



November 16, 2021

Assol Kubeisinova
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RE: Submission of 2021 Geotechnical Inspection Report No. 2 (September 2021)

Under Part D, Item 18 of Baffinland Iron Mines Corporation's (Baffinland) Type "A" Water Licence 2AM-MRY1325 Amendment No. 1 (Water Licence), Baffinland is required to conduct biannual geotechnical inspections of specified Mary River Project (the 'Project') infrastructure. Part D, Item 18, of the Water Licence states that:

"The Licensee shall conduct inspections of the earthworks and geological and hydrological regimes of the Project biannually during the summer or as otherwise approved by the Board [Nunavut Water Board] in writing. The inspection shall be conducted by a Geotechnical Engineer and the inspection report shall be submitted to the Board within sixty (60) days of the inspection, including a cover letter from the Licensee outlining an implementation plan to respond to the Engineer's recommendations."

The second geotechnical inspection for 2021 was conducted by Laszlo Bodi, M.Sc., P.Eng., Principal Civil/Geotechnical Engineer with Wood Environment and Infrastructure Solutions. The focus of the inspection was on the Water Licence related infrastructure located at the Mary River Mine Site and Milne Port, as well as select water crossings along the Milne Inlet Tote Road. The second geotechnical inspection for 2021 was conducted between September 14 and 17, 2021.

During the inspection, the following structures and facilities were inspected:

Mary River Mine Site

- a) Berms of Polishing/Wastewater Stabilization Ponds (3)
- b) Berms of hazardous waste disposal cells - (HWB-1 to HWB-7)
- c) MS-06, MS-07 and MS-08 surface water collection/settling ponds and adjacent ditches
- d) Berms of the generator fuel bladder cell (located adjacent to the generators)
- e) Fuel storage farms (3) – Aerodrome jet-fuel storage, MS-03 and MS-03B diesel fuel farms
- f) Solid-waste disposal site (non-hazardous landfill facility)
- g) Camp Lake silt sedimentation check dams and berms
- h) Rock fill slope (riprap) at the water (effluent) discharge area
- i) Deposit 1 pit walls
- j) QMR2 and D1Q1 rock quarries, and KM106 ore storage area

Milne Inlet Port Site

- a) Berms of hazardous waste disposal cells - (HWB-1 through to HWB-4)
- b) Berms of the MP-01A Polishing Waste Stabilization Pond (PWSP)
- c) MP-03 fuel tank farm
- d) Berms of the MP-04 landfarm and MP-04A contaminated snow disposal pond
- e) Berms of the Pond #3, MP-05, and MP-06/MP-06A settling ponds and drainage ditches
- f) Q01 rock quarry and north quarry ditch system
- g) Surface water collection ditches (P-SWD-3, -5, -6, -7, W3/W14, 380M pad and PSC ditches)
- h) Tote Road culverts (conveying surface water from the Q01 rock quarry area)

Milne Inlet Tote Road

- a) Bridges (4)
- b) Culverts (7)

The attached report (Attachment 1) presents the findings and recommendations of the September 2021 inspection for the aforementioned structures. The following subsections of this letter summarize Baffinland's plan for implementing the recommendations identified in the report.

Recommendations for the Mary River Mine Site Infrastructure

Hazardous Waste Berm – HWB-3

There is some wooden debris left in cell 3, which should be removed during regular maintenance.

Baffinland Action: Baffinland has removed the wooden debris from HWB-3 during routine maintenance activities.

Hazardous Waste Berm – HWB-6

Some containers and wooden debris have been placed on the slopes and crest of the perimeter berm instead of inside the cell. Those items should be removed from the berm and stored inside the cell. This process should be followed by regrading the damaged slopes and crest by hand to prevent damage to the liner.

Baffinland Action: Baffinland has removed the items from the slopes and crest of the perimeter berm, and will regrade the slopes and crest of the berm by hand (Completion prior to Freshet 2022).

MS-06 – Surface Water Management Pond Adjacent to Crusher Pad

The inlet-end of a culvert under the Tote Road that connects one (1) of the side ditches with the north corner of the settling pond is clogged with granular soil which must be removed to restore proper flow through the side-ditch.

