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**Re: July 2015 – Monthly Monitoring Report for Water Licence 2BB-BOS1217**

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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 13, 2015. In July, 14.0 m<sup>3</sup> of water from the BOS-2C Containment Pond was treated through an oil-water separator and discharged directly to tundra and 52.2 m<sup>3</sup> of water was transferred from the Bulk Fuel Storage facility (BOS-5) to the Containment Pond (BOS-2C). No water was discharged from BOS-6 (Landfarm) this month. The total surface runoff discharged directly to tundra from the portal (BOS-2P) was 207.4 m<sup>3</sup>. Visual observations were made during discharges to tundra and no erosion was noted.

**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**

Water quality samples were collected from BOS-2C (Containment Pond), BOS-2P (Portal) and BOS-5 (Bulk Fuel Storage) facilities during the month. No samples were collected from BOS-6 (Landfarm); there was no water at this facility to sample. Samples collected from BOS-2C include parameter requirements for monitoring station BOS-5 from Part D, Item 19 of the licence, as the containment pond facility has been utilized as a temporary holding location for effluent from the bulk fuel storage facility. Water quality for discharges of surface runoff accumulated at the portal (BOS-2P) were compared with criteria for discharges from Containment Pond BOS-2C Part D, Item 9 to facilitate direct discharge to tundra when complaint. Results for all July sampling are presented in Tables 1 through 3 below.

Water in the Containment Pond BOS-2C did not meet the more stringent Part D, Item 19 (BOS-5) discharge criteria for lead (0.001mg/L). On July 18th, 2015 the Inspector authorized a discharge from the Containment Pond BOS-2C for water meeting the discharge criteria for lead as outlined in the 2AM-DOH1323 licence (0.01 mg/L) for bulk fuel storage facilities (see the July 2015 AANDC Inspection Report located here: <ftp://ftp.nwb-oen.ca/1%20PRUC%20PUBLIC%20REGISTRY/2%20MINING%20MILLING/2B/2BB%20-%20Bulk%20Sampling/2BB-BOS1217/3%20TECH/0%20SCOPE%20ENFORCE%20%28A%29/1%20INSPECTION/2015/150730%202BB-BOS1217%20Water%20Licence%20Inspection%20Form-IACE.pdf>).

14.0 m<sup>3</sup> of water was discharged from BOS-2C in July.

Water quality samples collected July 23<sup>rd</sup> from BOS-5 bulk fuel storage facility indicated this water was slightly higher than the amended discharge criteria for lead. All water in BOS-5 was pumped to Containment Pond BOS-2C for temporary holding. This water will be treated and re-sampled prior to any discharges.

Water in BOS-2P (Portal) was compliant with Part D, Item 9 criteria, and 207.4 m<sup>3</sup> was discharged directly to tundra in July.

