station PDC10 (same location as ST-7a)

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, May 2015

Sample ID			ST8B-05MAY15	Part G Item 3(b)	
ALS ID			L1607441-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			5/5/2015 10:15:00 AM		
Parameter	Units	Detection Limit	Water		
pH	pH	0.1	7.74	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)	CFU/100mL	1	3	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

This month, 272 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

No water was discharged at the Sedimentation Pond (ST-1) this month. In May, 415 m³ of water was pumped from the Pollution Control Pond (ST-2) to ST-1. Pre-discharge water quality samples were collected from monitoring station ST-1 in accordance with Schedule J of the licence. Results are provided in Table 4. Levels of total ammonia, total iron and total zinc exceeded the criteria for discharge to tundra in Part G Item 23(a). Water from the Sedimentation Pond will be discharged to the Tailings Impoundment Area (TIA) in accordance with Part G Item 23(d). 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.

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

Sample ID			ST1-30MAY15	Part G Item 23(a)	
ALS ID			L1619268-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			5/30/2015 9:52:00 AM		
Parameter	Units	Detection Limit	Water		
Hardness (as CaCO ₃)	mg/L	0.5	348	-	-
pH	pH	0.1	7.78	6.0 - 9.0	9.0
Total Suspended Solids	mg/L	3	11.7	15.0	30.0
Alkalinity, Total (as CaCO ₃)	mg/L	1	33.6	-	-
Ammonia, Total (as N)	mg/L	0.005	3.38	2.0	4.0
Bromide (Br)	mg/L	0.5	<0.50 *	-	-
Chloride (Cl)	mg/L	5	333	-	-
Fluoride (F)	mg/L	0.2	<0.20 *	-	-
Nitrate (as N)	mg/L	0.05	12.5	-	-
Nitrite (as N)	mg/L	0.01	0.111	-	-
Sulfate (SO ₄)	mg/L	5	29.6	-	-
Cyanide, Total	mg/L	0.005	<0.0050	1.0	2.0
Aluminum (Al)-Total	mg/L	0.005	0.365	1.0	2.0
Antimony (Sb)-Total	mg/L	0.0005	<0.00050	-	-
Arsenic (As)-Total	mg/L	0.0005	<0.00050	0.05	0.10
Barium (Ba)-Total	mg/L	0.02	0.028	-	-
Beryllium (Be)-Total	mg/L	0.001	<0.0010	-	-
Boron (B)-Total	mg/L	0.1	<0.10	-	-
Cadmium (Cd)-Total	mg/L	0.00001	0.0000582	-	-
Calcium (Ca)-Total	mg/L	0.1	105	-	-
Chromium (Cr)-Total	mg/L	0.001	0.0021	-	-
Cobalt (Co)-Total	mg/L	0.0003	0.00099	-	-
Copper (Cu)-Total	mg/L	0.001	0.0048	0.02	0.30
Iron (Fe)-Total	mg/L	0.03	0.615	0.30	0.60
Lead (Pb)-Total	mg/L	0.0005	<0.00050	0.01	0.02
Lithium (Li)-Total	mg/L	0.005	0.0109	-	-
Magnesium (Mg)-Total	mg/L	0.1	12.6	-	-
Manganese (Mn)-Total	mg/L	0.0003	0.301	-	-
Molybdenum (Mo)-Total	mg/L	0.001	<0.0010	-	-
Nickel (Ni)-Total	mg/L	0.001	0.0024	0.05	0.10
Potassium (K)-Total	mg/L	2	5.3	-	-
Selenium (Se)-Total	mg/L	0.0001	0.000337	-	-
Silver (Ag)-Total	mg/L	0.00002	<0.000020	-	-
Sodium (Na)-Total	mg/L	2	81.8	-	-
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	0.022	-	-
Uranium (U)-Total	mg/L	0.0002	0.00024	-	-
Vanadium (V)-Total	mg/L	0.001	0.00178	-	-
Zinc (Zn)-Total	mg/L	0.005	0.0378	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 Adjusted due to sample matrix effects.