Baffinland Action: Baffinland will remove the granular soil material from the identified culvert to restore the proper flow pattern (Completion prior to Freshet 2022).

The temporary containment sump that was excavated to contain seepage water for diversion back to the settling pond could endanger the stability of the existing berm, and therefore must be backfilled with native soil prior to freshet.

Baffinland Action: Baffinland will backfill the containment sump to maintain the structural integrity of the pond berm (Completion prior to Freshet 2022).

Historic Generator Fuel Bladder Berm

As previously recommended in the June 2021 report, to prevent further deterioration of the pond's berm, the drainage of melting snow in the area must be rectified permanently. The surface water should be redirected away from the berms by excavating properly designed and constructed drainage ditches in the area, preferably around the adjacent snow stockpile.

Baffinland Action: Drainage ditches will be constructed in the area to prevent further deterioration of the pond's berm (Completion prior to Freshet 2022).

Water (Effluent) Discharge Area

Some of the rock fill has been "washed down" from the crest to the toe of the slope in a small area. It is recommended that area be filled with additional rock fill to prevent the erosion of the underlying finer material down the slope.

Baffinland Action: Baffinland will place additional rock fill on the slope in this area to maintain slope stability (Completion prior to Freshet 2022).

QMR2 Rock Quarry

Ponding water continues to cover a section of the main level of the quarry, with potential to cause slope stability and traffic safety issues in the area.

Baffinland Action: Baffinland commits to continuing to improve surface water drainage in the quarry including implementation of water management strategies as needed and installation of erosion control protection measures at strategic locations. Surface water was diverted throughout the 2021 open water season and will continue to be a focus after rain events. (Completion prior to Freshet 2022).

KM 106 Ore Facility

The "diversion" berm is constructed from granular fill that may not function well in diverting all surface runoff to the adjacent MS-07 pond. Consideration shall be given to add a fine-grained core into the granular berms at the critical locations where seepage through the berms was noted. To eliminate the need for pumping the collected water into the nearby MS-07 pond, consideration shall be given to provide a seal on the upstream side of the berm along the critical sections, by placing either a clay core or a synthetic liner to prevent seepage through the berm.

Baffinland Action: Baffinland has retained third party consulting firm to investigate the km106 diversion berm to determine appropriate corrective actions to ensure the berm functions as per design criteria (Completion prior to Freshet 2022). Temporary diversion swales and a sump were installed to capture contact water and convey it to the Km 106 surface water management pond and will continue to be used until another solution is implemented.

Recommendations for Milne Port Infrastructure

Hazardous Waste Berm – HWB-1

Large tire-tracks were visible on one of the berms, indicating that trucks were apparently driving over the berm, which should be avoided. It is recommended that the affected crest and slopes of that berm be regraded without damaging the underlying liner (re-grading the surface by hand is preferred).

Baffinland Action: Baffinland will regrade the crest and slopes of the affected area of berm by hand (Completion Q2 2022). Baffinland continues to educate personnel to access the interior of the berm via the access ramp.

MP-01A Polishing Waste Stabilization Pond (PWSP)

Some sewage sludge accumulation was visible in one (1) corner of the pond, which should be removed from the cell. This should be completed carefully, so as not to damage the liner.

Baffinland Action: Baffinland will assess the solids build up within PWSP MP-01A and if necessary will develop an implementation plan to remove the solids from the corner of the pond using a method that does not damage the liner (Completion Q3 2022).

MP-05 Settling Pond

Minor liner damage was noted near the crest of the southern inlet channel to the pond. Consideration should be given to place protective berms adjacent to the slope's crest near the channel to prevent such damages.

Baffinland Action: Baffinland is reviewing snow clearing practices for protection of this area and other suitable controls to prevent recurring minor liner damage (Completion prior to Freshet 2022). Baffinland will repair the liner damage that is above the water line (Completion Q3 2022).

Surface Water Drainage Ditch - P-SWD-3

Sloughing of the sides of the P-SWD-3 ditch, adjacent to the LP2 laydown area, has occurred at several locations along the ditch. It is suggested that the existing condition of the P-SWD-3 drainage ditch and adjacent topography be re-evaluated in detail, and that the ditch be redesigned and reconstructed to drain the large amount of surface water to the correct direction. Some debris in the northern part of the ditch should also be removed.