Table 1: Water Quality Data Summary for BOS-2C (Containment Pond), July 2015

Sample ID			BOS2C-21JUL15	BOS2C-22JUL15	Part D Item 9	
ALS ID			L1647871-1	L1647871-2	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			7/21/2015 4:45:00 PM	7/22/2015 11:20:00 AM		
Parameter	Units	Detection Limit	Water	Water		
Conductivity	uS/cm	2	921	928		
Hardness (as CaCO <sub>3</sub> )	mg/L	0.5	478	480		
pH	pH	0.1	8.25	8.41	6.0 - 9.5	6.0 - 9.5
Total Suspended Solids	mg/L	3	<3.0	<3.0	25	50
Alkalinity, Total (as CaCO <sub>3</sub> )	mg/L	1	82.3	83.8		
Ammonia, Total (as N)	mg/L	0.005	-	-		
Nitrate (as N)	mg/L	0.25	<0.010 *	<0.010 *		
Nitrite (as N)	mg/L	0.05	<0.0020 *	<0.0020 *		
Sulfate (SO <sub>4</sub> )	mg/L	5	445	410		
Aluminum (Al)-Total	mg/L	0.005	0.0069	0.0089		
Antimony (Sb)-Total	mg/L	0.0005	0.00332	0.00338		
Arsenic (As)-Total	mg/L	0.0005	0.0584	0.0566	0.5	1.00
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	0.0000057	0.0000058		
Calcium (Ca)-Total	mg/L	0.1	114	115		
Chromium (Cr)-Total	mg/L	0.001	<0.0010	<0.0010		
Cobalt (Co)-Total	mg/L	0.0003	0.00231	0.00165		
Copper (Cu)-Total	mg/L	0.001	<0.0010	<0.0010	0.30	0.60
Iron (Fe)-Total	mg/L	0.03	0.065	0.052		
Lead (Pb)-Total	mg/L	0.0005	0.0015	0.00133	0.20	0.4/0.01**
Lithium (Li)-Total	mg/L	0.005	0.014	0.014		
Magnesium (Mg)-Total	mg/L	0.1	46.7	47.1		
Manganese (Mn)-Total	mg/L	0.0003	0.0267	0.00981		
Mercury (Hg)-Total	mg/L	0.00001	<0.0000050	<0.0000050		
Molybdenum (Mo)-Total	mg/L	0.001	0.0017	0.0019		
Nickel (Ni)-Total	mg/L	0.001	0.0149	0.0148	0.50	1.00
Potassium (K)-Total	mg/L	2	28	27.6		
Selenium (Se)-Total	mg/L	0.0001	0.000168	0.000167		
Silver (Ag)-Total	mg/L	0.00002	<0.000020	<0.000020		
Sodium (Na)-Total	mg/L	2	10	9.9		
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	0.00058	0.00053		
Vanadium (V)-Total	mg/L	0.001	0.0006	0.00062		
Zinc (Zn)-Total	mg/L	0.005	0.0063	<0.0050	0.50	1.00

Sample ID			BOS2C-21JUL15	BOS2C-22JUL15	Part D Item 9	
ALS ID			L1647871-1	L1647871-2	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			7/21/2015 4:45:00 PM	7/22/2015 11:20:00 AM		
Parameter	Units	Detection Limit	Water	Water		
Oil and Grease	mg/L	5	<5.0	<5.0		15**
Oil And Grease (Visible Sheen)		n/a	NO	NO	No visible sheen	No visible sheen
Phenols (4AAP)	mg/L	0.001	<0.0010	<0.0010		
Benzene	mg/L	0.0005	<0.00050	<0.00050		0.37**
Ethylbenzene	mg/L	0.0005	<0.00050	<0.00050		0.09**
Methyl t-butyl ether (MTBE)	mg/L	0.0005	<0.00050	<0.00050		
Toluene	mg/L	0.0005	<0.00050	<0.00050		0.002**
ortho-Xylene	mg/L	0.0005	<0.00050	<0.00050		
meta- & para-Xylene	mg/L	0.0005	<0.00050	<0.00050		
Xylenes	mg/L	0.00075	<0.00075	<0.00075		
4-Bromofluorobenzene (SS)	%	Surrogate	101	98.9		
1,4-Difluorobenzene (SS)	%	Surrogate	99.8	100.6		
TPH10-32	mg/L	1	<1.0	<1.0		
2-Bromobenzotrifluoride	%	Surrogate	83	75.2		
Acenaphthene	mg/L	0.00001	<0.000010	<0.000010		
Acenaphthylene	mg/L	0.00001	<0.000010	<0.000010		
Acridine	mg/L	0.00001	<0.000010	<0.000010		
Anthracene	mg/L	0.00001	<0.000010	<0.000010		
Benz(a)anthracene	mg/L	0.00001	<0.000010	<0.000010		
Benzo(a)pyrene	mg/L	0.00001	<0.000010	<0.000010		
Benzo(b)fluoranthene	mg/L	0.00001	<0.000010	<0.000010		
Benzo(g,h,i)perylene	mg/L	0.00001	<0.000010	<0.000010		
Benzo(k)fluoranthene	mg/L	0.00001	<0.000010	<0.000010		
Chrysene	mg/L	0.00001	<0.000010	<0.000010		
Dibenz(a,h)anthracene	mg/L	0.00001	<0.000010	<0.000010		
Fluoranthene	mg/L	0.00001	<0.000010	<0.000010		
Fluorene	mg/L	0.00001	<0.000010	<0.000010		
Indeno(1,2,3-c,d)pyrene	mg/L	0.00001	<0.000010	<0.000010		
Naphthalene	mg/L	0.00005	<0.000050	<0.000050		
Phenanthrene	mg/L	0.00002	<0.000020	<0.000020		
Pyrene	mg/L	0.00001	<0.000010	<0.000010		
Quinoline	mg/L	0.00001	<0.000050	<0.000050		
Acridine d9	%	Surrogate	84.8	86		
Chrysene d12	%	Surrogate	72.3	76.4		
Naphthalene d8	%	Surrogate	97.4	97.3		
Phenanthrene d10	%	Surrogate	89	92.8		

