AGNICO-EAGLE

MEADOWBANK DIVISION

# Monitoring Program Summary Report

**July 2011**

Type A Water License 2AM-MEA0815

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## SECTION 1 • BACKGROUND

As required under Part I, Item 25 of Type A Water License 2AM-MEA0815, this report documents the water management and monitoring activity at the mine site for the month. This activity includes: water usage, sewage treatment plant discharge water quality and dewatering monitoring.

Additionally, a summary of the AEM internal spill reporting for the month is included.

# SECTION 2 • WATER MANAGEMENT

## 2.1 WATER USAGE

Freshwater usage for July 2011 is summarized in Table 2.1 below. Freshwater usage for the month totals 94,595 $m^3$. The consumption of fresh water for mine and mill operations (including production drills, batch plant and dust control) was 89,247 $m^3$ and the consumption of reclaim water in the mill was 209,868 $m^3$.

**Table 2-1: Freshwater Usage ($m^3$)**

| | **July** |
|---|---|
| Camp | 3186 |
| Mine & Mill Operations | 89247 |
| Emulsion Plant | 193 |
| Water Truck | 1970 |
| **Total** | **94,595** |

## 2.2 SEWAGE TREATMENT PLANT MONITORING

Four water samples were taken at the effluent of the sewage treatment plants (STP) in July. The results showed the system is working well.

Table 2.2 presents the monitoring results.

**Table 2-2: STP Effluent Results**

| **Date** | **Units** | **4-Jul-11** | **12-Jul-11** | **18-Jul-11** | **25-Jul-11** |
|---|---|---|---|---|---|
| Ammonia | mg/L | <0.05 | <0.05 | <0.05 | <0.05 |
| BOD-5 | mg/L | 4 | 4 | 4 | 1 |
| COD (mg/L) | mg/L | 54 | 59 | 41 | 45 |
| Total Suspended Solids | mg/L | 16 | 8 | 11 | 6 |
| Nitrite | mg N/L | <0.01 | <0.01 | 0.01 | <0.01 |
| Nitrate | mg N/L | 39.4 | 40.9 | 43.0 | 38.9 |
| pH * | units | 3.60 | 3.80 | 4.10 | 3.60 |
| Total Phosphorus | mg/L | 11.8 | 11.8 | 13.8 | 12.8 |
| Fecal Coliform | UFC/100 mL | <4 | 2 | <2 | 4 |
| Total Coliform | UFC/100 mL | 600 | 10 | 20 | 4 |

## 2.3 DEWATERING

### 2.3.1 Northwest Arm of Second Portage Lake

Dewatering of the northwest arm of Second Portage Lake continued throughout the month. The water treatment plants were in operation for 23 of the 30 days.

The pH and Aluminum concentrations at the outlets of the TSS water treatment plants were as follows:

- pH 24 hour minimum/maximum: 6.33/7.13 units (Limit is 6-9 units)
- Al 24 hour maximum concentration: 0.963 mg/L (Limit is 1.5 mg/L)

Table 2.3 summarizes the dewatering monitoring results for pH and Aluminum for the month.

