



## INDUSTRIAL WATER LICENCE INSPECTION REPORT

<b>Date:</b> April 15-16, 2014	<b>Licensee Rep. (Name/Title):</b> Tyler Myers, Environmental Superintendent
<b>Licensee:</b> Baffinland Iron Mines Corporation	<b>Licence No.:</b> 2AM-MRY1325

A compliance inspection was conducted on April 15-16, 2014 by Justin Hack, a Water Resource Officer of Aboriginal Affairs and Northern Development Canada (AANDC) for the Baffinland Iron Mines Corporation (BIMC) Mary River and Milne Inlet iron ore project, Water Licence No: 2AM:MRY1325.

### WATER SUPPLY

<b>Source(s):</b> Lake KM32 (Milne Camp), Camp Lake (Mary River Camp)	<b>Quantity used:</b> N/I
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Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

<b>Intake Facilities:</b> U	<b>Storage Structure:</b> NI	<b>Treatment Systems:</b> NI	<b>Chemical Storage:</b> NI
<b>Flow Meas. Device:</b> NI	<b>Conveyance Lines:</b> NI	<b>Pumping Stations:</b> NI	<b>Screen :</b> NI

#### Comments:

- Currently, potable water is sourced from two lakes for use at the Baffinland project. At the Mary River site, water is pumped from Camp Lake and piped directly to the Mary River camp; whereas, at the Milne Inlet site, water is pumped directly from Km 32 Lake for use at Milne Inlet using a Water Truck. The truck backs onto the ice and withdraws water on an as needed basis.
- At the Km 32 Lake facility, two pieces of equipment, a Terex Light Plant and a seacan were located next to the shoreline for use during the winter to provide light and the storage of equipment (see **Figure 1**). This equipment is within 31m of the high water mark and must be moved back as required in Part D-10 of the Licence.

### WASTE DISPOSAL

**SEWAGE:** Sewage Treatment System: Membrane Biological Reactor Waste Water Treatment Plant

- |                                                                          |                                             |
|--------------------------------------------------------------------------|---------------------------------------------|
| <input type="checkbox"/> Natural Water Body                              | <input type="checkbox"/> Wetlands Treatment |
| <input checked="" type="checkbox"/> Continuous Discharge (land or water) | <input type="checkbox"/> Seasonal Discharge |
| <input checked="" type="checkbox"/> Incineration                         | <input type="checkbox"/> Pit-privy/outhouse |

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

<b>Dams, Dykes:</b> NI	<b>Dyke Inspection:</b> NI	<b>Seepages:</b> NI
<b>Freeboard:</b> NI	<b>Erosion:</b> NI	<b>Decant Structure:</b> NI
<b>Discharge Quality:</b> NI	<b>Discharge Meas. Device:</b> NI	<b>Effluent Discharge Rate:</b> NI
<b>Spills:</b> NI	<b>O&amp;M Plan:</b> NI	

Comments: Sewage Discharge and the sewage disposal facilities were not inspected.

#### SOLID WASTE:

- |                                               |                                                |
|-----------------------------------------------|------------------------------------------------|
| <input checked="" type="checkbox"/> Landfill  | <input type="checkbox"/> Burn & Landfill       |
| <input checked="" type="checkbox"/> Open Burn | <input checked="" type="checkbox"/> Incinerate |
| <input checked="" type="checkbox"/> Backhaul  | <input type="checkbox"/> Other: _____          |

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

<b>Waste Management Area:</b> U	<b>Waste Segregation Practices:</b> U	<b>Incinerator Efficiency:</b> NI
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Signage: A	Records: NI	
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Comments:

Incinerator:

- Two incinerators were in operation, one at the Mary River site and one at the Milne Inlet Site.
  - At the Mary River site, waste is segregated in empty barrel drums with labelling in English and Inuktitut. In the near future, an indoor waste management facility will be built as outlined in the 2014 Work Plan.
  - At Milne Inlet, the indoor waste management facility has already been constructed; it was not inspected during this inspection.
- At the time of inspection, there were a number of open drums of ash not stored in a proper facility. These ash drums were located around the project. As per the *Waste Management Plan for Construction, Operation and Closure, 2012*, ash is to be stored in closed drums at the inert landfill (if found to be non-hazardous). If the ash is hazardous, it must be stored at an approved hazardous material storage facility. All ash is to be properly stored on site by July 1, 2014.