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

\* Detection limit adjusted due to sample matrix effects.

\*\* Part D, Item 19 (BOS-5) discharge criteria and amended criteria for lead (0.01mg/L) authorized by the Inspector on July 20, 2015.

Table 2: Water Quality Data Summary for BOS-5 (Bulk Fuel Storage), July 2015

Sample ID			BOS5-23JUL15	Part D Item 19 Maximum Concentration in any Grab Sample (mg/L)
ALS ID			L1647864-1	
Date Sampled			7/23/2015 1:45:00 PM	
Parameter	Units	Detection Limit	Water	
Conductivity	uS/cm	2	976	
Hardness (as CaCO <sub>3</sub> )	mg/L	0.5	558	
pH	pH	0.1	7.6	
Alkalinity, Total (as CaCO <sub>3</sub> )	mg/L	1	57.2	
Nitrate (as N)	mg/L	0.25	0.268	
Nitrite (as N)	mg/L	0.05	0.0163	
Sulfate (SO <sub>4</sub> )	mg/L	5	465	
Aluminum (Al)-Total	mg/L	0.005	0.0812	
Antimony (Sb)-Total	mg/L	0.0005	0.00642	
Arsenic (As)-Total	mg/L	0.0005	0.361	
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	0.26	
Cadmium (Cd)-Total	mg/L	0.00001	0.0000824	
Calcium (Ca)-Total	mg/L	0.1	143	
Chromium (Cr)-Total	mg/L	0.001	<0.0010	
Cobalt (Co)-Total	mg/L	0.0003	0.0566	
Copper (Cu)-Total	mg/L	0.001	0.0063	
Iron (Fe)-Total	mg/L	0.03	0.295	
Lead (Pb)-Total	mg/L	0.0005	<b>0.031</b>	0.0010/0.01+
Lithium (Li)-Total	mg/L	0.005	0.0092	
Magnesium (Mg)-Total	mg/L	0.1	48.9	
Manganese (Mn)-Total	mg/L	0.0003	0.103	
Mercury (Hg)-Total	mg/L	0.00001	<0.0000050	
Molybdenum (Mo)-Total	mg/L	0.001	0.0033	
Nickel (Ni)-Total	mg/L	0.001	0.22	
Potassium (K)-Total	mg/L	2	7.9	
Selenium (Se)-Total	mg/L	0.0001	0.000345	
Silver (Ag)-Total	mg/L	0.00002	<0.000020	
Sodium (Na)-Total	mg/L	2	7.4	
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	0.0094	
Oil and Grease	mg/L	5	<5.0	15
Oil And Grease (Visible Sheen)		n/a	NO	No visible sheen
Phenols (4AAP)	mg/L	0.001	0.0048 *	
Benzene	mg/L	0.0005	<0.00050	0.370
Ethylbenzene	mg/L	0.0005	<0.00050	0.090
Methyl t-butyl ether (MTBE)	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	<0.000030 **	
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	

