November 04, 2022

Assol Kubeisinova
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RE: Submission of 2022 Geotechnical Inspection Report No. 2 (September 2022)

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 2022 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. The second geotechnical inspection for 2022 was conducted between August 31st and September 7th, 2022.

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, MS-08 and MS-11 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 run-of-mine ore storage area

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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) Berms of the MP-03 fuel tank farm
d) Berms of the MP-04 landfarm and MP-04A contaminated snow disposal pond
e) Berms of 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)
i) Rock fill slope (riprap) at the water (effluent) discharge area
j) LP-5 Storage Pad

Milne Inlet Tote Road

a) Bridges (4)
b) Representative Former Borrow Areas Along the Tote Road (4)
c) Section of the Haul Road Between the Crusher Pad and the Deposit 1 Open Pit

The attached report (Attachment 1) presents the findings and recommendations of the September 2022 inspection for the aforementioned structures. The following subsections of this letter summarize completed actions from the first 2022 geotechnical inspection, and Baffinland's plan for implementing the recommendations identified in the second 2022 geotechnical inspection report.

Completed Actions from the First 2022 Geotechnical Inspection

Mary River Hazardous Waste Berms (HWB 2)
Baffinland completed the clean-up of the wood pallets and debris in HWB 2.
Mary River Hazardous Waste Berm (HWB 6)
Baffinland completed the levelling and grading in HWB 6.
Mary River Hazardous Waste Berm (HWB 7)
Baffinland completed treatment and discharge of water to maintain adequate freeboard in HWB 7.
Mary River Historic Generator Fuel Bladder Berm
Baffinland completed the road and berm remedial improvements to restore the water management in the Generator Fuel Bladder Berm area.
Milne Port Hazardous Waste Berms (HWB 3 and 4)
Baffinland completed the regrading at the entrance of HWB-3/HWB-4.
Milne Port MP-05 Surface Water Management Pond
Baffinland completed the liner repairs at MP-05.
W3/W14 Surface Water Collection Ditch and Culvert
Baffinland completed the construction of the W3/W14 ditch, including covering the base and side-slopes with crushed rock fill.

Recommendations for the Mary River Mine Site Infrastructure from the Second 2022 Geotechnical Inspection

MS-06 - Surface Water Management Pond Adjacent to the Crusher Facility (CF)

The temporary containment sump adjacent to the toe of the south berm of the MS-06 pond should be backfilled with native soil, as soon as possible.

Baffinland Action: This has been completed.

The inlet of the culvert under the crusher pad entrance was partly clogged with soil. The soil must be removed to restore proper drainage through the culvert. Extension of the culvert is also suggested to prevent future clogging of this corrugated drainage pipe.

Baffinland Action: The soil was removed from the inlet of the culvert, and drainage has been restored. Baffinland will monitor the culvert during the 2023 open water season to determine if an extension of the culvert is required.

MS-07 - Surface Water Management Pond Adjacent to the KM106 ROM Facility

It is recommended to cover the base and slopes of the temporary containment sump adjacent to the Facility Diversion Berm with riprap.

Baffinland Action: The sump will be covered with rip rap when the site is accessible in Q2 2023.

MS-08 – Surface Water Management Pond Adjacent to the Waste Rock Facility (WRF)

A section of the rock fill berm and liner at the south west berm of the WTP Geotube pond is damaged. The damaged berm section and liner should be repaired as soon as practically possible.

Baffinland Action: Baffinland will repair the damaged berm section and liner when the contractors are on site during summer 2023. A field investigation determined that there is minimal risk to the Geotube pond capacity due to the location of the damage on the top of the crest (Completion Q3 2023).

One section along the west perimeter collection ditch of the WRF is blocked by waste rock. It is suggested to excavate a new section of the ditch to facilitate easier flow of surface water to the pond. Removal of waste rock from the existing ditch would result in more boulders rolling down from the adjacent steep waste rock slope into the ditch, hence, the excavation of a new ditch section would be preferred.

Baffinland Action: Baffinland will restore flow in the west perimeter collection ditch prior to freshet 2023.

MS-11 – Surface Water Management Pond and Dam at KM105

Some frost related damages were observed during the first inspection in 2022 along the road next to the southern zone of the MS-11 pond’s slope. During the second inspection, some crushed stone was observed placed in some of the cracks however was not complete at the time. The cracks must be completely regraded/filled and compacted as soon as practically possible to prevent water collection in those cracks in the future.

Baffinland Action: Baffinland will review the potential frost related damages to the south embankment with the design engineer during 2023 repair work to correct the above observation, and implement corrective actions as per the design engineer's recommendations.

Mary River Landfarm

The slopes of the berms (upstream and downstream) appear to be steeper than the design. Also, the loose granular material anchoring the liner on the top of the berms has settled significantly, resulting in a long depression along the top of the berms. The water in the sump has resulted in slumping of the granular cover layer on top of the liner, which resulted in slumping of the granular cover layer on the slope of the berms. It is recommended that the deficiencies be repaired/rectified in both cells. The problems should also be considered (lessons learned) in the design and construction of the still planned two additional cells to prevent such problems in the future.

Baffinland Action: Baffinland will complete this prior to the end of Q3 2023.

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. To maintain traffic safety and stable side slopes when the operation in this facility resumes, the ponding water at the quarry's main level should be properly drained from the area down on the side-slope located immediately next to the plateau. It is recommended that consideration be given to the installation of a slope-drain pipe, chute, or flume drain, as an erosion protection measure.

Baffinland Action: Baffinland will review this requirement with the design consultant that is currently assisting with Modification No. 13 Water Management Plans, to include an assessment of the QMR2 drainages. The plan will be in place prior to Freshet 2023, and the plan will be actioned during the summer of 2023.

D1Q1 Quarry

A few boulders were observed close to the edge of the crest of the slope of the D1Q1 quarry, from the overburden left in place on the upper ground surface. The soil cover on the top of the rock slope should be scaled back once the operation will restart in the quarry.

Baffinland Action: Baffinland will complete this prior to freshet 2023.

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<u>Recommendations for Milne Port Infrastructure from the Second 2022 Geotechnical Inspection</u>

MP-04A

The geotextile was noted to be damaged in two areas on the access ramp to MP-04A, although there was no damage to the liner noted. It is recommended that the granular fill be carefully removed from the area and the damaged geotextile be replaced, followed by the placement of additional granular fill cover layer. The placement of somewhat thicker granular fill is recommended on the ramp and over the top of the berm in this area to assist in future prevention of a similar issue.

<u>Baffinland Action:</u> Baffinland will complete this prior to the end of Q3 2023.

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 however the ditch is not able to convey the collected water to the required location. To improve the drainage capability of this ditch, it is recommended that it should be redesigned and reconstructed to drain the large amount of surface water from the snow-dump to the north-east. The design must consider the fact that large amount of snow is stockpiled adjacent to this ditch every winter that generates excessive quantity of run-off water in the spring/summer that must be drained more efficiently toward the north-east. It is also suggested that a perimeter diversion berm be provided around the snow stockpile area and the surface water generated by the melting snow be conveyed to the P-SWD-3 ditch in a separate new drainage ditch.

<u>Baffinland Action</u>: Baffinland will complete the remaining improvement work in this drainage ditch in 2023. A review of the water management design in this area is required, to include consideration of snow stockpile melt, which will occur prior to Freshet 2023. The resulting remedial plan will be implemented when ground conditions permit in Q3 2023. In the interim, all water will continue to be actively pumped downstream of this area to the proper receiving location until permanent remedial work to the drainage ditch is complete.

Surface Water Drainage Ditch - P-SWD-5

A short section of the P-SWD-5 ditch was noted with missing riprap and continuous water seepage from the side-slope was observed resulting in the periodic sloughing/erosion of the side of the ditch along this short section. It is recommended that the finer soil, currently forming the side of the ditch, be removed to a depth of around 1 m and replaced with crushed rock fill. To minimize migration of fine soil particles from the quarry pad to the ditch, the crushed rock fill should be placed over geotextile. There is also a clogged culvert along this ditch, located beneath the road at the entrance to the quarry. The clogged culvert should be cleaned or replaced if necessary; preferably with a larger diameter culvert.

<u>Baffinland Action:</u> Baffinland will review Q1 quarry water management requirements and have a remedial plan prepared by Freshet 2023.

Surface Water Drainage Ditch – PSC

Minor localized slope movements/failure at the west end of the ditch should be repaired, regraded and the riprap rock fill cover reinstated. The sloughing of the slope is apparently caused by frequent water seepage from the granular fill of the LP-2 laydown that likely is a result of the inefficient drainage of surface water from the P-SWD-3 ditch that seeps into the LP-2 laydown and most likely exits at the location in the PSC ditch requiring repairs. Once the drainage conditions in the P-SWD-3 ditch are improved/rectified, the failed slope at the PSC ditch can also be repaired. Consideration should be given to reshape the west section of the ditch and reinstall the culvert to a lower invert level to prevent ponding in this section of the ditch.

Baffinland Action: Baffinland will repair and regrade the identified area in the ditch where localized slope movements/failure have occurred and reinstate the riprap rock cover in Q2 2023. Baffinland will inspect in Q2 2023 and, if required, repair the invert level of the west ditch section culvert, prior to completion of the construction of the PSC drainage ditch.

Milne Port WWTP Effluent Discharge

The sandy valley floor downstream of the WWTP effluent discharge location requires additional crushed rock fill over geotextile to prevent erosion and undermining of the adjacent two embankment slopes.

Baffinland Action: Baffinland will complete this prior to the end of Q3 2023.

LP-5 Laydown

A network of natural cracks and depressions were noted on the surface at the edge of the LP-5 Laydown, and periodic formation and thawing of ice wedges resulted in a network of "stripes" (depressions/ cracks) within the active layer of the laydown. It was suggested to fill the cracks with the same material that was used for the laydown construction (sand and gravel), to minimize ice-wedge development in the future.

Baffinland Action: Baffinland will complete this prior to Freshet 2023.

Tote Road KM17 Bridge

Some elements of the steel bolt-a-bin structure are damaged. The damaged elements should be removed, together with part of the sandy backfill from behind them (from the face of the abutment). The sand should then be replaced with clean crushed rock fill to prevent erosion of the finer soil from the old abutments.

Baffinland Action: Baffinland will remove the old abutment structure when ground conditions permit in summer 2023.

Tote Road Borrow Pits

When the historic borrow pits at KM 6.9 and 7.7 were infilled, the base of the borrow area was leveled/graded, just slightly above the crest elevation of the adjacent road. The poor grade control and lack of drainage ditch can result in unwanted surface water flow onto the road from both sides, wherever the surface of the road is located at somewhat lower elevation. It is recommended that critical road sections with such poor grade and drainage controls be mapped, and the drainage conditions be improved by providing adequate side-ditches along the road, wherever the elevation of the road surface is located somewhat lower than the adjacent ground surface. The drainage ditches should be constructed as specified in the Project's Civil Design Criteria and Drawings.

Baffinland Action: Baffinland will review these locations and action earthworks to ensure proper drainage is maintained following backfill of these borrow pits.

The toe of the slope at the historic borrow pit at KM28.9 to KM29 is located somewhat closer to the edge of the road and the slope appears to be as steep as 1H:1V. The raveling face of the slope and the development of tension cracks indicate further slumping of the slope can be expected in the future. Although there is no immediate risk to the traffic on the road, the sloughing soil from the steep slope is filling up the drainage ditch along the road, preventing surface water from flowing in the ditch. At the subject road section, it is suggested that the slope should be reshaped (cut back) to shallower inclination (preferably to 2H:1V) and the drainage ditch be cleaned of soils, as soon as practically possible.

Baffinland Action: Baffinland will complete this when ground conditions permit in Q3 2023.