**Table 2-3: Second Portage Arm Dewatering Monitoring – pH and Al**

| Date | DD-WTP-01 | | DD-WTP-02 | | Both WTP Outlets | |
|---|---|---|---|---|---|---|
| | pH | Total Al | pH | Total Al | pH 24-hour Mean | Al 24-hour Mean |
| | units | mg/L | units | mg/L | units | mg/L |
| 2011-07-04 | 6.31 | 0.687 | 6.34 | 0.689 | 6.33 | 0.688 |
| 2011-07-05 | 6.67 | | 6.56 | | 6.62 | |
| 2011-07-06 | 6.63 | | 6.51 | | 6.57 | |
| 2011-07-10 | 6.62 | | 6.93 | | 6.78 | |
| 2011-07-11 | 6.62 | 0.694 | | | 6.62 | 0.694 |
| 2011-07-12 | 6.71 | | 6.72 | | 6.72 | |
| 2011-07-13 | 6.71 | | 6.78 | | 6.75 | |
| 2011-07-14 | | | 6.71 | | 6.71 | |
| 2011-07-15 | 6.76 | | | | 6.76 | |
| 2011-07-16 | 6.90 | | | | 6.90 | |
| 2011-07-17 | 6.71 | | 6.67 | | 6.69 | |
| 2011-07-18 | 6.79 | 0.805 | 6.53 | 1.120 | 6.66 | 0.963 |
| 2011-07-20 | 6.51 | | 6.77 | | 6.64 | |
| 2011-07-21 | 6.94 | | 7.00 | | 6.97 | |
| 2011-07-22 | | | 7.13 | | 7.13 | |
| 2011-07-23 | | | 6.63 | | 6.63 | |
| 2011-07-24 | | | 6.66 | | 6.66 | |
| 2011-07-25 | | | 6.54 | 0.560 | 6.54 | 0.560 |
| 2011-07-26 | | | 6.80 | | 6.80 | |
| 2011-07-27 | | | 6.72 | | 6.72 | |
| 2011-07-30 | 6.61 | | | | 6.61 | |
| 2011-07-31 | 6.94 | | | | 6.94 | |

There was one exceedance of the 24 hour mean regulatory criteria (22.5 mg/L) for Total Suspended Solids (TSS); July 31 (80 mg/L). The plant operators took immediate mitigative measures to reduce the TSS concentrations at the outlet; the following day the TSS concentration was below the regulatory criteria (7 mg/L). The 30 day mean TSS concentration remained below the regulatory criteria of 15 mg/L.

A representative from John Meunier Inc., the water treatment plant supplier, has been working at the site since July 23, 2011. A performance review of the water treatment plant was completed; all equipment settings were adjusted to optimize TSS removal. A review of the operating parameters and procedures, and an identification of equipment repairs, if any, was also completed.

The turbidity and TSS concentrations at the outlets of the TSS water treatment plants were as follows:

- NTU 24 hour mean maximum concentration: 9.9 NTU (Maximum Limit is 30 NTU)
- TSS 24 hour mean maximum concentration: 80 mg/L (Maximum Limit is 22.5 mg/L)
- NTU 30 days mean maximum concentration: 4.6 NTU (Maximum Limit is 15 NTU)
- TSS 30 days mean maximum concentration: 12 mg/L (Maximum Limit is 15 mg/L)

Table 2.4 summarizes the dewatering monitoring results for turbidity and TSS for the month.