Sample ID			BOS5-23JUL15	Part D Item 19 Maximum Concentration in any Grab Sample (mg/L)
ALS ID			L1647864-1	
Date Sampled			7/23/2015 1:45:00 PM	
Parameter	Units	Detection Limit	Water	
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	0.000088 ^	
Phenanthrene	mg/L	0.00002	<0.000020	
Pyrene	mg/L	0.00001	<0.000010	
Quinoline	mg/L	0.00001	<0.000050	

**Bold/shading** indicates exceedance of Part D Item 19 Maximum Concentration in a Grab Sample.

\* Reported Result Verified By Repeat Analysis

\*\* Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.

^ The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.

+ Discharge criteria authorized by the Inspector July 20, 2015.

Table 3: Water Quality Data Summary for BOS-2P (Portal), July 2015

Sample ID			BOS2P-21JUL15	BOS2P-22JUL15	Part D Item 9**	
ALS ID			L1647928-1	L1647928-2	Maximum Average Concentration (mg/L)	Maximum Concentration in any Grab Sample (mg/L)
Date Sampled			7/21/2015 4:20:00 PM	7/22/2015 11:28:00 AM		
Parameter	Units	Detection Limit	Water	Water		
Hardness (as CaCO3)	mg/L	0.5	134	137		
pH	pH	0.1	7.65	7.67	6.0 - 9.5	6.0 - 9.5
Total Suspended Solids	mg/L	3	<3.0	<3.0	25	50
Aluminum (Al)-Total	mg/L	0.005	0.0154	0.0261		
Antimony (Sb)-Total	mg/L	0.0005	0.00117	0.00117		
Arsenic (As)-Total	mg/L	0.0005	0.0444	0.047	0.5	1.0
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	0.0000111	0.00001		
Calcium (Ca)-Total	mg/L	0.1	35.4	36.2		
Chromium (Cr)-Total	mg/L	0.001	<0.0010	<0.0010		
Cobalt (Co)-Total	mg/L	0.0003	0.0127	0.0131		
Copper (Cu)-Total	mg/L	0.001	0.0022	0.0022	0.30	0.60
Iron (Fe)-Total	mg/L	0.03	0.098	0.114		
Lead (Pb)-Total	mg/L	0.0005	<0.00050	<0.00050	0.20	0.4
Lithium (Li)-Total	mg/L	0.005	0.0054	0.0056		
Magnesium (Mg)-Total	mg/L	0.1	11.1	11.4		
Manganese (Mn)-Total	mg/L	0.0003	0.0261	0.0254		
Molybdenum (Mo)-Total	mg/L	0.001	<0.0010	<0.0010		
Nickel (Ni)-Total	mg/L	0.001	0.0461	0.047	0.50	1.00
Potassium (K)-Total	mg/L	2	<2.0	<2.0		
Selenium (Se)-Total	mg/L	0.0001	0.000407	0.000429		
Silver (Ag)-Total	mg/L	0.00002	<0.000020	<0.000020		
Sodium (Na)-Total	mg/L	2	17.2	17		
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	0.00039	0.0004		
Vanadium (V)-Total	mg/L	0.001	<0.00050	<0.00050		
Zinc (Zn)-Total	mg/L	0.005	0.0057	0.0056	0.50	1.00
Oil and Grease	mg/L	5	<5.0	<5.0		
Oil And Grease (Visible Sheen)		n/a	NO	NO	No visible sheen	No visible sheen

**Bold/shading** indicates exceedance of Part D Item 9 criteria; however no exceedances observed.

\*\* Criteria from Part D Item 9 applied for discharges direct from accumulated surface runoff at the portal.

**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. There was no water accumulated at BOS-8 seepage locations this month and no samples were collected.

**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](mailto:John.Roberts@tmacresources.com).

Yours sincerely,



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cc. Eva Paul, Water Resources Officer, AANDC

Figure 1. 2BB-BOS1217 SNP Monitoring Locations