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

Sample ID			ST2-30MAY15
ALS ID			L1619282-1
Date Sampled			5/30/2015 9:55:00 AM
Parameter	Units	Detection Limit	Water
Hardness (as CaCO ₃)	mg/L	0.5	340
pH	pH	0.1	7.99
Total Suspended Solids	mg/L	3	5.7
Alkalinity, Total (as CaCO ₃)	mg/L	1	63.5 *
Ammonia, Total (as N)	mg/L	0.25	3.71
Bromide (Br)	mg/L	0.05	0.38
Chloride (Cl)	mg/L	0.5	303
Fluoride (F)	mg/L	0.02	<0.10 ^
Nitrate (as N)	mg/L	0.025	12.2
Nitrite (as N)	mg/L	0.001	0.0917
Sulfate (SO ₄)	mg/L	0.5	44.9
Cyanide, Total	mg/L	0.005	<0.0050
Aluminum (Al)-Total	mg/L	0.006	0.343
Antimony (Sb)-Total	mg/L	0.0005	<0.00050
Arsenic (As)-Total	mg/L	0.0005	0.0007
Barium (Ba)-Total	mg/L	0.02	0.025
Beryllium (Be)-Total	mg/L	0.001	<0.0010
Boron (B)-Total	mg/L	0.1	0.12
Cadmium (Cd)-Total	mg/L	0.00002	0.0000328
Calcium (Ca)-Total	mg/L	0.1	111
Chromium (Cr)-Total	mg/L	0.001	0.0013
Cobalt (Co)-Total	mg/L	0.0003	0.00088
Copper (Cu)-Total	mg/L	0.001	0.0045
Iron (Fe)-Total	mg/L	0.03	0.463
Lead (Pb)-Total	mg/L	0.0005	<0.00050
Lithium (Li)-Total	mg/L	0.005	0.0135
Magnesium (Mg)-Total	mg/L	0.1	15.8
Manganese (Mn)-Total	mg/L	0.0003	0.213
Molybdenum (Mo)-Total	mg/L	0.001	0.0019
Nickel (Ni)-Total	mg/L	0.001	0.0016
Potassium (K)-Total	mg/L	2	6.6
Selenium (Se)-Total	mg/L	0.0002	0.000382
Silver (Ag)-Total	mg/L	0.00002	<0.000020
Sodium (Na)-Total	mg/L	2	87.7
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	0.018
Uranium (U)-Total	mg/L	0.0002	0.00039
Vanadium (V)-Total	mg/L	0.002	0.00148
Zinc (Zn)-Total	mg/L	0.005	<0.0050
Oil and Grease	mg/L	5	<5.0
Oil And Grease (Visible Sheen)	-	n/a	NO

* Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.

^ Detection Limit Adjusted due to sample matrix effects.

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

No monitoring was conducted at station ST-4 (Landfarm Sump) in accordance with the Schedule J requirements of the licence as no water was discharged from this facility in May.

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 collected prior to discharge and daily during discharge at the Doris Tank Farm (ST-5) and Roberts Bay tank farms (ST-6a and ST-6b) this month. All results were in compliance with the licence. Results are presented in Tables 6 through 8 below.

A discharge notification for these facilities was provided to the Inspector on May 13, 2015. Dewatering of these facilities was undertaken during the month. Samples were collected daily during discharges from the facilities. Compliant berm water was used for dust suppression and other industrial purposes; permission was granted for this use by the Inspector on May 14, 2015.