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,

Connor Devereaux
Environmental Manager

Attachments:
Attachment 1: 2022 Geotechnical Inspection Report No. 2

Cc: Karén Kharatyan (NWB)
Chris Spencer, Hugh Karpik (QIA)
Lauren Perrin, Omer Pasalic, Jeremy Fraser (CIRNAC)
Tim Sewell, Megan Lorde-Hoyle, Lou Kamermans, Sylvain Proulx, Francois Gaudreau, Martin Beausejour, Todd Swenson, Kendra Button, Allison Parker (Baffinland)

Baffinland

Attachment 1

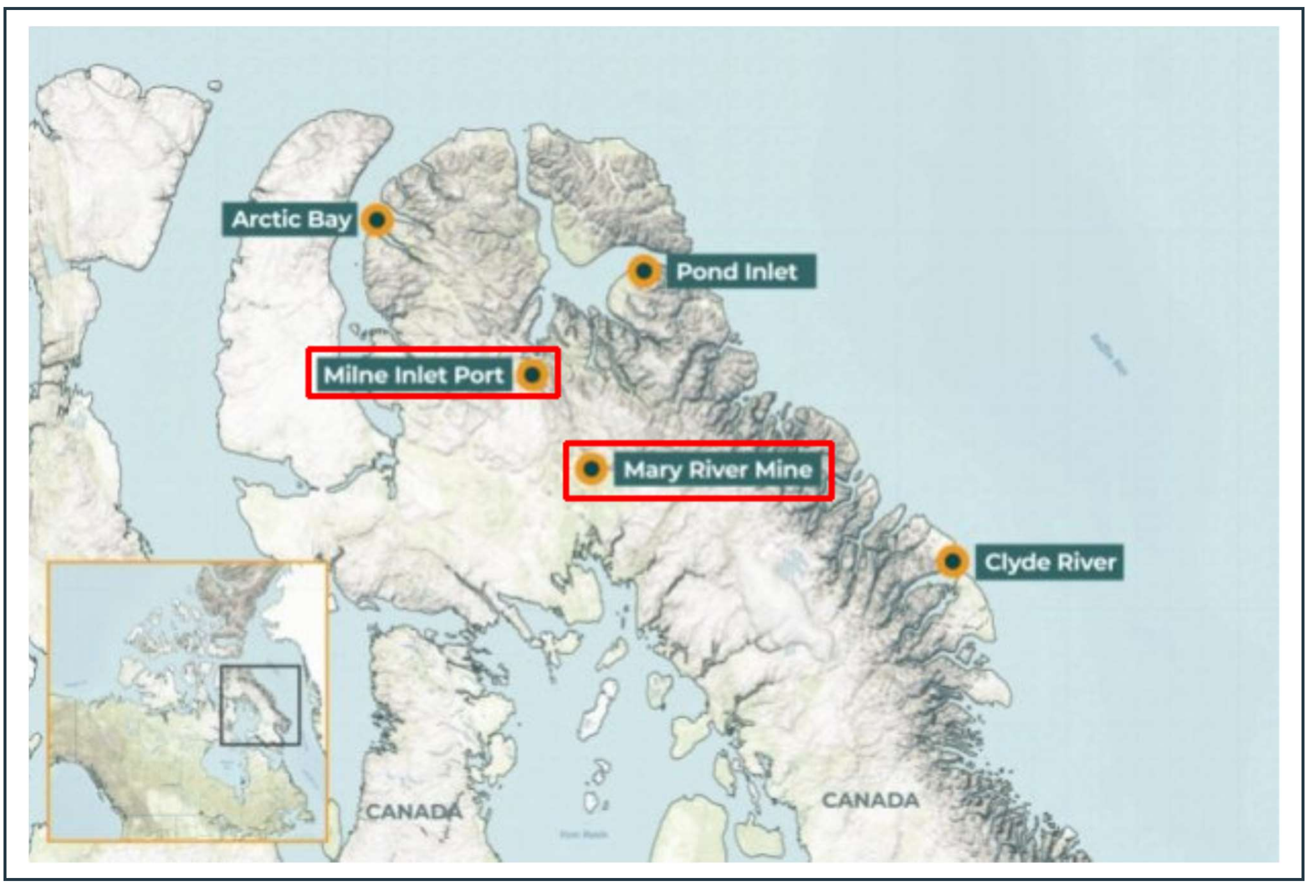
2022 Geotechnical Inspection Report No. 2

Baffinland Iron Mines Corporation

November 1, 2022
Project #: OMGM2212

Annual Geotechnical Inspections – 2022 Report 2.

Mary River Project – Nunavut



Location of the Mary River Mine and Milne Inlet Port on Baffin Island - Source: Baffinland

November 1, 2022
OMGM2212

Mr. Connor Devereaux - Environmental Manager, Mary River Iron Mine, Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, Ontario
L6H 0C3

Re: Annual Site Inspections and Reporting - Mary River Iron Mine Complex, Nunavut

WSP Environment & Infrastructure Ltd., (formerly Wood Canada Limited), has been retained by Baffinland Iron Mines Corporation to carry out Annual Geotechnical Engineering Services at the Mary River Project in Nunavut. Based on information and guidance, provided in connection with the site's infrastructure, the undersigned has completed the second of the two required inspections for 2022 and summarized the findings in the following report. In addition to field observations, the following historic reports had also been reviewed:

- Annual Geotechnical Site Inspections (2016, 2018) – SNC Lavalin
- Annual Geotechnical Site Inspections (2017) – ARCADIS Design and Consultancy
- Annual Geotechnical Site Inspections (2018 August and October) – B.H. Martin Consultancy
- Tote road bridges – Abutment Review (2018 December) – B.H. Martin Consultancy
- Annual Geotechnical Site Inspections (2019, 2020, 2021 and 2022 1st report) – Wood E&I
- Construction Summary Reports – Crusher Pad Sedimentation Pond Expansion (2019); Waste Rock Pond Expansion Drainage System; KM-106 Run of Mine Stockpile & Sedimentation Pond (2020) and Mine Site Landfarm Cell 1 and Cell 2 (2022)
- Inspection of the Milne Inlet Tote Road and Associated Borrow Sources – Tetra Tech (2019)

We trust that the content of this report meets your expectations. Should you have any questions regarding the details presented in the following document, please do not hesitate to contact our office.

Sincerely,

WSP Environment & Infrastructure Canada Limited

Laszlo Bodi, M.Sc.; P.Eng. – Principal Civil/Geotechnical Engineer
WSP Environment & Infrastructure Canada Ltd.,

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1.0 Introduction

WSP Environment & Infrastructure Canada Ltd., (formerly Wood E&I Canada Ltd.), has completed the second geotechnical field inspection of 2022 at the Mary River Project, which is a condition of the Type "A" Water Licence No: 2AM-MRY1325 – Amendment No.1 ("Water Licence").

Based on the requirements outlined in the Water Licence, the field inspections shall include the review of various facilities and structures that contain waste materials (hazardous and non-hazardous), and store or retain/convey water (surface water management ponds and ditches) at the Mary River Mine and Milne Inlet Port sites. The field review included visual assessment of the current condition of the berms and slopes and reporting on potential seepage/stability problems at the ponds and waste disposal areas, if any.

In addition to the condition survey of the above noted infrastructure components, critical watercourse crossings (bridges) were also reviewed along the Tote Road connecting the Mary River Mine and Milne Inlet Port sites. As specified by the Nunavut Water Board, the conditions of the above listed infrastructure components need to be visually inspected twice a year and documented by photographs. The inspected structures and facilities in the fall (September) of 2022 included the following:

A. 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, MS-08 and MS-11 surface water management ponds and adjacent ditches
d) Berms of the generator fuel bladder cell (located adjacent to the generators)
e) Fuel storage berms (3) – Aerodrome jet-fuel storage, MS-03 and MS-03B diesel fuel farms
f) Solid-waste disposal site (non-hazardous landfill facility) and two adjacent new landfarm cells
g) Camp Lake settling 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 the KM106 run-of-mine ore storage area

B. Milne Inlet Port Site

a) Berms of hazardous waste disposal cells - (HWB-1 through HWB-4)
b) Berms of the MP-01A Polishing Waste Stabilization Pond (PWSP)
c) Berms around the MP-03 fuel tank farm
d) Berms of the MP-04 landfarm and MP-04A contaminated snow disposal cell
e) Berms of Pond #3, MP-05, and MP-06/MP-06A surface water management 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, 380-Person Camp and PSC ditches)
h) Tote Road culverts (conveying surface water from the Q01 rock quarry area)

i) Rock fill slope (riprap) at the water (effluent) discharge area
j) LP-5 Storage Pad

C. Tote Road Between the Mary River Mine and Milne Inlet Port

a) Bridges (4)
b) Representative Former Borrow Areas Along the Tote Road (4)
c) Section of the Haul Road Between the Crusher Pad and the Deposit 1 Open Pit

The above listed infrastructure components were visually inspected between August 31 and September 7, 2022, by the author of this report, Laszlo Bodi M.Sc.; P.Eng. of WSP Environment & Infrastructure Canada Limited. During the inspection, the current condition of the structures was visually reviewed, and the findings are summarized in the following report. The locations of the inspected infrastructure components, berms, settling ponds and ditches are shown in the following figures:

a) Mary River Mine site – **Central Zone** (Figure 1), **North-Eastern Zone** (Figure 2), **South-Eastern Zone** (Figure 3), **Western Zone** (Figure 4), and **Southern Zone** (Figure 5)
b) Milne Inlet Port site – **Northern Zone** (Figure 6) and **Southern Zone** (Figure 7)
c) Representative section of the **Tote Road** – (Figure 8)

Photographs of the inspected structures are shown in the following documents (attached to the report):

a) **Appendix A**: Mary River Mine site – Figures 9 to 47
b) **Appendix B** : Milne Inlet Port site - Figures 48 to 80
c) **Appendix C**: Bridges, Former Borrow Areas, and a Section of the Haul Road : Figures 81 to 96

Figure 1: Site layout – Mary River Mine Site - **Central Zone** with the MS-03 and MS-03B fuel farms and the MS-06 surface water management pond, located near the ore crusher facility.

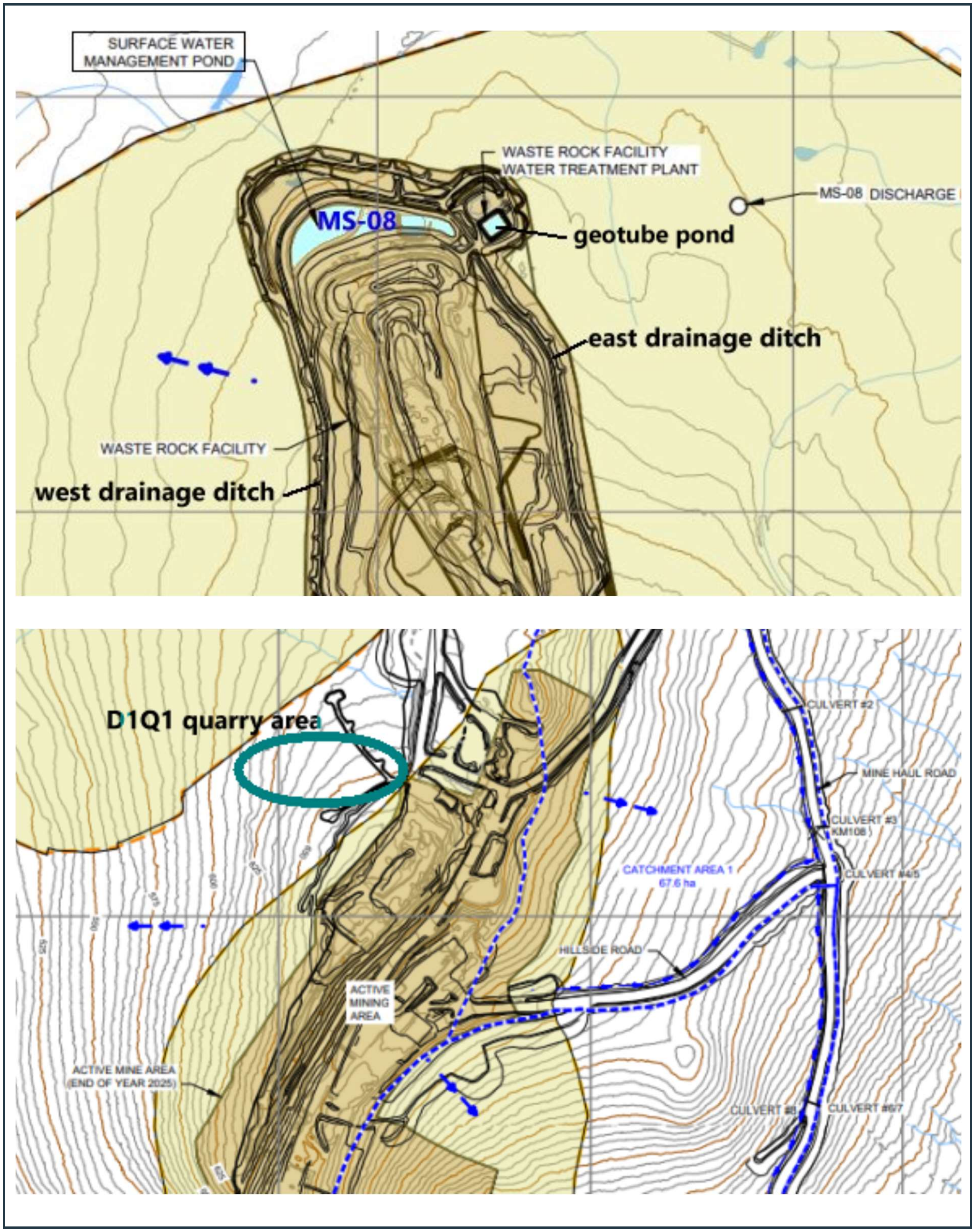

Figure 2: Mary River Site layout – **North-Eastern Zone** – Waste rock facility with the MS-08 and geotube ponds – Active Pit #1 and D1Q1 rock quarry areas.