Landfill:

- The landfill facility, located at the Mary River site, is used for the disposal of inert, non combustible waste only (plastics, cement, sand, used construction materials, scrap metal, pipes, glass, etc).
- At the time of inspection, waste was recently capped with a layer of cover meant to reduce the risk of wind-blown debris and as outlined in the Waste Management Plan.
- Non-hazardous waste, including ashes from the incineration process and other unburned residue, is also approved to be deposited at the site. At the time of inspection, a number of ash barrels were waiting to be capped with appropriate cover material.
- Fencing around the facility was in disrepair. Mr. Myers explained that the fencing breaks annually due to the harsh winter and will need to be replaced with proper snow fencing that is less sensitive to winters (see **Figure 2**). Since this important windblown debris control measure is not functioning, Baffinland should monitor any windblown debris leaving the site, collect it and return it to the landfill.
- Contaminated snow containing hazardous waste was observed at the landfill. The landfill is not an appropriate location for hazardous waste and needs to be placed at an appropriate facility.

Open Burn Facility:

- The open burning facility, located at the Mary River site, consists of a vented sea can, where clean wood and cardboard are the only approved materials to be burned according to the Waste Management Plan.
- The open burn facility contained elements not authorized under the Waste Management Plan including the remnants of an air filter, likely from a piece of heavy equipment, and a significant amount of metal strapping (see **Figure 3**).
- Outside the facility, there was a significant amount of ash on the tundra (see **Figure 4**). It is not clear how so much ash accumulated here, but material should not be burned on windy days to avoid ash from accumulating on the tundra. As per the *Open Burning of Untreated Wood, Cardboard and Paper Products Procedure, 2014*, all ash is to be disposed of at an approved facility. The Licensee must clean up the spilled ash and secure it at an approved facility.
- Domestic waste was identified outside the facility and is not approved to be burned. Baffinland should ensure the facility is secured to only authorized personnel.
- It appeared that during the previous burn, there was a significant amount of snow within the facility. As outlined in their Open Burning Procedure, Baffinland is to ensure a hot burn in order to create an efficient burn. Snow within the facility must be monitored and managed before a burn.

FUEL and HAZARDOUS MATERIALS MANAGEMENT

HAZARDOUS MATERIALS:

- ☒ Fuel
- ☒ Drill additives/Salts
- ☐ Other: \_\_\_\_\_
- ☒ Lubricants
- ☒ Hazardous Waste
- ☐



Indicate: **A** - Acceptable    **U** - Unacceptable    **NA** - Not Applicable    **NI** - Not Inspected

<b>Berms &amp; Liners: NI</b>	<b>Water within Berms: U</b>	<b>Evidence of Leaks: U</b>
<b>Drainage Pipes: NI</b>	<b>Pipeline Condition: NI</b>	<b>Condition of Tanks: A</b>
<b>Pump Station: A</b>	<b>Spills: U</b>	<b>Contingency Plan: A</b>

**Comments:**

*Hazardous Materials Management:*

- Hazardous waste berm (Mary River) N71° 19' 33".42, W79° 22' 15".41.
  - It was noted that hazardous materials were situated outside the bermed area.
  - As per the *Materials and Hazardous Waste Management Plan, 2013*, all hazardous waste are to be in lined and bermed facilities.
- Hazardous waste berm (Milne Inlet) N71° 19' 53".01, W80° 53' 48".81.
  - It was noted that some hazardous materials were situated outside the bermed area and a spill was noted coming from one of the Megabags located outside the berm (see **Photo 5**).
  - As per the *Materials and Hazardous Waste Management Plan, 2013*, all hazardous waste are to be in lined and bermed facilities.
- Fuel Storage and Transfer Area
  - The fuel storage and transfer areas were inspected at the Mary River and Milne Inlet project areas.
  - Spill kits, personal protective equipment, and drip trays were noted at both sites as measures to prevent and minimize petroleum products from spilling into the environment.
- Spills
  - Overall, significant improvements could be made to the mitigation of small spills on site. Numerous small spills on land were noted during the inspection due to leaking equipment on site, specifically:
    - 930K Cat – Tag#: LDR013. N71° 18' 51.562", W79° 17' 10.529"
    - 950H Cat – Tag#: LDR017. N71° 52' 42.671", W80° 54' 3.925"
    - Western Star W6900XD – Tag#: OHT003. N71° 52' 42.371", W80° 54' 2.808"