Table 6: Monthly Compliance Sample Results for ST-5, May 2015

Sample ID			ST5-22MAY15	ST5-28MAY15	ST5-31MAY15	Part G Item 24(e)	
ALS ID			L1615568-1	L1618547-1	L1620640-3	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			5/22/2015 7:40:00 AM	5/28/2015 9:12:00 AM	5/31/2015 10:15:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water		
pH	pH	0.1	7.96	7.97	8.09	6.0– 9.0	9
Total Suspended Solids	mg/L	3	6.5	<3.0	<3.0	15.0	30.0
Lead (Pb)-Total	mg/L	0.00005	0.000314	0.000117	0.000122	0.01	0.02
Oil and Grease	mg/L	5	<5.0	<5.0	<5.0	5	10
Oil And Grease (Visible Sheen)		n/a	NO	NO	NO	-	-
Benzene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	0.37	-
Ethylbenzene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	0.090	-
Toluene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	0.002	-

Bold/shading indicates exceedance of Part G Item 24(e) Maximum Concentration in a Grab Sample; however no exceedances observed.

Table 7: Monthly Compliance Sample Results for ST-6A, May 2015

Sample ID			ST6A-22MAY15	ST6A-28MAY15	ST6A-29MAY15	ST6A-30MAY15	ST6A-31MAY15	Part G Item 24(e)	
ALS ID			L1615572-1	L1618547-2	L1619262-1	L1619262-2	L1620640-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			5/22/2015 8:20:00 AM	5/28/2015 8:50:00 AM	5/29/2015 8:00:00 AM	5/29/2015 7:44:00 AM	5/31/2015 8:14:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water	Water	Water		
pH	pH	0.1	8.18	8.03	8.17	8.11	8.1	6.0– 9.0	9
Total Suspended Solids	mg/L	3	6.4	4.2	<3.0	8.4	<3.0	15.0	30.0
Lead (Pb)-Total	mg/L	0.00005	<0.000050	0.000093	<0.000050	0.000155	0.000251	0.01	0.02
Oil and Grease	mg/L	5	<5.0	<5.0	<5.0	<5.0	<5.0	5	10
Oil And Grease (Visible Sheen)	-	n/a	NO	NO	NO	NO	NO	-	-
Benzene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.37	-
Ethylbenzene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.090	-
Toluene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.002	-

Bold/shading indicates exceedance of Part G Item 24(e) Maximum Concentration in a Grab Sample; however no exceedances observed.

Table 8: Monthly Compliance Sample Results for ST-6B, May 2015

Sample ID			ST6B-22MAY15	ST6B-28MAY15	ST6B-31MAY15	Part G Item 24(e)	
ALS ID			L1615568-2	L1618547-3	L1620640-2	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			5/22/2015 8:05:00 AM	5/28/2015 8:30:00 AM	5/31/2015 9:54:00 AM		
Parameter	Units	Detection Limit	Water	Water	Water		
pH	pH	0.1	8.1	8.09	8.26	6.0– 9.0	9
Total Suspended Solids	mg/L	3	7.5	6.6	<3.0	15.0	30.0
Lead (Pb)-Total	mg/L	0.00005	0.000289	0.00024	0.000144	0.01	0.02
Oil and Grease	mg/L	5	<5.0	<5.0	<5.0	5	10
Oil And Grease (Visible Sheen)	-	n/a	NO	NO	NO	-	-
Benzene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	0.37	-
Ethylbenzene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	0.090	-
Toluene	mg/L	0.0005	<0.00050	<0.00050	<0.00050	0.002	-

Bold/shading indicates exceedance of Part G Item 24(e) Maximum Concentration in a Grab Sample; however no exceedances observed.

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)

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

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 will commence when ice conditions on the TIA permit.

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 as no water was discharged from the TIA.

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 will be stored underground until September 2015 when more underground equipment is delivered to site on the sea lift and the waste rock can be hauled to surface. The total volume of waste rock on the temporary waste rock pad is 189,607 tonnes, as per the December 2011 survey.

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

Discharges to tundra occurred at stations ST-5 and ST6-B. During daily discharge sampling, visual observations were made and no erosion was noted. Water accumulated at station ST6-A was discharged to site roads for dust suppression.

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

During spring melt and after heavy rainfall events, visual observations were made of runoff associated with the diversion berm. No sedimentation was noted and water is effectively routed away from camp facilities.

Environmental Incident Reporting

No incidents occurring pertaining to this licence during the period.

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-DOH1323 SNP Monitoring Locations