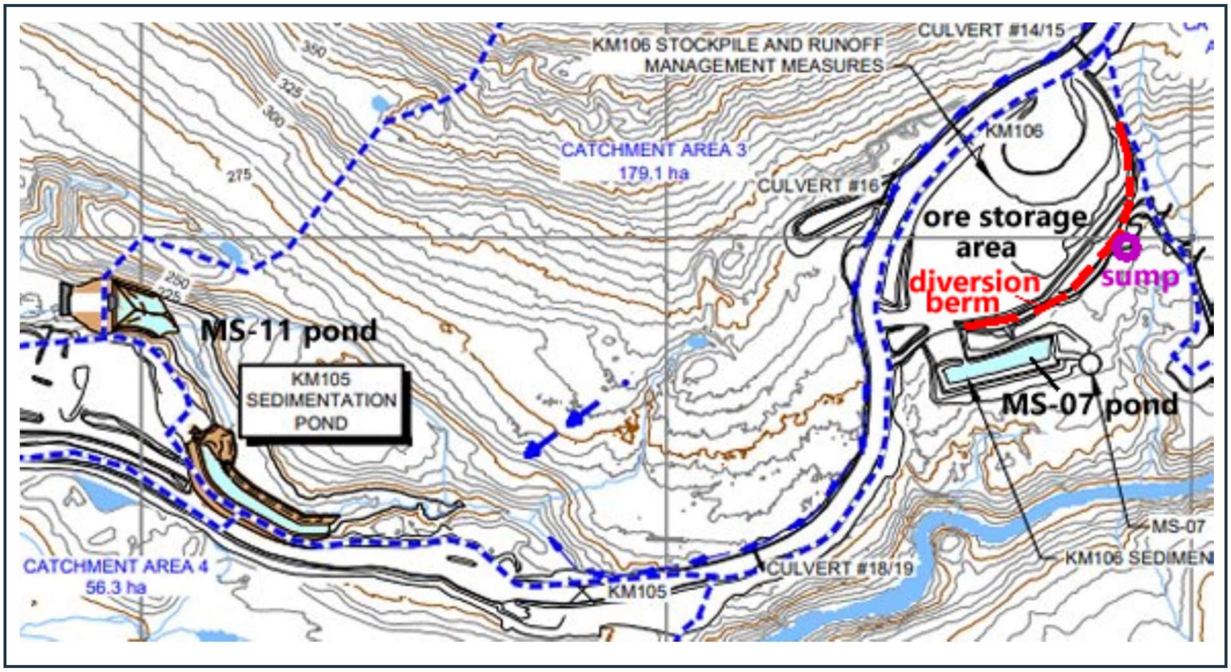

Figure 3: Site layout – Mary River Mine Site – **South-Eastern Zone** – KM106 run-of-mine ore storage area and KM106/MS-07 and KM105/MS-11 surface water management ponds.

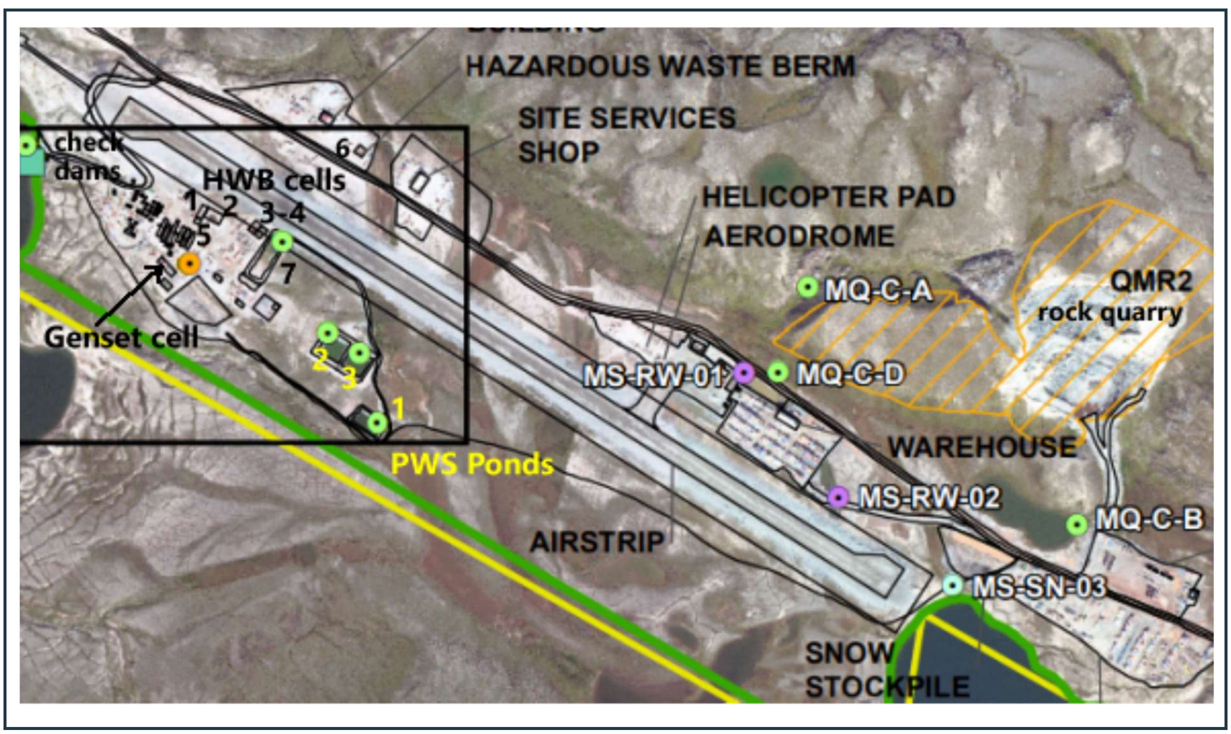

Figure 4: Site layout – Mary River Mine Site - **Western Zone** – PWS ponds (1-3), HWB hazardous waste storage cells (1-7), genset cell, Camp Lake check dams and QMR2 rock quarry area.

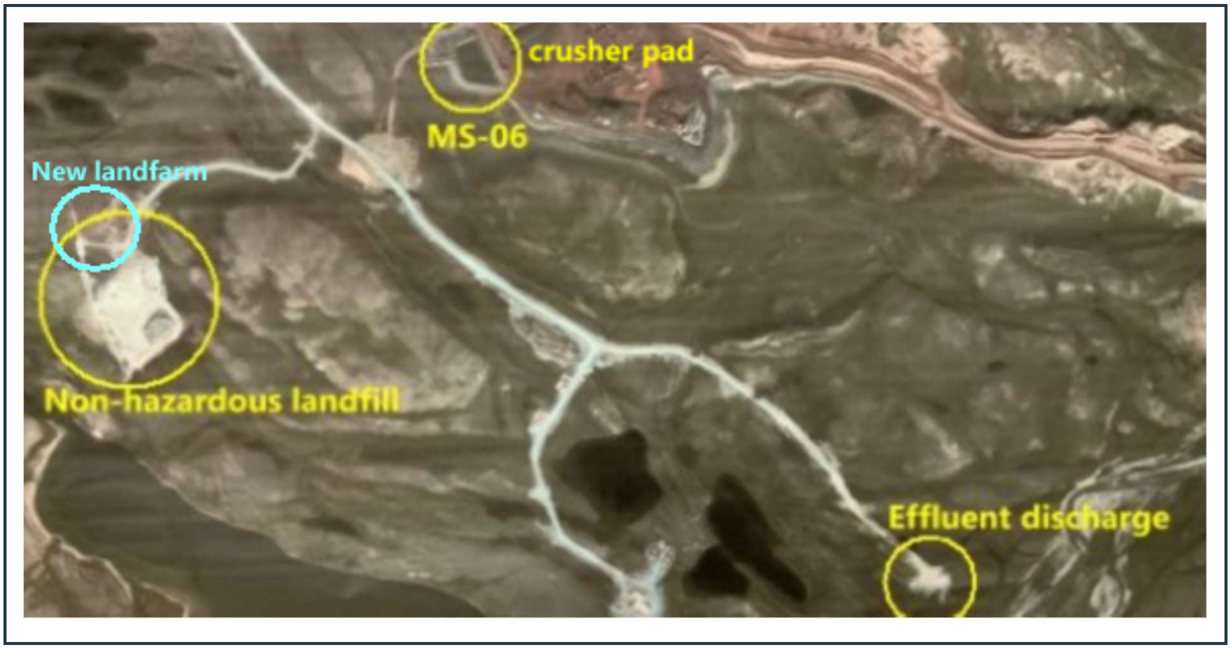

Figure 5: Site layout – Mary River Mine Site – **Southern Zone** – Non-hazardous landfill area with two new landfarm cells, and the effluent discharge point.

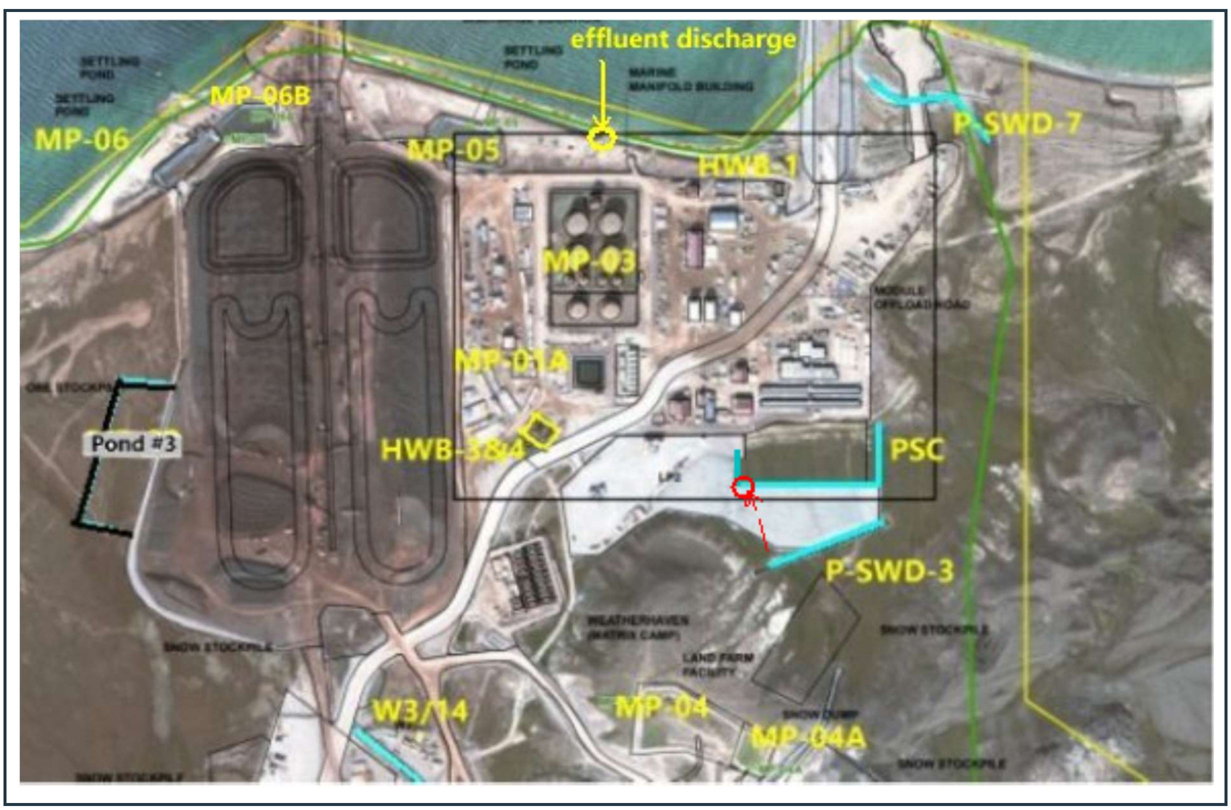

Figure 6: Site layout – Milne Inlet Port Site – **Northern Zone**.

