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July 29, 2016

Licensing
Nunavut Water Board
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Re: June 2016 – Monthly Monitoring Report for Water Licence 2BB-BOS1217

This report is comprised of monitoring requirements as set out in Part J of water licence 2BB-BOS1217. Boston Camp was shut down in November 2011 and has not been reopened since that time. Activities at Boston are focussed on seasonal water management and licence compliance; the site remains in a Care and Maintenance status. Sampling locations monitored under this licence (seasonally or when facilities are operational) are provided in Figure 1.

Part J Item 2: Water Use Volumes

No water was used as the camp was not operational.

Part J Item 3: Minewater Discharge Volumes

Minewater was not pumped from underground during this period.

Part J Items 4 and 5: Sewage Disposal Facility Daily Effluent Discharge and Sewage Sludge

Effluent was not discharged at BOS-3 and no sludge was removed from the sewage disposal facility. The camp was not operational.

Part J Items 5: Daily Quantities of Effluent Discharged – Containment Pond, Bulk Fuel Storage and Landfarm

A discharge notification for these facilities was provided to the Inspector on May 4, 2016. In June, 1.0 m^3 of water was consolidated from the Bulk Fuel Storage facility (BOS-5) to the Containment Pond (BOS-2C). No water was discharged from BOS-2C, BOS-2P (Portal) or BOS-6 (Landfarm) this month.

Part J Items 6 and 7: Water Source and Waste Disposal Coordinates

GPS coordinates of locations of water sources and waste associated with camp and drilling activities are kept on file. At this time, there are no water sources being used and no wastes being produced.

Part J Items 8 and 11 (also Part D Items 9 and 19): Sampling at Containment Pond, Minewater, Bulk Fuel Storage, and Landfarm

Pre-discharge samples were collected from BOS-2C (Containment Pond) and BOS-2P (Portal) facilities during the month. No samples were collected from BOS-5 (Bulk Fuel Storage) as this water was consolidated into the Containment Pond (BOS-2C), as has occurred in past year. BOS-2C was sampled after water was added from BOS-5, and is tested for parameter requirements of both BOS-2 and BOS-5 from Part D, Item 19 of the licence.

No samples were collected from BOS-6 (Landfarm); there was no water in this facility to sample. Results for all June sampling are presented in Tables 1 and 2 below.

All water in BOS-5 was pumped to Containment Pond BOS-2C for consolidation purposes. Water in the Containment Pond BOS-2C met the criteria for discharge to tundra from BOS-5 (Part D Item 19), BOS-2 (Part D, Item 9) and the criteria for lead authorized by the Inspector on July 20, 2015 (0.01mg/L). This lead criteria is below that for BOS-2 (which is 0.2 mg/L average), but above that of BOS-5 (0.001 mg/L).

Water in BOS-2P (Portal) was compliant with criteria from Part D, Item 9 of the licence. Water was not discharged to the environment from these facilities in June. Authorization from the Inspector to discharge from this facility was received on May 4, 2016.