**Table 2-4: Second Portage Arm Dewatering Monitoring – TSS and Turbidity**

| Date | DD-WTP-01(Out) | | DD-WTP-02(Out) | | Both WTP Outlets | | | |
|---|---|---|---|---|---|---|---|---|
| | 24-hour Mean | Lab TSS | 24-hour Mean | Lab TSS | NTU 24-hour Mean | TSS 24-hour Mean | NTU 30-day Mean | TSS 30-day Mean |
| | NTU | mg/L | NTU | mg/L | NTU | mg/L | NTU | mg/L |
| 2011-07-01 | Not in operation | | Not in operation | | | | | |
| 2011-07-02 | Not in operation | | Not in operation | | | | | |
| 2011-07-03 | Not in operation | | Not in operation | | | | | |
| 2011-07-04 | 3.6 | 11 | 3.19 | 10 | 3.4 | 11 | 3.5 | 10 |
| 2011-07-05 | 3.2 | 6 | 2.79 | 10 | 3.0 | 8 | 3.6 | 10 |
| 2011-07-06 | 1.9 | 7 | 1.69 | 9 | 1.8 | 8 | 3.6 | 10 |
| 2011-07-07 | Not in operation | | Not in operation | | | | | |
| 2011-07-08 | Not in operation | | Not in operation | | | | | |
| 2011-07-09 | Not in operation | | Not in operation | | | | | |
| 2011-07-10 | 3.6 | 10 | 8.11 | 4 | 5.9 | 7 | 3.8 | 10 |
| 2011-07-11 | 3.9 | 11 | Not in operation | | 3.9 | 11 | 3.9 | 10 |
| 2011-07-12 | 2.7 | 6 | 1.97 | 2 | 2.3 | 4 | 3.9 | 10 |
| 2011-07-13 | 4.4 | 12 | 2.50 | 7 | 3.5 | 10 | 3.9 | 11 |
| 2011-07-14 | Not in operation | | 5.01 | 12 | 5.0 | 12 | 4.0 | 11 |
| 2011-07-15 | 9.9 | 14 | Not in operation | | 9.9 | 14 | 4.3 | 11 |
| 2011-07-16 | 3.5 | 5 | Not in operation | | 3.5 | 5 | 4.4 | 11 |
| 2011-07-17 | 5.6 | 5 | 4.90 | 17 | 5.3 | 11 | 4.5 | 11 |
| 2011-07-18 | 3.8 | 14 | 4.71 | 16 | 4.3 | 15 | 4.6 | 11 |
| 2011-07-19 | Not in operation | | Not in operation | | | | | |
| 2011-07-20 | 2.2 | 8 | 2.55 | 8 | 2.4 | 8 | 4.6 | 11 |
| 2011-07-21 | 2.2 | 6 | 2.72 | 7 | 2.4 | 7 | 4.5 | 11 |
| 2011-07-22 | Not in operation | | 1.36 | 3 | 1.4 | 3 | 4.5 | 11 |
| 2011-07-23 | Not in operation | | 0.79 | 4 | 0.8 | 4 | 4.4 | 10 |
| 2011-07-24 | Not in operation | | 0.35 | 4 | 0.4 | 4 | 4.3 | 11 |
| 2011-07-25 | Not in operation | | 0.32 | 9 | 0.3 | 9 | 4.3 | 11 |
| 2011-07-26 | Not in operation | | 1.62 | 4 | 1.6 | 4 | 4.3 | 11 |
| 2011-07-27 | Not in operation | | 0.38 | 2 | 0.4 | 2 | 4.2 | 10 |
| 2011-07-28 | Not in operation | | Not in operation | | | | | |
| 2011-07-29 | Not in operation | | Not in operation | | | | | |
| 2011-07-30 | 1.8 | 3 | Not in operation | | 1.8 | 3 | 4.0 | 10 |
| 2011-07-31 | 1.8 | 80 | Not in operation | | 1.8 | 80 | 3.8 | 12 |

### 2.3.2 Bay Goose Impoundment Area

Dewatering of the Bay Goose impoundment area began on July 26, 2011. One pump was in operation for the last week of July.

The pH and Aluminum concentrations at the pump intakes were as follows:

- pH 24 hour minimum/maximum: 6.72/7.31 units (Limit is 6-9 units)
- Al 24 hour maximum concentration: 0.256 mg/L (Limit is 1.5 mg/L)

Table 2.5 summarizes the dewatering monitoring results for pH and Aluminum for the month.

**Table 2-5: Bay Goose Impoundment Area Dewatering Monitoring – pH and Al**

| Date | BG-PUMP-1 | | BG-PUMP-2 | | Both PUMPS | |
|---|---|---|---|---|---|---|
| | pH | Total Al | pH | Total Al | pH 24-hour Mean | Al 24-hour Mean |
| | units | mg/L | units | mg/L | units | mg/L |
| 2011-07-26 | 6.94 | | Not in operation | | 6.94 | |
| 2011-07-27 | 6.95 | | Not in operation | | 6.95 | |
| 2011-07-28 | 6.72 | 0.256 | Not in operation | | 6.72 | 0.256 |
| 2011-07-30 | 6.81 | | Not in operation | | 6.81 | |
| 2011-07-31 | 7.31 | | Not in operation | | 7.31 | |

The turbidity and TSS concentrations at the pump intakes were as follows:

- NTU 24 hour mean maximum concentration: 6.1 NTU (Maximum Limit is 30 NTU)
- TSS 24 hour mean maximum concentration: 4 mg/L (Maximum Limit is 22.5 mg/L)

30-day means for TSS and turbidity will be calculated once the pumps have been in operation for 30 days.