Figure 7: Site layout – Milne Inlet Port Site – **Southern Zone**.

Figure 8: View of a section of the Tote Road between the Mary River Mine and Milne Inlet Port.

Details of the recent condition survey of the individual infrastructure components, reviewed in September 2022, are summarized in the following sections of the report while the relevant photographs are shown in Appendix A, B and C, as integral parts of this document.

2.0 Mary River Mine Site

2.1 Polishing/Waste Stabilization Ponds (3 PWS ponds)

There are three (3) polishing/waste stabilization ponds, located adjacent to the airstrip, as shown in Figure 4. Pond #1 is a single structure, while Ponds #2 and #3 were constructed as twin-cells, as shown in Figure 9. The photograph in Figure 9 is a historic aerial image showing the robust and stable berms around the three ponds. As pointed out in previous inspection reports, these ponds were associated with the exploration phase of the mine, and currently serve as emergency holding ponds in case problems would arise, which would prevent the discharge of treated effluent directly to the receiving environment. The robust, stable berms around the ponds generally comprise granular materials (rock fill, sand, and gravel), supporting High Density Polyethylene (HDPE) geomembrane liners. The liners are secured in anchor trenches on the crest of the berms, and no damage is visible on the membranes in the cells or on the upstream face of the slopes (see Figures 10 to 12). Wrinkles noted on the liners are common features and do not present any potential problems to the resistance of the material against seepage.

The robust berms around the three (3) ponds appear to be stable, having wide crests and shallow downstream slopes. They were built by using non-frost-susceptible compacted locally available granular materials. Based on site observations, it appears that the subgrade around the berms also comprise thaw-stable, predominantly granular soils with only trace to some fines. With this observation, the berms are assumed to have stable foundations/subgrade, which is further supported by the fact that there is no indication of ground displacement or sloughing at and around the berms. In summary, these berms are structurally stable with no sign of any seepage from the three (3) ponds.

A relatively common issue (although not a problem) in water storage ponds is the appearance of so-called "whales" within the ponds. Whales are sections of the liners which have risen (float) above the surface of shallow water, particularly in shallow ponds, where the weight of water above the liner is minimal. Such small "whales" were visible during both June and September 2022 inspections at PWS ponds #2 and #3, as shown in Figure 11. Similar "whales" were noticed and recorded during previous inspections in the past; however, no damage to the liner or seepage from the ponds was visible, including during the latest inspection in September, 2022.

2.2 Hazardous Waste-Cell Berms (HWB-1 to HWB-7)

There are seven (7) lined hazardous waste storage cells with perimeter berm structures at the Mary River mine site (HWB-1 to HWB-7). The HWB-6 cell is located at the north side of the airstrip near the incinerator, while the other six (6) cells are located opposite of HWB-6, at the south side of the adjacent airstrip, as shown in Figure 4. All seven (7) HWB cells are lined with HDPE liner, and comprise shallow, stable perimeter berms constructed from locally available, generally granular soils. There is no visible instability at the berms (sloughing, excessive settlement, or tension cracks), other than some soil displacement caused by foot and truck traffic on the surface of the slopes and crests at a few locations, as shown in the relevant images in Appendix A. It is recommended that foot and truck traffic on the slopes and crest of the berms be limited to maintain the integrity and stability of the berms. Trucks may only use the designated ramps to access the cells.

a) HWB-1

This cell is currently not in use, as shown in Figure 13. As reported previously, concerns had been raised in the past to suspected potential liner damage within this cell, and consequently no material has been stored in this cell since this concern was identified. Baffinland has previously committed to removing the old liner from this cell and replacing it with a new one should use of HWB-1 be required in the future, prior to storing material in this cell.

b) HWB-2

As shown in Figure 14, this cell is currently empty, holding only some rainwater. The perimeter berms around the cell appear to be stable and the presence of ponding water indicates good liner performance.

c) HWB-3 and HWB-4

These cells were constructed as "twin-cells" and were called "Fuel Containment" cells. As shown in Figures 15 and 16, cell 3 is generally holding fuel barrels, stored on wooden pallets, (jet-fuel and diesel), and similar barrels are stored in cell 4. The berms and liner around and within the two cells appear to be in good condition and no seepage from either of the cells was noted during the inspection.

d) HWB-5

As shown in Figure 17, this cell is currently empty. The shallow berms around the cell appear to be stable and there is no visible liner damage in the cell. Baffinland has previously committed to removing the old liner from this cell and replacing it with a new one should use of this HWB-5 cell be required in the future.

e) HWB-6

The berms around this cell and the internal "floor" have been regraded and stabilized recently using clean granular fill. As shown in Figure 18, the cell contained a few containers only at the time of the September inspection. The ponding rainwater in the cell indicates good liner performance.

f) HWB-7

Only one (1) large fuel tank is stored in this cell with a few plastic containers, as shown in Figure 19 (white tank and containers). The perimeter berms around the cell appear to be stable and the ponding rainwater within the cell is indicative of adequate liner performance. At the time of the September inspection the ponding water was being gradually removed and treated.

2.3 MS-06, MS-07, MS-08 and MS-11 Surface Water Management Ponds

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

The MS-06 surface water management pond collects surface water from the area of the crusher pad. The surface water is collected in side-ditches, excavated around the crusher pad, and conveyed into the pond. There is one culvert under the crusher pad entrance that connects one (1) of the side ditches with the north corner of the surface water management pond. It was noted during the September 2022 inspection that the inlet-end of that culvert is still partly clogged with soil (see Figure 20). The location of the clogged end of the culvert is marked by a green dot in Figure 1 (within the yellow circle marking the MS-06 pond). The soil fill, blocking the flow of water through the culvert, must be completely removed to restore proper drainage through this culvert. Extension of the culvert is also suggested to prevent future clogging of this corrugated drainage pipe.

There are two (2) intake locations to the pond at the northeast and southeast corners, and there is an emergency spillway located opposite to the intakes. The liner within the pond and on the upstream slopes of the stable berm appears to be intact; however, minor damage to the liner was noted at the spillway (Figure 21) at the time of the September inspection. Apparently, this was caused by strong wind lifting up the edges of the liner on the top of the berm. The problem was rectified during the inspection by weighing down the edges of the liner more efficiently.

No wet downstream slopes or toe seepage from the pond were visible at the time of the inspection. However, seepage water within the relatively permeable, cobbly overburden (within the active layer) adjacent to the toe of the south berm of the pond was noted in a temporary containment sump (marked by a blue dot in Figure 1), which was excavated to contain the seepage water and pump it to the MS-06 surface water management pond, as shown in Figure 22. The water in the sump appears to be surface water, percolating down into the ground and flowing from higher elevations within the valley adjacent to the crusher pad toward the MS-06 pond. The excavated temporary containment sump could endanger the stability of the existing berm, and therefore should be backfilled with native soil, as soon as possible. To maintain the structural integrity of the pond's berms, no soil should be removed from the toe of the berms. Temporary containment sumps could; however, be excavated at least 10 m away from the toe of the berm, as suggested in Figure 22 (yellow circle).

b) MS-07 – Surface Water Management Pond Adjacent to the ROM Storage

The MS-07 surface water management pond is located adjacent to the KM-106 run-of-mine stockpile area. The pond has robust perimeter berms and intact geomembrane liner, as shown in Figure 23. No stability or seepage related problems were observed at this pond during the September 2022 site visit. As shown in Figure 23, the pond had low water level at the time of the inspection.

c) MS-08 – Surface Water Management Pond Adjacent to the Waste Rock Facility

Waste rock from the open pit mining operation is disposed of in the WRF, which consists of waste rock stockpiles, the MS-08 surface water management pond, and continuously upgraded perimeter drainage ditches constructed around the facility. Surface runoff and seepage from the WRF is collected in the ditches and conveyed to the MS-08 pond. The MS-08 surface water management pond is surrounded by robust and stable berm, as shown in Figure 24 in Appendix A. The pond is lined with exposed HDPE liner that is secured in place in anchor trenches, extending down into the permafrost.

As pointed out earlier, contact water from the WRF is collected in perimeter ditches and the collected water flows to the surface water management pond from the east and west. As shown in Figure 25 and Figure 26, the drainage ditches are generally well maintained, and have stable side-slopes. However, one section at the west ditch is blocked by waste rock, as shown in Figure 25. It is suggested to excavate a new section of the ditch along the yellow line shown in the image, to facilitate easier flow of surface water to the pond. Simple removal of waste rock from the existing ditch would result in more boulders rolling down from the adjacent steep waste rock slope into the ditch, hence, the excavation of a new ditch section would be preferred.

Water from the MS-08 pond is pumped to the nearby designated facility for treatment, if required. There is a lined treatment cell (geotube pond) in good condition located immediately next to the WRF water treatment plant with stable perimeter berms, shown in Figure 27. However, a section of the rock fill berm and liner at the south-west berm of the pond have been damaged recently, as shown in Figure 27 and Figure 28. The damaged berm section and liner should be repaired as soon as practically possible.

d) MS-11 – New Surface Water Management Pond at KM105

The KM105 surface water management pond (MS-11), shown in Figure 3, was designed, and constructed to provide sediment control for runoff, originating from the following catchment areas:

- The undisturbed areas upslope of the Mine Haul Road (MHR) and the KM105 ponds from which runoff cannot be easily diverted to other areas,
- The section of the MHR near the ponds, and
- The area of the ponds (north and south) themselves.

As per the design, the runoff from the above areas flows overland into the MS-11 pond or is conveyed to the pond by the runoff collection ditch, located along the MHR. The pond includes an emergency spillway with an invert elevation of 220.5 m, which is the design maximum water level in the pond. At normal water level the pond has two separate areas: the “north and south ponds”, as shown in Figure 3. As specified in the design, the upstream slopes of the pond embankments are lined with a geomembrane liner, underlain by non-woven geotextile as a cushion layer. The geomembrane liner and non-woven geotextile extend up the interior (upstream) slope of the embankments and are anchored at the crest. The geomembrane liner is covered with an additional layer of geotextile and a layer of compacted liner bedding, which in turn is covered with a layer of compacted transition material followed by more rockfill (riprap), as shown in Figure 29.

Figure 30 shows the stable spillway of the pond that consists of a trapezoidal shaped inlet, constructed through the crest of the northwest embankment, and a stepped gabion basket outlet channel. A boulder apron is also shown in the image; constructed at the base of the spillway outlet channel to dissipate energy as the potentially fast-flowing runoff leaves the spillway. During the June 2022 inspection the ponds (north and south) were approximately half full of collected run-off water. As shown in Figure 29 of this report; however, the collected water has found its way within the active layer (bypassing the liner on July 14/15) and seeped toward downstream beneath the spillway leaving the ponds empty by the September inspection. It is understood that the potential location of the leak is currently under investigation and steps will be made to rectify the situation. Visual inspection of the seepage water in the valley-floor downstream of the spillway (Figure 30) has indicated that it appears that no serious piping (loss of large quantity of fine soil particles) has taken place during the seepage. This is most likely related to the fact that the hydraulic gradient was low (much less than 1.0), since the length of seepage between the potential location of the leak and the toe of the spillway is greater than the hydraulic head initiating the seepage. Only minor siltation was visible near the downstream toe of the spillway, but that small quantity of silt may have come from the rock fill spillway or simply from the side-slopes of the valley as well. It is recommended that once the source of the problem in the pond is identified and future seepage eliminated, any potential downstream siltation be monitored frequently and reported.