Table 1: Water Quality Data Summary for BOS-2C (Containment Pond), June 2016

		Sample ID	BOS2C-21JUN16	Part D Item 9	
		ALS ID	L1788426-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
		Date Sampled	6/21/2016 3:45:00 PM		
Parameter	Units	Detection Limit	Water		
Conductivity	µS/cm	2	752		
Hardness (as CaCO3)	mg/L	0.5	421		
pH	pH	0.1	7.76	6.0 - 9.5	6.0 - 9.5
Total Suspended Solids	mg/L	3	3.4	25	50
Alkalinity, Total (as CaCO3)	mg/L	1	77.2		
Nitrate (as N)	mg/L	0.025	<0.025 *		
Nitrite (as N)	mg/L	0.005	<0.0050 *		
Sulfate (SO4)	mg/L	1.5	314		
Aluminum (Al)-Total	mg/L	0.005	0.0432		
Antimony (Sb)-Total	mg/L	0.0005	0.00332		
Arsenic (As)-Total	mg/L	0.0005	0.113	0.5	1.00
Barium (Ba)-Total	mg/L	0.02	<0.020		
Beryllium (Be)-Total	mg/L	0.001	<0.0010		
Boron (B)-Total	mg/L	0.1	<0.10		
Cadmium (Cd)-Total	mg/L	0.000005	0.000042		
Calcium (Ca)-Total	mg/L	0.1	103		
Chromium (Cr)-Total	mg/L	0.001	<0.0010		
Cobalt (Co)-Total	mg/L	0.0003	0.004		
Copper (Cu)-Total	mg/L	0.001	0.0015	0.30	0.60
Iron (Fe)-Total	mg/L	0.03	0.261		
Lead (Pb)-Total	mg/L	0.0005	0.00963	0.2/0.01^	0.40
Lithium (Li)-Total	mg/L	0.001	0.0078		
Magnesium (Mg)-Total	mg/L	0.1	39.8		
Manganese (Mn)-Total	mg/L	0.0003	0.0166		
Mercury (Hg)-Total	mg/L	0.000005	<0.0000050		
Molybdenum (Mo)-Total	mg/L	0.001	<0.0010		
Nickel (Ni)-Total	mg/L	0.001	0.0307	0.50	1.00
Potassium (K)-Total	mg/L	2	8.2		
Selenium (Se)-Total	mg/L	0.00005	0.000158		
Silver (Ag)-Total	mg/L	0.00002	<0.000020		
Sodium (Na)-Total	mg/L	2	6.1		
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	<0.00020		
Vanadium (V)-Total	mg/L	0.0005	0.00058		
Zinc (Zn)-Total	mg/L	0.005	0.0292	0.50	1.00
Oil and Grease	mg/L	5	<5.0		15**
Oil And Grease (Visible Sheen)		n/a	No	No visible sheen	No visible sheen

		Sample ID	BOS2C-21JUN16	Part D Item 9	
		ALS ID	L1788426-1	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
		Date Sampled	6/21/2016 3:45:00 PM		
Parameter	Units	Detection Limit	Water		
Phenols (4AAP)	mg/L	0.001	0.0012		
Benzene	mg/L	0.0005	<0.00050		0.37**
Ethylbenzene	mg/L	0.0005	<0.00050		0.09**
Methyl t-butyl ether (MTBE)	mg/L	0.0005	<0.00050		
Styrene	mg/L	0.0005	<0.00050		
Toluene	mg/L	0.0005	<0.00050		0.002**
ortho-Xylene	mg/L	0.0005	<0.00050		
meta- & para-Xylene	mg/L	0.0005	<0.00050		
Xylenes	mg/L	0.00075	<0.00075		
TPH10-32	mg/L	1	<1.0		
Acenaphthene	mg/L	0.00001	<0.000010		
Acenaphthylene	mg/L	0.00001	<0.000010		
Acridine	mg/L	0.00001	<0.000010		
Anthracene	mg/L	0.00001	<0.000010		
Benz(a)anthracene	mg/L	0.00001	<0.000010		
Benzo(a)pyrene	mg/L	0.00001	<0.000010		
Benzo(b)fluoranthene	mg/L	0.00001	<0.000010		
Benzo(g,h,i)perylene	mg/L	0.00001	<0.000010		
Benzo(k)fluoranthene	mg/L	0.00001	<0.000010		
Chrysene	mg/L	0.00001	<0.000010		
Dibenz(a,h)anthracene	mg/L	0.00001	<0.000010		
Fluoranthene	mg/L	0.00001	<0.000010		
Fluorene	mg/L	0.00001	<0.000010		
Indeno(1,2,3-c,d)pyrene	mg/L	0.00001	<0.000010		
Naphthalene	mg/L	0.00005	<0.000050		
Phenanthrene	mg/L	0.00002	<0.000020		
Pyrene	mg/L	0.00001	<0.000010		
Quinoline	mg/L	0.00005	<0.000050		

Bold/shading indicates exceedance of applicable criteria (see footnotes)

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

** From Part D, Item 19 for the Bulk Fuel Storage Facility. Water was pumped from the Bulk Fuel Storage Facility to the Containment Pond to ensure maximum freeboard.