Table 2.6 summarizes the dewatering monitoring results for turbidity and TSS for the month.

**Table 2-6: Bay Goose Impoundment Area Dewatering Monitoring – TSS and Turbidity**

| Date | BG-PUMP-1 | | BG-PUMP-2 | | Both PUMPS | | | |
|---|---|---|---|---|---|---|---|---|
| | 24-hour Mean | Lab TSS | 24-hour Mean | Lab TSS | NTU 24-hour Mean | TSS 24-hour Mean | NTU 30-day Mean | TSS 30-day Mean |
| | NTU | mg/L | NTU | mg/L | NTU | mg/L | NTU | mg/L |
| 2010-07-26 | 6.6 | 4 | Not in operation | | | 4 | | |
| 2010-07-27 | 8.8 | 2 | Not in operation | | | 2 | | |
| 2010-07-28 | 4.9 | 1 | Not in operation | | | 1 | | |
| 2010-07-30 | 6.1 | 2 | Not in operation | | 6.1 | 2 | | |
| 2010-07-31 | 4.1 | 2 | Not in operation | | 4.1 | 2 | | |

## SECTION 3 • SPILL MANAGEMENT SUMMARY

AEM has developed a system of tracking spills on-site. Table 3.1 summarizes the AEM internal spill reports for the month. Eleven spills occurred on site and two were reported to the GN spill hotline.

**Table 3-1: Summary of AEM Internal Spill Reports**

| Date of Spill | Hazardous Material | Quantity | Location | Cause of spill | Clean-up action taken | Reported to Spill Hot Line |
|---|---|---|---|---|---|---|
| 2011-07-01 | Hydraulic oil | ~ 20 L (numerous spots) | Along AWPAR from Meadowbank to Emulsion | Tractor trailer went off the road and tipped | Contaminated soil taken to Hazmat area | N |
| 2011-07-03 | Fuel | 80 L | Wash Bay | Rock pierced the fuel line | Contaminated soil taken to Hazmat area | N |
| 2011-07-04 | Anti-Freeze | 3 L | Truck Shop | Broken hose | Contaminated soil taken to Hazmat area | N |
| 2011-07-05 | Glycol | 30 L | Old genset | Gasket not tight enough | Contaminated soil taken to Hazmat area | N |
| 2011-07-06 | Hydraulic oil | ~ 8 L | Drill bit shop | The intercooler of the skytrack cracked | Contaminated soil taken to Hazmat area | N |
| 2011-07-18 | Fuel | 280 L | Road in front of the TCG-Sana pad | Fire in the injection unit | Contaminated water was stored in totes for treatment; contaminated soil taken to Quarry 22 | Y |
| 2011-07-19 | Hydraulic oil | 35 L | Dewatering pump on Second portage arm | Broken hydraulic hose | Contaminated soil taken to Hazmat area | N |
| 2011-07-21 | Fuel | 500 L | Baker Lake refueling station | Over-filling | Contaminated soil taken to Quarry 22 | Y |
| 2011-07-22 | Fuel | 5 L | AWPAR km 80 | Tractor trailer went on the side and tipped | Contaminated soil taken to Hazmat area | N |
| 2011-07-24 | Hydraulic oil | 80 L | South portage pit | Broken hydraulic hose | Contaminated soil taken to Hazmat area | N |
| 2011-07-26 | Hydraulic oil | 90 L | South portage pit | Broken hydraulic hose | Contaminated soil taken to Hazmat area | N |