Figure 31 shows some freeze/thaw related movements in the ground along the road next to the MS-11 south pond's slope. It appears that large ice pockets or snow were likely present in the ground during construction of the pond in the fall and winter, and those ice and snow pockets remained within the ground near the road. During the start of summer those ice/snow pockets likely thawed, resulting in the somewhat wide cracks within the ground near the edge of the slope. The area of freeze/thaw impacted zones should be regraded/compacted as soon as practically possible to prevent water collection in those cracks in the future from rain and melting snow. As shown in Figure 31, some crushed stone has already been placed into some of the cracks, however, the "landscaping" process should be finalized, and all cracks should be eliminated by regrading the area. All surface water from the road should be drained away from the pond's slope, provided by appropriate road grading.

2.4 Berms of the Cell for Generator Fuel Bladders

This cell has previously contained fuel bladders for the generators; however, it is currently storing a few mobile fuel tanks only. The cell is located immediately adjacent to the power generators, south-west of the hazardous waste cells (Figure 4). As shown in Figure 32, the stable perimeter berm around the cell generally comprises granular materials and the cell is lined. Some ponding water within the cell indicates good liner performance.

A large area of the adjacent road was flooded by melting snow at the time of the June inspection; however, that water had been drained from the area prior to the September site visit. As recommended in the June 2022 report, the drainage of the melting snow in the area has been rectified and the road level has been raised by placing granular road fill adjacent to the cell's berm, as shown in Figure 32. With the upgraded road, truck traffic will not encroach the adjacent berm's slope as it was noted during previous inspections.

2.5 Fuel Storage Berms (3)

There are three (3) fuel storage areas at the Mary River mine site. One (1) is located at the airfield and two (2) adjacent to the main office complex of the mine. The berms and liners at these facilities are in excellent condition, as shown in the relevant images in Appendix A.

a) Jet-fuel Tank Farm

The jet-fuel tank farm is located at the aerodrome, and it is surrounded by a stable perimeter berm. In addition, a second berm, constructed from crushed rock fill, provides additional protection at two (2) sides (Tote Road and airport parking area) of the facility. The fuel farm is lined to the crest of the perimeter berms, and the liner within the cell appears to be in good condition. A well-constructed ramp at the berm provides safe access to the fuel tanks stored within the cell, without endangering the liner (Figure 33).

b) MS-03 Diesel Fuel Tank Farm

The robust, stable berms around the "original" diesel fuel tank farm are in excellent condition (see Figure 34) and they are well maintained. Some ponding rainwater within the cell indicates that the liner system is fully functional (i.e., no seepage from the cell is visible and the liner is well protected by granular fill throughout the facility). No problems with the liner were noted anywhere in this facility.

c) MS-03B New Fuel Tank Farm

A large capacity fuel tank farm is located adjacent to the Tote Road, as shown in Figure 35. This new tank farm was constructed as specified in the design drawings (subgrade, berms, bedding layer, liner, and protective cover). Based on site observations, the liner in the facility is intact, and all berms are stable and well maintained. The locations of additional tanks are already prepared within the facility.

2.6 Solid Waste Disposal Area and Two New Landfarm Cells

The solid waste disposal area is located in the southern zone of the Mary River Mine site, as shown in Figure 5. Recently, two (2) new landfarm cells were constructed near the gate to the landfill facility, as shown in Figure 36. It is understood that the number of new landfarm cells will be increased to four (4) as shown in Figure 37.

Figure 38 shows that only non-hazardous solid waste is placed into the unlined landfill facility and that site is surrounded by a chain-link fence and a lockable gate. The figure also shows the area of cell #4 of the planned four (4) new landfarm cells. As shown in Figure 37, three (3) of the new landfarm cells are planned outside of the fenced landfill area. Cells #1 and #2 have been recently completed, covering an approximate area of 10,180 m^2, while cells 3 and 4 will be completed at a later date.

Based on relevant documents prepared by Knight Piésold Consulting Engineers (KP), the cells were designed as above-ground structures to avoid disturbing permafrost. The perimeter berms were designed with 2 "horizontal" to 1 "vertical" slope, with a 2m wide crest. According to the KP design documents, the berms for the two completed cells were constructed using 100mm minus granular material and covered by 150mm thick 25mm minus clean sand and gravel. The bedding layer was installed as a cushion to the impermeable 60-mil (1.5 mm) HDPE geomembrane, which is used to prevent any potential contact water from infiltrating into the berm and escaping the containment system. The liner is covered with a layer of 300mm thick, clean sand and gravel layer. All liner-ends are anchored into a 300mm x 300mm key trench, located along the top of the berms. As shown in Figure 37, the cells had a sump area in one corner of the cells, to collect water within the facilities.

During the September 2022 inspection, the following deficiencies were noted at the two completed cells, shown in Figure 39 and Figure 40:

- The slopes of the berms (upstream and downstream) appear to be somewhat steeper than the designed inclination of 2H:1V.
- The loosely placed granular material filled into the key trench to anchor the liner on the top of the berms has settled significantly, resulting in a long depression along the top of the berms, allowing increasing long-term erosion on the top and sides of the berms.
- The elevated level of collected water in the sump areas has resulted in erosion (slump) of the granular cover layer placed over the liner, which in turn resulted in the slump of sections of that granular cover layer from the slope of the berms.

It is recommended that the deficiencies be repaired/rectified in both cells, as soon as practically possible. The problems should also be considered (lessons learned) in the design and construction of the still planned two additional cells to prevent such problems in the future.

2.7 Camp Lake Settling Check Dams and Berms

The Camp Lake settling control berms and check dams (all stable and well-maintained) are located along the access road to the mine's water intake jetty. The primary purpose of these structures is to collect (trap) fine soil particles (silts and clays) that are eroded down from the adjacent slopes, and to prevent the siltation of the lake around the water intake structure, as shown in Figure 41. The image shows that the cells are working well, as intended. It also shows an installed silt curtain at the base of the slope to provide additional protection against silt potentially entering the adjacent lake.

2.8 Water (Effluent) Discharge Area

The effluent discharge point is located south of the Mary River mine complex, as shown in Figure 5. There are two (2) discharge pipes at that location (one of the two is shown in Figure 42), conveying the discharged water down the slope's surface to the adjacent valley. Trucks also bring water for discharge to this location and let the water flow down on the embankment, comprising crushed rock fill, as shown in Figure 42. As shown in the image, new rock fill has been placed on the slope recently and the slope is well-protected against potential erosion.

2.9 Deposit-1 Pit Walls

The pit wall at the "deposit-1" open pit is in stable condition with only sporadic local friable weathered zones visible at a few locations, as shown in Figure 43. The access/haul road leading into the open pit is appropriately wide and the eroded rock fragments are removed from the toe of the pit walls as needed (regular maintenance). The rock slopes and benches along the pit wall appear to be stable with no sign of instability other than the minor surface erosion.

2.10 Rock Quarries (QMR2, D1Q1) and KM106 Ore Stockpile Area

a) QMR2 Rock Quarry

There is no blasting and excavation activity currently carried out in the QMR2 rock quarry (Figure 44). The exposed slopes (rock face) in the quarry appear to be in stable condition overall, with a few localized fall hazards (loose boulders) noted at the top level of the quarry walls in some areas. As shown in Figure 44, boulders are placed near the crest and along the toe of the exposed rock wall to prevent unauthorized access to the steep rock face.

As mentioned in earlier inspection reports, the lowest plateau (main level) of the quarry still exhibits somewhat poor surface water control and therefore periodic ponding rainwater still covers a section of the quarry's main level. The excess water can still flow uninterrupted along the side of the access road, as shown in Figure 45, still eroding the edge of the road somewhat, and initiating erosion and some settlement of the road embankment. As pointed out in earlier reports, the uncontrolled surface water presents not only potential slope stability issues in the area, but also traffic safety issues as well, particularly during freezing. To maintain traffic safety and stable side slopes when the operation in this facility resumes, the ponding water at the quarry's main level should be properly drained from the area down on the side-slope located immediately next to the plateau. It is recommended that consideration be given to the installation of a slope-drain pipe, chute, or flume drain, as an erosion protection measure, instead of letting the water flow uncontrolled along the edge of the access road.

b) D1Q1 Rock Quarry

This quarry is located north of the "deposit-1" open pit. No current activity was noted in the quarry during the September 2022 inspection. As shown in Figure 46, the exposed rock face in this quarry appears to be stable, with only a few boulders rolling down on the slope from the overburden left in place on the upper ground surface, close to the edge of the crest of the slope. The soil cover on the top of the rock slope should be scaled back once the operation will restart in the quarry.

c) Diversion Berm at the KM-106 Ore (Run-of-Mine) Storage Area

The area previously considered as the future D1Q2 rock quarry is now serving as a new ore (run-of-mine) stockpile site. As shown in Figure 3, the selected area is located south of the "deposit-1" open pit, along the east side of the mine haul road. It is also shown in Figure 3 that a surface water diversion berm was constructed along the east and south sides of the stockpile area. The "diversion" berm was constructed using granular fill that may not function well in diverting all surface runoff to the adjacent MS-07 pond. Some of the run-off water can seep through the berm at its bend, which is collected in a temporary sump (purple circle in Figure 3) downstream from the berm (Figure 47), and subsequently pumped into the nearby MS-07 pond. It is recommended to cover the base and slopes of the sump with riprap.

3.0 Milne Inlet Port Site

3.1 Hazardous Waste-cell Berms (HWB-1 to HWB-4)

There are four (4) hazardous waste disposal cells with stable perimeter berms at the Milne Inlet Port site. HWB-1 and HWB-2 cells are single detached structures, located north-east and south-east of the MP-03 fuel storage area, respectively. HWB-3 and HWB-4; however, were constructed as twin-cells, located south/south-west of the fuel storage area.

a) HWB-1

The HWB-1 is the largest cell of the four, bounded by stable perimeter berms, constructed of granular soils, as shown in Figure 48 and Figure 49, in Appendix B. The stored materials in this cell are generally placed close to the berms with the center of the cell kept open, facilitating easy operation of forklifts and trucks, moving the stored materials. A few steel shipping containers are also stored at the back of the cell, as shown in Figure 48. Ponding water was visible in the rear area of the cell (Figure 49), indicating that the liner within the cell is intact and working as intended. No seepage from the cell was visible around the downstream toe of the perimeter berm and the granular fill across the cell's interior is well maintained.

b) HWB-2

The HWB-2 is a relatively small cell that is no longer used to store hazardous waste. As shown in Figure 50, the cell has been filled with clean sand and gravel, and only empty plastic containers are stored across the raised interior of the cell.

c) HWB-3 and HWB-4

The HWB-3 and HWB-4 cells are located immediately next to each other (twin-cells), as shown in Figure 51 and Figure 52. These cells contained only shipping containers in the past; however, the cells have been recently emptied and "refurbished". Currently the cells contain fuel barrels on wooden pallets, with only two (2) shipping containers stored in HWB-4. The lined berms around the cells have been re-graded/raised and appear to be in stable condition with no indication of slope movements or seepage. It is also shown in Figures 51 and 52, that the granular fill inside the cells has been re-graded/lowered, as recommended in the previous (June 2022) inspection report.

3.2 MP-01A Polishing Waste Stabilization Pond (PWSP)

The MP-01A polishing pond is located immediately south of the MP-03 fuel tank site. As shown in Figure 53, the berms around the well-maintained pond are in excellent condition and the liner within the cell appears to be intact. No sign of slope instability, settlement or seepage from the pond was noted during the field inspection. Wood fragments (pieces of timber and lumber) have been removed from the pond.

3.3 MP-03 Fuel Tank Farm

The MP-03 fuel tank farm occupies a large area in the center of the Milne Inlet Port. As shown in Figure 54, the facility is well maintained and all berms around the site are in excellent condition. The presence of seasonal ponding rainwater at a few lower areas within the facility is an indication of good liner performance. The site is fenced in, and no indication of instability or seepage was noted at and around the robust berms at this facility.

3.4 MP-04 and 04A Land-farm and Contaminated Snow Disposal Cells

The MP-04 land-farm is located south of the Port at a higher elevation, adjacent to the rock quarry. It is a large cell that stores contaminated soils and a few empty shipping containers. The lined, robust berms around the cell are in stable condition and the ponding water in one (1) corner of the cell indicates good liner performance, as shown in Figure 55. No wet downstream slopes or toe seepage were noted during the September 2022 site visit.