^ Discharge criteria authorized by the Inspector on July 20, 2015.

Table 2: Water Quality Data Summary for BOS-2P (Portal), June 2016

		Sample ID	BOS2P-12JUN16	Part D Item 9 and Part D Item 19	
		ALS ID	L1783054-1	Maximum Average Concentration (mg/L) **	Maximum Concentration in any Grab Sample (mg/L) **
		Date Sampled	6/12/2016 5:30:00 PM		
Parameter	Units	Detection Limit	Water		
Hardness (as CaCO3)	mg/L	0.5	21.9		
pH	pH	0.1	6.97	6.0 - 9.5	6.0 - 9.5
Total Suspended Solids	mg/L	3	<3.0	25	50
Aluminum (Al)-Total	mg/L	0.005	0.0238		
Antimony (Sb)-Total	mg/L	0.0005	<0.00050		
Arsenic (As)-Total	mg/L	0.0005	0.0112	0.5	1.0
Barium (Ba)-Total	mg/L	0.02	<0.020		
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	<0.0000050		
Calcium (Ca)-Total	mg/L	0.1	5.47		

			Sample ID	BOS2P-12JUN16	Part D Item 9 and Part D Item 19	
			ALS ID	L1783054-1	Maximum Average Concentration (mg/L) **	Maximum Concentration in any Grab Sample (mg/L) **
			Date Sampled	6/12/2016 5:30:00 PM		
Parameter	**Units**	**Detection Limit**		**Water**		
Chromium (Cr)-Total	mg/L	0.001		<0.0010		
Cobalt (Co)-Total	mg/L	0.0003		0.00217		
Copper (Cu)-Total	mg/L	0.001		0.0011	0.30	0.60
Iron (Fe)-Total	mg/L	0.03		0.086		
Lead (Pb)-Total	mg/L	0.0005		<0.00050	0.20	0.4/0.001
Lithium (Li)-Total	mg/L	0.005		<0.0010		
Magnesium (Mg)-Total	mg/L	0.1		1.99		
Manganese (Mn)-Total	mg/L	0.0003		0.00871		
Molybdenum (Mo)-Total	mg/L	0.001		<0.0010		
Nickel (Ni)-Total	mg/L	0.001		0.0063	0.50	1.00
Potassium (K)-Total	mg/L	2		<2.0		
Selenium (Se)-Total	mg/L	0.0001		<0.000050		
Silver (Ag)-Total	mg/L	0.00002		<0.000020		
Sodium (Na)-Total	mg/L	2		2.9		
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		<0.00020		
Vanadium (V)-Total	mg/L	0.001		<0.00050		
Zinc (Zn)-Total	mg/L	0.005		<0.0050	0.50	1.00
Oil and Grease	mg/L	5		<5.0		
Oil And Grease (Visible Sheen)		n/a		NO	No visible sheen	No visible sheen

Bold/shading indicates exceedance of lowest criteria listed within Part D Item 9 and Part D Item 19; however no exceedances observed.

Part J Item 9 and 10: Sewage Disposal Facility Effluent

No samples were taken from monitoring station BOS-3 or BOS-4 as the sewage disposal facility was not operational.

Part J Item 12 and 13: Seepage Monitoring

Seepage at Boston (BOS-8) is monitored seasonally when water is available to sample. Opportunistic sampling was conducted once at BOS-8 seepage locations this month. Results are presented in Table 3 below.