*On-Ice Operations*

- The proponent has been given authorization to use David Lake as a temporary airstrip while modifications to the Mary River airstip are completed.
- The section of the airstrip where the aircraft are refueled was inspected thoroughly and only a small amount of drips from refueling were noted. Other than that, considering the heavy amounts of refueling that occur on the lake, this section of David Lake was in good condition.
- Unfortunately, at the time of inspection the Lake was being used as a lay-down area for heavy machinery (see **Figure 6**), temporary office structures, and frost fighters. After inspecting these areas, not only was numerous machines stored on ice, there was evidence of hydrocarbon leaking. Specific equipment that showed evidence of leaking on ice were noted, including:
  - Workstar Snowplow – Tag#: HTP016. N71° 21' 56.861", W79° 36' 39.838".
  - 950H Cat – Tag#: LDR018. N71° 21' 56.152", W79° 36' 27.911".
  - 247B3 Cat – Tag#: SKD001. N71° 21' 56.152", W79° 36' 27.911".
- As per Part D Item 21, the Licensee shall not store materials on the surface of frozen lakes, including immediate banks, except what is for immediate use.
- As such, the inspector requests that all equipment be removed from the ice immediately, except for that which is required for immediate use. All areas that were affected by hydrocarbons be scraped up and disposed of in a proper waste management facility. Photo evidence is to be submitted by June 1, 2014.

**General Comments:**

- At the time of Inspection, the Proponent was in the construction phase of development and is undertaking some major activities at the site.
- This includes finalizing the construction of buildings, airport runways, and the widening of the Tote Road; and includes related activities like quarrying, bridge building, and rock crushing.
- The inspector understands that all personnel on the site are very busy during this construction phase; however, compliance with the Water Licence must remain a priority.



**Non-Compliance of Act or Licence:**

- Failure to comply with Part D Item 21, the Licensee shall not store materials on the surface of frozen lakes including the immediate banks except what is for immediate use. Specifically:
  - Storage of equipment and materials on the bank of Km 32 Lake.
  - Storage of heavy machinery and frost fighters of David Lake.
- Failure to comply with Part F Item 8, whereas the Licensee shall direct ash to an appropriate facility for disposal. Specifically, ash located at:
  - Lay-Down 07. N71°19'39.515", W79°21'50.117"
  - N 71°53'01.223", W80°53'47.825"
- Failure to comply Part B Item 16, whereas every plan to be carried out pursuant to the terms and conditions of this Licence shall become part of the Licence, and any additional terms and conditions imposed upon approval of a Plan by the Board becomes part of the Licence. Specifically, there was issues implementing the following sections:
  - *Open Burning of Untreated Wood, Cardboard and Paper Products Procedure, 2014*
    - Section 5.2.9, Disposal of Open Burn Ash
    - Section 5.2.2, Acceptable Clean Wood Waste
    - Section 5.2.6, Burning Guidelines
  - *Waste Management Plan for Construction, Operation and Closure, 2013*
    - Section 4.5.3, Ash Disposal
    - Section 4.6 Inert Landfill
  - *Hazardous Materials and Hazardous Waste Management Plan, 2013*
    - Section 5.4.1 Hazardous Waste Containers
    - Section 5.4.2 Hazardous Waste Storage Areas

**Action Required:**

- Move the Terex Light Plant and the seacan to within an approved distance of the high water mark at Km 32 Lake by June 1, 2014.
- All equipment shall be removed from the ice immediately to within an approved distance of the high water mark, except for that which is required for immediate use. All areas that were affected by hydrocarbons be scraped up and disposed of in a proper waste management facility. Photo evidence is to be submitted by June 1, 2014.
- Remove inappropriately dumped materials from the Landfill before by June 1, 2014.
- Due to the number of issues related to hazardous waste and materials management on site, the inspector requests Baffinland to review their spill management practices and demonstrate that measures are being taken to reduce the amount of spills on site.
- Replace the snow fencing with new fencing that is less sensitive to winters by June 15, 2014. Baffinland shall monitor any windblown debris leaving the landfill facility and return any debris that blew away back to the facility.
- Properly secure all ash on site by July 1, 2014.
- The inspector requests that the Licensee re-evaluate the effectiveness of Quality Assurance and Quality Control plan for the Open Burning Facility, and provide this to the inspector by July 1, 2014.

JUSTIN HACK

Inspector's Name

[Signature]

Inspector's Signature

MAY 15, 2014

Date

**CC:**

Jim Millard, Environmental Manager, BIMC

Erik Allain, Manager of Field Operations, AANDC

Phyllis Beaulieu, Manager of Licensing, Nunavut Water Board





**Photo Appendix**



**Figure 1: Terex Light Plant and seacan located on shoreline.**



**Figure 2: Blown down snow fencing and ash barrels at the inert materials landfill.**





**Figure 3: Inside view of Open Burn Facility. Note the unapproved waste located in the facility (snow, metal strapping, and air filter).**



**Figure 4: Outside view of Open Burn Facility. Note the ash on the tundra and unapproved waste.**





**Figure 5: Improperly stored hazardous waste located outside an approved hazardous waste storage facility.**



**Figure 6: Storage of equipment on David Lake.**