The MP-04A is a smaller cell, constructed immediately adjacent to cell MP-04 and is used generally for the disposal of contaminated snow. This pond is also bounded by stable perimeter berms, as shown in Figure 56. No seepage from the cell was noted anywhere around the downstream toe of the berms, and the ponding water within the cell indicates that the liner is in good condition.

However, damage to the geotextile (protecting the liner) was noted in two small areas at the access ramp to the cell, as shown in Figure 57. Based on field examination during the inspection, no damage to the liner was noted. It is recommended that the granular fill be carefully removed from the area and the damaged geotextile be replaced, followed by the placement of additional granular fill cover layer. It appears that the access ramp is excessively used during the winter and hence, the placement of somewhat thicker granular fill is recommended on the ramp and over the top of the berm in this area.

3.5 Surface Water Management Ponds and Ditches (Surface Water Management Pond #3, MP-05, MP-06 and MP-06A Ponds)

The iron ore that is mined, crushed, and screened at the Mary River Mine site is transported to the Milne Port, and stockpiled across a large area near the ship-loader. Contact water (rain and melted snow) from the area is collected along the west and north sides of the ore stockpile in side-ditches and conveyed into four (4) surface water management ponds, strategically located around the ore storage area, as shown in Figure 6.

a) Surface Water Management Pond #3

Surface Water Management Pond #3 is located west of the ore storage area, as shown in Figure 6. The pond is bounded along three (3) sides by lined stable berms (Figure 58) and contains two (2) sumps. The geomembrane liner and protective geotextile on the internal slope of the berms were designed to extend 2.5 m below the surface and are anchored into the underlying permafrost zone to prevent any seepage from the pond into the ground below and to the surrounding environment. Excess water from the pond is pumped into the nearby, large capacity MP-06 surface water management pond whenever necessary.

In the June 2021 inspection report it was noted that thawing of potential ice wedges adjacent to the north berm have resulted in the cracking of the overlying granular fill in limited areas outside of the pond. No such cracks or depressions were visible inside the pond since that area has been covered by granular fill during the construction of the pond.

It was pointed out in the 2021 report that the surface cracks have no impact on the stability and integrity of the berms, whatsoever. The cracks appeared somewhat wide locally; however, they did not extend too deep. In the 2021 report it was recommended that the cracks near the berm be filled with the same material that was used for the construction of the berms to minimize ice-wedge development near the toe of the berms. During the September 2022 inspection it was noted that the cracks have been filled as specified, and the road in that area was regraded, as shown in Figure 59.

b) MP-05 Pond

The MP-05 surface water management pond is located adjacent to the north-east corner of the ore stockpile, while the MP-06 pond was constructed at the north-west corner. Both surface water management ponds are in excellent condition with stable, well-maintained berms and intact geomembrane liners, as shown in figures 60 to 64.

No instability, erosion or settlement was noted at the berms of the MP-05 pond and no toe seepage from the pond is visible anywhere around the pond's perimeter berm. Minor liner damage was noted near the crest of the southern inlet channel to the pond during the previous (June) inspection, however the damaged liner has been repaired prior to the September inspection, as shown in Figure 61. The surface water from around the ore stockpile is collected in well-maintained drainage ditches. The slopes of the drainage ditch leading to the MP-05 pond appeared to be in good condition, as shown in Figure 62.

c) MP-06 and MP-06A Ponds

The large surface water management pond adjacent to the north-west corner of the ore stockpile area is divided into two (2) cells (MP-06 and MP-06A) by a liner-covered internal berm. The main (south) part of the pond is called MP-06 and is shown in Figure 63. The northern cell is called the "overflow pond" MP-06A, shown in Figure 64. The liner in the ponds and the stable, robust perimeter berms are in good condition, and no seepage was noted from the ponds, indicating good liner performance.

3.6 Q01 Rock Quarry

No activity was noted in the Q01 rock quarry at the time of the inspection. The steep slopes (rock faces) in the quarry appear to be in stable condition with only minor weathering and bench erosion, as shown in Figure 65. Figure 65 also shows the safety berm (comprising large boulders), placed between the access road and the exposed rock wall to prevent unauthorized access to the toe of the rock wall.

3.7 Surface Water Collection Ditches (P-SWD-3, -5, -6, -7, W3/W14, 380-Person Camp and PSC ditches)

There are several surface water collection drainage ditches (listed above) in Milne Inlet Port, some of which are still under construction or improvement, as shown in figures 66 to 76. These open ditches are excavated somewhat into the native soils and then their sides and inverts are protected by fine to coarse crushed rock fill riprap or in many cases geotextile. Geotextile fabric has been used wherever the native subgrade along sections of the ditches is composed of fine-grained material to prevent migration of fines into the overlying crushed rock fill and eventually into the ditches. The issues (3) that were identified at these ditches during the September 2022 inspection are summarized below:

- As noted in previous inspection reports, sloughing of the sides of the **P-SWD-3** ditch, adjacent to the LP-2 laydown area, has occurred at several locations, as shown in Figures 66 and 67. It is evident that the sloughing of the ditch's slopes is a direct result of uncontrolled sheet-flow of surface water (melting snow from the adjacent snow-stockpile), continuously flowing into the ditch that is not able to convey the collected water to the designated discharge location. As pointed out in the 2021 inspection reports, the native ground adjacent to the ditch slopes toward south-west, while the ditch was designed to drain the water toward north-east. To improve the drainage capability of this ditch, it is recommended that it should be redesigned and reconstructed to drain the large amount of surface water from the snow-dump to the north-east. It is also suggested that a perimeter diversion berm be provided around the snow stockpile area and the surface water generated by the melting snow be conveyed to the P-SWD-3 ditch in a separate new drainage ditch. This alternative would eliminate sheet flow of surface water from the snow dump to the P-SWD-3 ditch and would minimize surface erosion in the area. It would also prevent continuous slope stability problem along the P-SWD-3 ditch. Some debris, shown in Figure 67, that were dumped into the northern part of the ditch should also be removed.

- A section of the **P-SWD-5** ditch was noted with missing riprap, as shown in Figure 68. It appears that there is continuous water seepage from within the quarry pad at this location, resulting in the periodic sloughing/erosion of the side of the ditch just along this short section. It is recommended that the somewhat finer soil, currently forming the side of the ditch, be removed to a depth of around 1 m and replaced with crushed rock fill. To minimize migration of fine soil particles from the quarry pad to the ditch, the crushed rock fill should be placed over geotextile. Figure 69 also shows that there is a clogged culvert in this ditch, located beneath the road at the entrance to the quarry. The clogged culvert should be cleaned, or preferably be replaced with a larger diameter culvert at this critical location of the ditch.
- The **PSC** drainage ditch has a "U" shaped alignment (see Figure 6) and is located north of the P-SWD-3 drainage ditch along the northern edge of the LP-2 laydown area. As shown in Figure 76, localized slope degradation/sloughing is visible at a short section of the ditch (marked by a red circle in Figure 6). The sloughing of the slope is apparently caused by frequent water seepage from the granular fill of the LP-2 laydown pad (blue arrows in Figure 76). It is likely that the frequent seepage at this location is a result of the inefficient drainage of surface water within the above discussed P-SWD-3 ditch. As pointed out above, the collected surface water in the P-SWD-3 ditch should drain toward its north-east end. However, at this stage, the water flows to the opposite direction. At the south-west end of the ditch the collected water seeps into the granular fill pad of the LP-2 laydown area and most likely exits at the location where the frequent slope problem is visible at the PSC ditch (see the red broken line in Figure 6). It is recommended that the drainage conditions at the P-SWD-3 and PSC ditches be reviewed and rectified as early as practically possible. Once the drainage conditions in the P-SWD-3 ditch would be improved/rectified, the failed slope at the PSC ditch can also be repaired. Based on field observations, consideration could also be given to reshape the west section of the ditch and reinstall the culvert, shown in Figure 76, to a lower invert level.

3.8 Tote Road Ditches and Culverts

Surface water from the P-SWD-6 drainage ditch is conveyed down toward the Tote Road through corrugated galvanized steel culverts, installed under an access road to the quarry and then under the Tote Road (Figures 77 and 78). The collected water is conveyed through the Tote Road culverts to small natural ponds, located along the west side of the Tote Road. Only minor siltation is visible at the inlet of the culverts (Figure 77), but both culverts appear to be clean, and the seasonal flow through them is uninterrupted.

3.9 Effluent Discharge Pipe and Slope

The discharge end of the effluent water pipe in the Port is located just north of the fuel farm, as shown in Figure 6. The slope in the immediate vicinity of the discharge point is covered with riprap; however, some additional crushed rock fill over geotextile should be placed in the area marked by a yellow circle in Figure 79, in Appendix B, to prevent erosion and undermining of the adjacent two embankment slopes.

3.10 LP-5 Storage Pad

A network of natural cracks and depressions were noted on the surface at the edge of the LP-5 storage area at one location, as shown in Figure 80. This area of the LP-5 storage pad, and its immediate vicinity shows a patterned ground, formed by the combination of locally representative soils and periodic ice wedge development and thaw, which landform is typical in the Arctic North and can be seen across many areas of the Mary River and Milne Inlet sites. In areas affected by repeated freezing and thawing of groundwater within the active layer (at and slightly below the surface above the permafrost), freezing during long winters force larger sand and gravel particles toward the surface, as finer particles (silt) flow and settle underneath the larger, coarser soils. At the surface, areas comprising predominantly larger soil particles (sand and gravel) contain less water than the fine-grained sediments (silt and clay). The water-saturated areas of finer sediments develop ice wedges and have a much greater ability to expand and contract as freezing and thawing occur leading to lateral forces, which in turn results in "clusters and stripes", visible on the surface.

When the ice wedges, developed slightly beneath the surface, turn into water during the thaw period, they leave cracks and depressions on the surface, which will continue to collect water and subsequently will turn into ice wedges again during cold periods. This repeated freezing and thawing results in the development of patterned ground across large areas across the site.

The LP-5 storage pad was apparently constructed over such patterned ground, where the periodic formation and thawing of ice wedges resulted in a network of "stripes" (depressions/cracks) within the active layer. It is most likely that this network of "ground depressions" was generally "eliminated" beneath most of the storage pad during its construction; however, a few depressions may still develop, particularly along the edges. The cracks may seem somewhat wide locally, near the edge of the storage pad; however, they do not extend too deep and into the main part (centre) of the storage pad. It is suggested that the cracks be filled with the same material that was used for the construction of the pad (sand and gravel), to minimize ice-wedge development in the future.

4.0 Tote Road Between Mary River Mine and Milne Inlet - Bridges and Former Borrow Areas

Four (4) bridges and four (4) former borrow areas were visually inspected during the September site visit. The general condition of the foundations at the bridge abutments and the slopes at the former borrow areas are summarized below, and the relevant images are shown in the attached Appendix C document.

4.1 Bridges (4)

a) **Bridge 17** (located approximately 17 km from Milne Inlet Port)

As shown in Figure 81 and Figure 82, the abutments of this bridge appear to be stable, and no scour was noted in the riverbed around the abutments during the recent site visit. The abutments show no visible differential settlement or any structural discrepancy like deterioration of the steel bolt-a-bin abutments or sloughing of the riprap rock fill. There are two (2) historic abutments located immediately adjacent to the "new" ones, one (1) of which is visible in Figure 82. As reported earlier and noted during the most recent visit, the metal bin structures of both "old" abutments have suffered damages in the past, most likely during the construction of the new abutments. As shown in Figure 82, some elements of the steel bolt-a-bin structure (not sheet piles) became damaged. The damaged elements should be removed, together with part of the sandy backfill from behind them (from the face of the abutment). The sand should then be replaced with clean crushed rock fill to prevent erosion of the finer soil from the old abutments (although the actual erosion from the abutments is insignificant). As recommended before, the two (2) old abutments should be kept in place since they provide additional support (even with the damaged steel box) to the adjacent "new" abutments and approach embankments.

b) **Bridge 63** (located approximately 63 km from Milne Inlet Port)

As shown in Figure 83 and Figure 84, the abutments of this bridge are stable and no scour around the abutments was noted during the site visit. The abutments show no visible differential settlement or any structural discrepancy like damages to the bolt-a-bin foundation cribs. Similar to bridge 17, there are the "remnants" of two (2) historic abutments (visible in Figure 84), located immediately adjacent to the "new" ones and damage to the metal bins of both old abutments are visible. In order to maintain the stability of the currently used bridge abutments and approach embankments, the two (2) old abutments should be kept in place since they provide support to the adjacent new structures.

c) **Bridge 80** (located approximately 80 km from Milne Inlet Port)

As shown in Figure 85 and Figure 86, the abutments of this bridge are stable and no scour in the riverbed and around the abutments was noted. The abutments show no differential settlement or any structural discrepancy like deterioration of the metal bolt-a-bin structures supporting the bridge. This is the bridge where the "old" bolt-a-bin abutments are still in relatively good condition, as shown in Figure 85.

d) **Bridge 97** (located approximately 97 km from Milne Inlet Port)

As shown in Figure 87 and Figure 88, the abutments of this bridge appear to be stable and no scour in the riverbed and around the approach embankments was noted during the site visit. The abutments show no differential settlement or any structural discrepancy like deterioration of the foundation bins.