Table 3: BOS-8 (Waste Rock/Ore Storage Pad) Water Quality Results, June 2016

		Sample ID	BOS8A-12JUN16	BOS8C-12JUN16	BOS8D-12JUN16A	BOS8D-12JUN16B
		ALS ID	L1783045-4	L1783045-3	L1783045-1	L1783045-2
		Date Sampled	6/12/2016 5:05:00 PM	6/12/2016 4:50:00 PM	6/12/2016 4:25:00 PM	6/12/2016 4:25:00 PM
Parameter	**Units**	**Detection Limit**	**Water**	**Water**	**Water**	**Water**
Conductivity	µS/cm	2	951	1610	1470	1470
Hardness (as CaCO3)	mg/L	0.5	416	739	668	669
pH	pH	0.1	7.72	7.9	7.91	7.94
Total Suspended Solids	mg/L	3	<3.0	28	9.8	10.1
Ammonia, Total (as N)	mg/L	0.005	0.0308	0.0678	0.0383	0.017
Sulfate (SO4)	mg/L	0.6	359	468	4350	434
Aluminum (Al)-Total	mg/L	0.005	0.0401	0.541	0.116	1.24
Antimony (Sb)-Total	mg/L	0.0005	0.00139	0.0353	0.03	0.0291
Arsenic (As)-Total	mg/L	0.0005	0.0146	0.739	0.534	0.56
Barium (Ba)-Total	mg/L	0.02	<0.020	<0.020	<0.020	0.021
Beryllium (Be)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010

		Sample ID	BOS8A-12JUN16	BOS8C-12JUN16	BOS8D-12JUN16A	BOS8D-12JUN16B
		ALS ID	L1783045-4	L1783045-3	L1783045-1	L1783045-2
		Date Sampled	6/12/2016 5:05:00 PM	6/12/2016 4:50:00 PM	6/12/2016 4:25:00 PM	6/12/2016 4:25:00 PM
Parameter	**Units**	**Detection Limit**	**Water**	**Water**	**Water**	**Water**
Boron (B)-Total	mg/L	0.1	<0.10	0.17	0.18	0.18
Cadmium (Cd)-Total	mg/L	0.000005	0.0000295	0.0000366	0.0000159	0.0000261
Calcium (Ca)-Total	mg/L	0.1	91.5	210	188	186
Chromium (Cr)-Total	mg/L	0.001	<0.0010	0.0136	0.0026	0.0284
Cobalt (Co)-Total	mg/L	0.0003	0.00817	0.82	0.431	0.436
Copper (Cu)-Total	mg/L	0.001	0.0049	0.0058	0.005	0.0091
Iron (Fe)-Total	mg/L	0.03	0.107	1.62	0.298	4.49
Lead (Pb)-Total	mg/L	0.0005	<0.00050	0.00061	<0.00050	0.00174
Lithium (Li)-Total	mg/L	0.001	0.002	0.0425	0.0417	0.042
Magnesium (Mg)-Total	mg/L	0.1	45.6	51.9	48.3	49.3
Manganese (Mn)-Total	mg/L	0.0003	0.325	0.312	0.131	0.257
Molybdenum (Mo)-Total	mg/L	0.001	<0.0010	0.0025	0.003	0.003
Nickel (Ni)-Total	mg/L	0.001	0.0279	1.03	0.523	0.536
Potassium (K)-Total	mg/L	2	7.4	11.8	11	10.9
Selenium (Se)-Total	mg/L	0.00005	0.000389	0.00216	0.00167	0.00159
Silver (Ag)-Total	mg/L	0.00002	0.000025	0.000163	0.000073	0.000221
Sodium (Na)-Total	mg/L	2	30	28.2	26.1	25.8
Thallium (Tl)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050
Titanium (Ti)-Total	mg/L	0.01	<0.010	0.011	<0.010	0.02
Uranium (U)-Total	mg/L	0.0002	0.00034	0.00025	0.00027	0.00027
Vanadium (V)-Total	mg/L	0.0005	<0.00050	0.00394	0.00138	0.00691
Zinc (Zn)-Total	mg/L	0.005	<0.0050	<0.0050	0.0213	0.0322

Part J Item 14 (also Part F Item 7): Under-Ice Water Quality Sampling

Not applicable as on-ice drilling did not occur pertaining to licence 2BB-BOS1217.

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,

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Hope Bay Project
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cc. Eva Paul, Water Resources Officer, INAC

Figure 1. 2BB-BOS1217 SNP Monitoring Locations