Baffinland Action: Baffinland commits to further assessing the sloughing and existing drainage of the PSWD-3 drainage ditch and adjacent topography to ensure remedial actions address this issue. All water is currently actively pumped downstream of this area to proper receiving location. (Completion prior to Freshet 2022). The debris has been removed from the ditch.

Baffinland Action: Baffinland has started remedial actions and will continue to monitor the existing drainage of the P-SWD-3 drainage ditch and adjacent topography, to ensure remedial actions address this issue (Completion prior to Freshet 2022). All water is currently actively pumped downstream of this area to the proper receiving location. The debris has been removed from the ditch.

Surface Water Drainage Ditch - P-SWD-5

A short section of the P-SWD-5 ditch was noted with missing riprap. Rock fill riprap should be placed at this section to prevent unwanted erosion of the soil present at the base and slopes of the ditch.

Baffinland Action: Baffinland will repair the slopes at the identified section of the P-SWD-5 ditch (Completion prior to Freshet 2022).

Surface Water Drainage Ditch – PSC

The PSC drainage ditch is still under construction, however, minor localized slope movements at the west end of the ditch should be repaired, regraded and the riprap rock fill cover reinstated.

Baffinland Action: Baffinland will repair and regrade the identified area in the ditch and reinstate the riprap rock cover prior to completion of the construction of the PSC drainage ditch.

Tote Road between Mary River and Milne Inlet - Bridges and Culverts

KM 32 Lake Access Road Check Dams

One of the berms installed upstream of the culvert's inlet has started to wash away and should be reinstated. Silt should be removed from the clogged culvert, and periodically from the upstream ditch, to restore and maintain proper drainage.

Baffinland Action: Baffinland will reinstate the impacted berm at the culvert inlet and remove built up silt from the ditch and culvert prior to freshet 2022 (Completion Q2 2022).

Culvert - CV-098

Additional rock fill should be placed upstream of the culverts' inlet to minimize siltation within the culvert.

Baffinland Action: Baffinland will place addition rock fill upstream of the culvert's inlet in accordance with the approved Civil Design Criteria (Completion Q2 2022).

Culvert - CV-093

The end of one of the culverts is partially blocked by rock fill that should be removed from the front of the pipe and spread around the outlet.

Baffinland Action: Baffinland will clear the rock fill from the blocked culvert to ensure proper flow through the culvert (Completion prior to Freshet 2022).

Culvert - CV-030 A&B

One (1) of the culverts is blocked with silt. It is suggested that the blocked pipe be replaced, and both ends of the pipes be protected from siltation by placing riprap around them.

Baffinland Action: Baffinland commits to assessing the blocked culvert to determine if replacement is required and placing riprap at both ends of the culvert to prevent further siltation for occurring (Completion prior to Freshet 2022).

Culvert – BG-03A

The inlet-end of this culvert appears to be short, and no rock fill riprap is protecting the vicinity of the inlet from erosion/siltation. The diameter of the culvert may potentially be too small for this location, which could result in flooding of the area upstream of the inlet during spring freshet. It is suggested that the efficiency of the culvert be monitored in the spring/early summer of 2022.

Baffinland Action: Baffinland will monitor the efficiency of the culvert during freshet 2022 (Completion Q3 2022).

We trust that this submission meets the requirements for geotechnical inspections as outlined in the Water Licence. Should you have any questions, please do not hesitate to contact the undersigned.

Regards,

A handwritten signature in black ink, appearing to read "K. Button".

Kendra Button
Environmental Superintendent

Attachments:

Attachment 1: 2021 Geotechnical Inspection Report No. 2

Cc: Karén Kharatyan (NWB)
Chris Spencer, Hugh Karpik (QIA)
Andrew Keim, Jonathan Mesher, Justin Hack (CIRNAC)
Tim Sewell, Megan Lorde-Hoyle, Lou Kamermans, Sylvain Proulx, Francois Gaudreau, Martin Beausejour, Connor Devereaux, Allison Parker (Baffinland)



Attachment 1

2021 Geotechnical Inspection Report No. 2