4.2 Former Borrow Areas (4)

Four (4) representative former borrow areas were visually inspected during the September 2022 visit, by following up on comments on typical ground conditions along the Tote Road, presented in a 2019 inspection report by Tetra Tech. Two typical conditions were identified in that report, which conditions may have adverse effect on the road:

a) The surface of the road appears to be located near the original ground level in some areas, with surface water ponding near or even flowing onto the road during snowmelt or rain.
b) Potential slope stability issues in cut areas of former borrow sites.

Two locations (**KM 06-900** and **KM 07+700**) were inspected, and the actual conditions presented in Figure 89 and Figure 90. As shown in the images, these conditions presented poor grade and drainage control along the edge of the road. Once the soils from the borrow areas were extracted, the base of the borrow area was leveled/graded, just slightly above the crest elevation of the adjacent road. Unfortunately, no side ditches were excavated between the edge of the borrow area and the edge of the road in these areas. The poor grade control and lack of drainage ditch can result unwanted surface water flow onto the road from both sides, wherever the surface of the road is located at somewhat lower elevation, as shown in the two images. The surface water can be rainwater but more often melted snow, from the snow that is pushed to the sides of the road during winters and thaws during the early weeks of the summers. Flowing run-off water on the surface of the road may result in erosion of road-fills and present traffic safety issues, particularly when the snow is melting during sunny periods but freezes back again when the temperature is dropping back below zero. It is recommended that critical road sections with such poor grade and drainage controls be mapped, and the drainage conditions be improved by providing adequate side-ditches along the road, wherever the elevation of the road surface is located somewhat lower than the adjacent ground surface. The excavation of drainage ditches can be completed by the road maintenance team, as soon as practically possible. The drainage ditches should be constructed as specified in the Project's Civil Design Criteria and Drawings.

Two former borrow areas at locations (**KM 09+700** and **KM 28+900 to KM 29+000**) were also inspected, where potential slope instability issues were identified in the past. Slope conditions at these two locations are presented in figures 91 to 94. At the KM 09+700 location, the subject slope (with an approximate inclination of 1.5H:1V) is located well away from the edge of the road, as shown in Figure 91. As shown in Figure 92, slumping/spalling/raveling of the slope's materials (generally comprising soil particles with sizes of silt to boulders) are trickling/rolling down on sections of the face of the slope without endangering the traffic on the Tote Road, located well away from the slope. Wherever slopes in cut areas of road construction are located immediately adjacent to the edge of the road, soil slopes are generally cut back to inclinations between 1.5H:1V to 3H:1V, depending on the internal shearing resistance of the soils forming the slopes. Slopes, located away from roads, particularly in rural, remote areas are generally left with inclinations close to their angle of repose. At that angle, the materials on the slope's face are on the verge of sliding. As a result of freezing, thawing, snow and rain, such slopes experience some degradation (spalling and raveling) on their faces, as it is visible in Figure 92. If the toe of these slopes is located away from the roads (at least the same distance as the height of the slopes) they do not present risk to the road structure or to the traffic on the road. For slopes immediately adjacent to the edge of the road; however, the ground conditions (local soil types, soil properties, seepage conditions) should be reviewed, and the slopes may need to be cut back to shallower inclinations (generally to 2H:1V, 2 units horizontal to 1 unit vertical, or about 27 degrees from horizontal).

A somewhat more critical slope was inspected between KM 28+900 and KM 29+000. As shown in Figure 93 and Figure 94, the toe of the slope in that area is located somewhat closer to the edge of the road and the slope appears to be as steep as 1H:1V. In addition to spalling and raveling of the soils on the face of the slope, tension cracks near the crest of the slope are also visible, as shown in Figure 94. The raveling face of the slope and the development of tension cracks indicate that the factor of safety against potential slope movement is close to unity at this slope and further slumping of the slope can be expected in the future. As pointed out above, the toe of the slope is located somewhat closer to the road, but at this stage it may not present risk to the traffic on the road or to the stability of the road. However, the slope should be monitored and reshaped if necessary. Although there is no immediate risk to the traffic on the road, the sloughing soil from the steep slope is filling up the drainage ditch, visible along the road, as shown in Figure 93. The surface water, trapped in a section of the ditch and visible in Figure 93, is ponding water from precipitation and not the result of "degradation" of permafrost. Poorly maintained drainage ditches always collect surface run-off from melted snow and rain and may result in potential softening of the ground along the edges of roads or may even result in some instability of the edge of road embankments. At the subject road section, it is suggested that the slope should be reshaped (cut back) to shallower inclination (preferably to 2H:1V) and the drainage ditch be cleaned of soils, as soon as practically possible. Uninterrupted flow of the collected surface water should always be provided in drainage ditches.

4.3 Section of the Haul Road Between the Crusher Pad and the Open Pit

The drainage condition along a section of the haul road between the crusher pad and the open pit was also reviewed during the September inspection. As it was pointed out in the 2019 Tetra Tech report, several large erosion channels were visible downslope from the open pit along the upslope side of the haul road. Such large erosion channels are quite common in other areas as well, with steep natural slopes. The report has suggested that blankets of riprap should be installed on slopes along critical road sections and below culvert outlets. Such riprap would encourage sheet flow rather than concentrated flow occurring during snow melt and rain. As shown in Figure 95 and Figure 96, excavation of drainage ditch along the upslope side of the haul road is in progress and riprap blanket is also being placed on the upslope side of the ditch to encourage sheet flow of surface water and minimize erosion of the finer soil particles. Placement of riprap into the drainage ditch and to the discharge ends of culverts is also in progress and the collected water is directed into the new surface water management pond at KM-105.

5.0 Conclusion

WSP Environment & Infrastructure Canada Ltd., has completed the second of the two (2) required geotechnical site inspections of 2022 at the Mary River Project in Nunavut. Based on field observations, the condition of the inspected infrastructure components can be summarized as follow:

- The surface water management ponds and waste disposal areas are enclosed by relatively shallow, stable berms. The berms show no signs of instability, there are no tension cracks or excessive settlements, and no detrimental slope erosion is visible on the berms. These structures were constructed by using thaw-stable, generally granular materials, placed over thaw-stable subgrades. Foot traffic on the berms (crest and slopes) must be minimized, while truck traffic on them must be always avoided. Wherever truck traffic into the cells is necessary, ramps are provided, and those ramps shall be maintained in good condition (the ramp to the jet fuel farm at the Mary River site is a good example). Some localized damages on the crest and slopes of the two new landfarm cells were noted, which should be remediated/repaired as soon as practically possible.
- The water and waste storage surface water management ponds and cells comprised of HDPE/LLDPE liners are in good condition. No seepage from the currently operating ponds and cells was noted. Minor damage to the liner were noted at a few locations (MS-06 spillway and a small section of the treatment plant pond in Mary River), as detailed above in the report and shown in the relevant images in Appendix A. As specified, these minor damages to the liners should be repaired as soon as practically possible. The problem at the MS-06 spillway was in fact rectified during the September inspection. Sloughing of the cover layer from the slope/liner was visible at two localized areas in the two new landfarm cells. The eroded cover layers should be reinstated in those areas as specified earlier as well.
- Open drainage ditches across the Mary River and Milne Port sites are generally in good condition with some erosion and sloughing of slopes visible at a few locations, particularly where the riprap slope protection is missing, or the flow is blocked by materials (cobbles and boulders) sloughing/rolling into the ditches. As part of a more frequent maintenance program, the eroded sides of the ditches should be repaired/regraded, and the missing rock fill riprap replaced. Drainage ditches blocked by cobbles/boulders should be cleaned. One (1) of the drainage ditches in the Port (P-SWD-3) still requires special attention. Currently the floor of this drainage ditch slopes away from the designed and constructed discharge point (north-east end), which resulted in a situation where the ditch is discharging water into the granular fill pad of the LP-2 storage area. It is recommended that the P-SWD-3 ditch be redesigned and reconstructed to facilitate efficient drainage of all surface water to the north-east. The design must consider the fact that large amount of snow is stockpiled adjacent to this ditch every winter that generates

excessive quantity of run-off water in the spring/summer that must be drained more efficiently toward the north-east. Consideration may also need to be given to select a different location for the snow-dump to minimize drainage problems in the vicinity of the LP-2 storage pad.

- The MS-11 surface water management ponds (north and south) at KM105 in Mary River, were designed, and constructed to provide sediment control for runoff, originating from large areas along the mine haul road. It was noted that the recently collected water from the pond has found its way within the active layer (bypassing the liner) and seeped toward downstream beneath the spillway leaving the ponds empty by the September inspection. It is understood that the potential location of the leak is currently under investigation and steps will be made to rectify the situation and bring the pond back into service.
- Four former borrow areas were inspected during the recent site visit along the Tote Road, where poor grade control along the sides of the road and lack of appropriate drainage ditches combined with some steep, potentially unstable slopes were noted. The presented problems shall be rectified during the regular road maintenance program as soon as practically possible, with the primary objective of the excavation and maintenance of efficient drainage ditches along critical sections of the road. Steep slopes, located closer to the edge of the road and side ditches, may require some reshaping (cutting back to shallower slopes) as well.

6.0 Closing Remarks

We trust that the above technical report and its appendices provide you with satisfactory information in connection with the reviewed infrastructure components at the selected sites of the Mary River Project. Should you have any questions regarding this report, please do not hesitate to contact our office.

Sincerely,

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Baffinland Iron Mines Corporation

November 1, 2022
Project #: OMGM2212

Annual Geotechnical Inspections – 2022 Report 2.

APPENDIX “A” - Mary River Mine Complex - Photographs

Figure 9 to Figure 47

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2.0 Mary River Mine Complex

2.1 Polishing/Wastewater Stabilization Pond Berms (3 PWS ponds)

Figure 9: Aerial view of the robust, stable berms around the three PWS ponds. (Historic image to show the layout of the three ponds).

Figure 10: PWS pond #1. Well-maintained, stable perimeter berm and liner at the pond.

Figure 11: PWS pond #2 – Stable, well-maintained berm and liner. – A small section of the liner is visible in the center of the pond (yellow circle), which does note pose a risk to the integrity of the liner.

Figure 12: Robust, stable perimeter berms around PWS pond #3 – Wrinkles are common on exposed liners, but they do not pose a risk to the integrity of the high-strength HDPE liners.

2.2 Hazardous Waste Disposal Cell Berms (HWB-1 to HWB-7)

a) HWB-1

Figure 13: View of HWB-1 – Currently this cell is not in use.

b) HWB-2

Figure 14: View of the robust, stable berms around HWB-2. The presence of water in the cell indicates good liner performance. No material is currently stored in this cell.

c) HWB-3 and HWB-4

Figure 15: View of stable berms and stored fuel barrels in HWB-3.

Figure 16: View of stable berms around the HWB-4 cell, with fuel barrels stored on wooden pallets.

d) HWB-5

Figure 17: View of stable berms around the empty (currently not in use) HWB-5 cell.

e) HWB-6

Figure 18: View of stable berms around, and the regraded granular fill within the HWB-6 cell. The ponding rainwater in the cell indicates good liner performance.

f) HWB-7

Figure 19: View of the stable berm around the HWB-7 cell, with an old fuel tank and some plastic containers stored in the cell. The ponding water is being currently removed and treated.

2.3 MS-06, MS-07, MS-08, and MS-11 Surface Water Management Ponds and Ditches

a) MS-06 – Surface Water Management Pond Adjacent to the Crusher Facility

Figure 20: Drainage ditch next to the crusher plant leading to the MS-06 pond. The yellow circle indicates that the entry to the culvert that should drain the collected surface water from the ditch to the MS-06 pond is partly clogged (should be cleaned). Extending the culvert is also suggested.

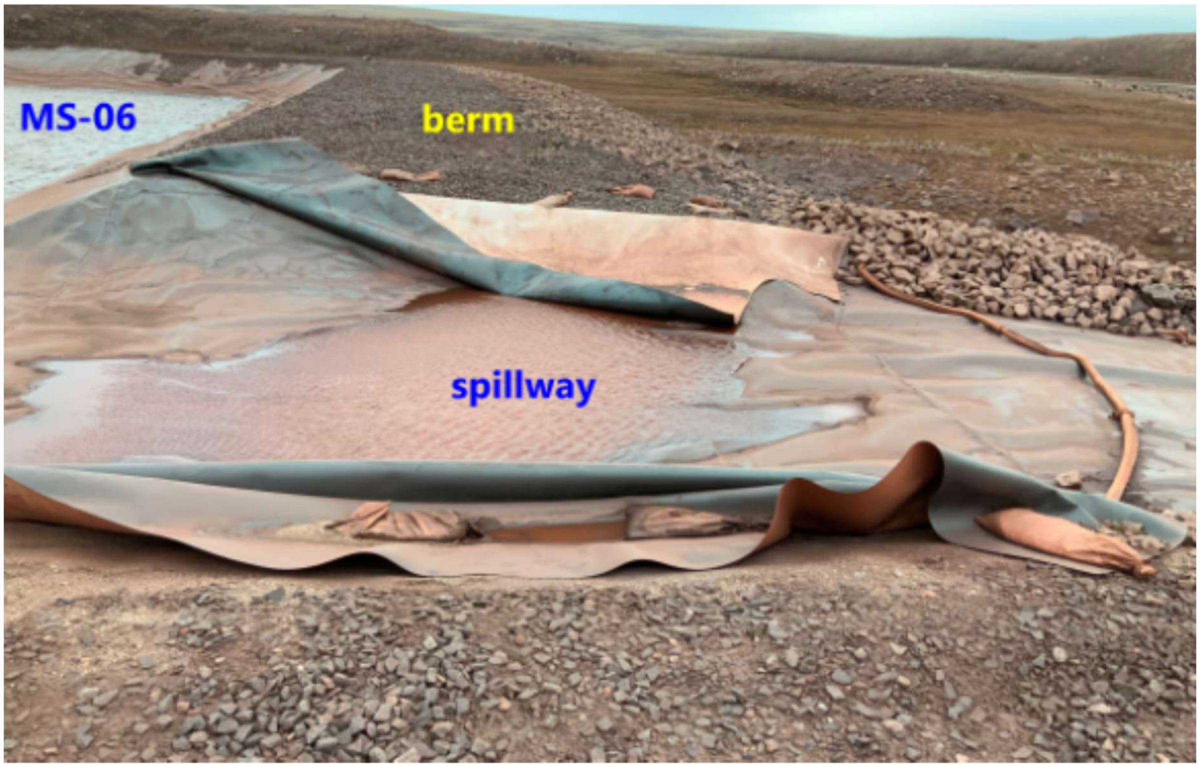

Figure 21: View of the robust, stable berm around the MS-06 pond, with temporary problem with the liner (lift-up by wind) at its spillway. The problem was rectified during the site visit.

Figure 22: Seepage water within the permeable, cobbly overburden adjacent to the area of the crusher pad and the MS-06 pond's berm. The excavated temporary sump at the toe of the berm should be filled and "relocated" away from the toe of berm (to the area of the yellow circle).

b) MS-07 – Surface Water Management Pond Adjacent to the new KM106 ore storage

Figure 23: View of the robust, stable berms and intact liner at the MS-07 surface-water management pond. The pond was almost empty at the time of the September visit.

c) MS-08 pond and drainage ditches next to the waste rock facility

Figure 24: View of stable berm and intact liner at the MS-08 pond.

Figure 25: Drainage ditch around the west side of the waste rock facility. Note a short section of the ditch blocked by waste rock (purple arrows). It is suggested to excavate the ditch along the yellow line to facilitate easier flow of surface water within the ditch to the pond.

Figure 26: View of the clean drainage ditch around the east side of the waste rock facility, leading to the MS-08 pond.

Figure 27: Damaged liner at the south-west section of the berm (yellow circle) at the geotube pond, located adjacent to the treatment plant and waste rock disposal facility.

Figure 28: Damaged rock fill berm and liner at the south-west section of the berm at the geotube pond, located adjacent to the treatment plant and waste rock disposal facility.

d) MS-11 surface water management pond at KM105, with emergency spillway

Figure 29: View of the internal area and the loss of water in the MS-11 pond at KM105.

Figure 30: View of the robust and stable emergency spillway (gabion baskets and blankets filled with crushed rock) at KM105. Note the water seepage at the toe of the spillway.

Figure 31: View of freeze/thaw related ground movement along the road next to the MS-11 slope. The area of the cracks should be regraded/compacted to minimize water infiltration into the ground next to the slope.

2.4 Generator Fuel Berm

Figure 32: View of the stable berm around the "fuel bladder" cell. The adjacent road next to the east berm was recently regraded to improve surface drainage in the area.

2.5 Fuel Farm Berms

a) Jet-fuel Tank Farm

Figure 33: View of the well-maintained sand and gravel berm and access ramps at the lined jet-fuel storage facility.

b) MS-03 Diesel Fuel Tank Farm

Figure 34: Well-maintained, stable berm around the MS-03 diesel fuel farm, with some ponding water. No problems with the liner were noted anywhere in this facility.

c) MS-03B New Fuel Tank Farm

Figure 35: View of the well-maintained stable berm and interior granular fill over the liner at the new fuel tank farm. The locations of additional tanks are already prepared within the facility.

2.6 Solid Waste Landfill Facility and New Land-Farm Cells

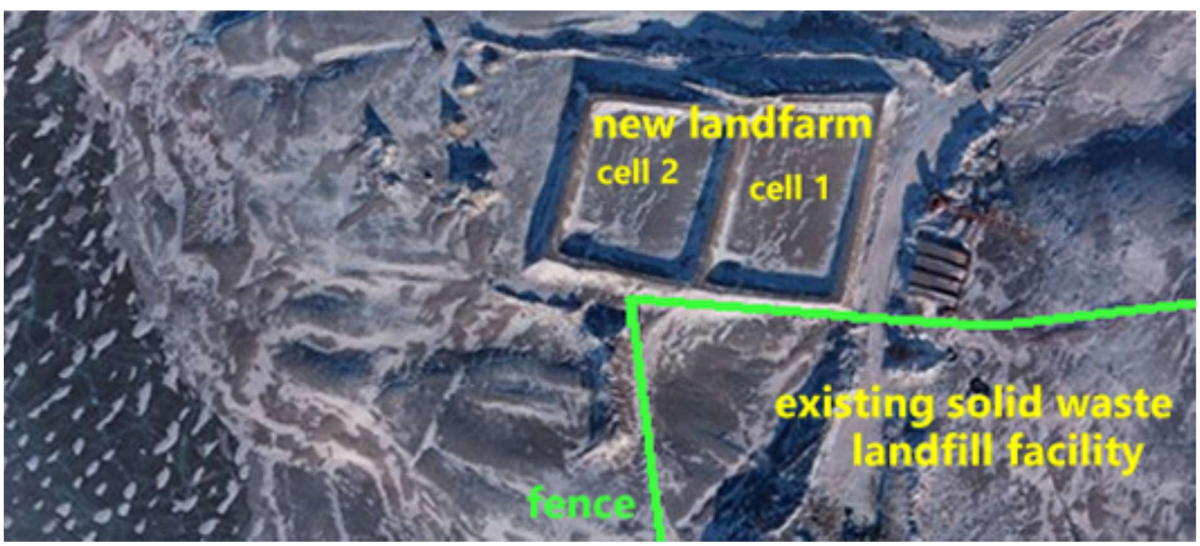

Figure 36: Satellite view of the existing solid waste landfill facility and the adjacent two, recently constructed land-farm cells.

Figure 37: Layout map of the new land-farm cells, adjacent and within the existing landfill facility.

Figure 38: View of soil cover over solid waste in the landfill facility. Note the proposed area for land-farm Cell 4 (see Figure 34 for the entire land-farm cell layout).

Figure 39: View of a section of the recently constructed berm at the land-farm's Cell 1. Note the exposed liner above the sump area and the settled anchor trench along the top of the berm.

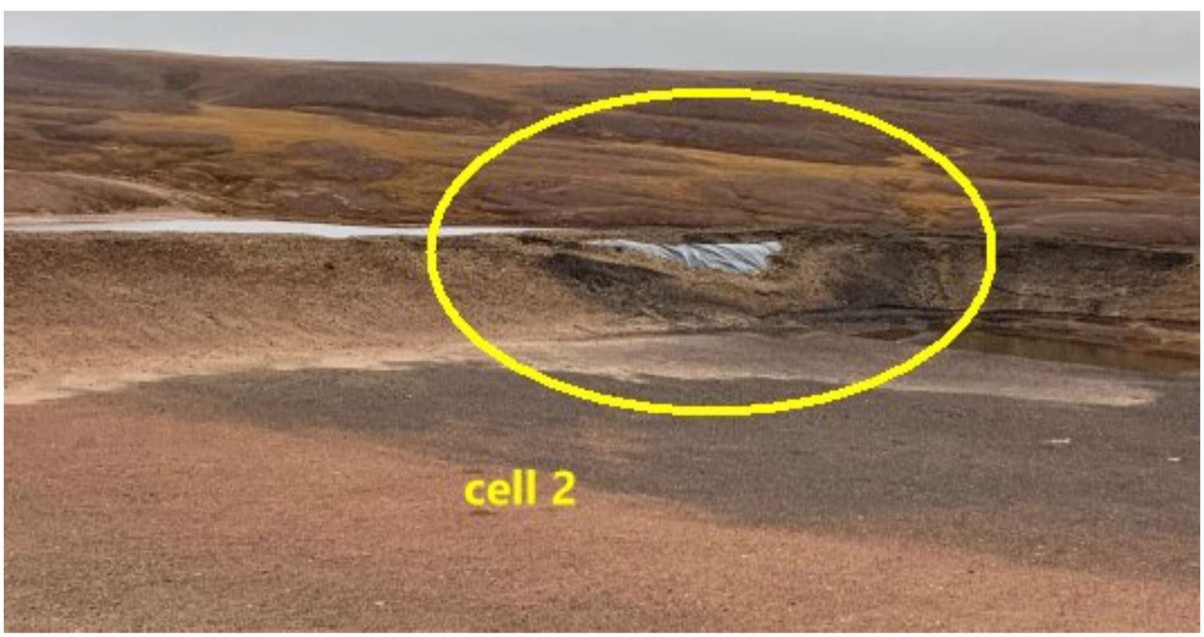

Figure 40: View of the currently empty Cell 2 at the land-farm. Note the exposed liner above the sump area. The slump of the soil cover is most likely related to the impact of the sump.

2.7 Camp Lake Settling Check Dams and Berms

Figure 41: Camp Lake berm and check dams, constructed to form effective silt sedimentation cells. Note the silt curtain at the base of the slope for additional protection.

2.8 Rock Fill Slope at the Water Discharge Area

Figure 42: View of the stable rock fill riprap slope at the water discharge area.

2.9 Deposit-1 Pit Wall

Figure 43: Stable deposit-1 pit-wall with minor rock weathering and erosion in limited areas.

2.10 Rock Quarries and KM106 Ore Stockpile Area

a) QMR2 Rock Quarry

Figure 44: View of the rock face at the upper quarry level with some potential rolling rock hazard. Note the row of boulders placed on the crest and toe of the rock face to prevent unauthorized access to the wall. No activity is currently carried out in this quarry.

Figure 45: Erosion problem still exists along the edge of the access road to the quarry.

b) D1Q1 Rock Quarry

Figure 46: View of the exposed stable slope of the rock quarry with some boulders rolling down on the slope from the overburden. The soil cover on the top of the rock slope should be scaled back.

c) KM106 Ore Stockpile area

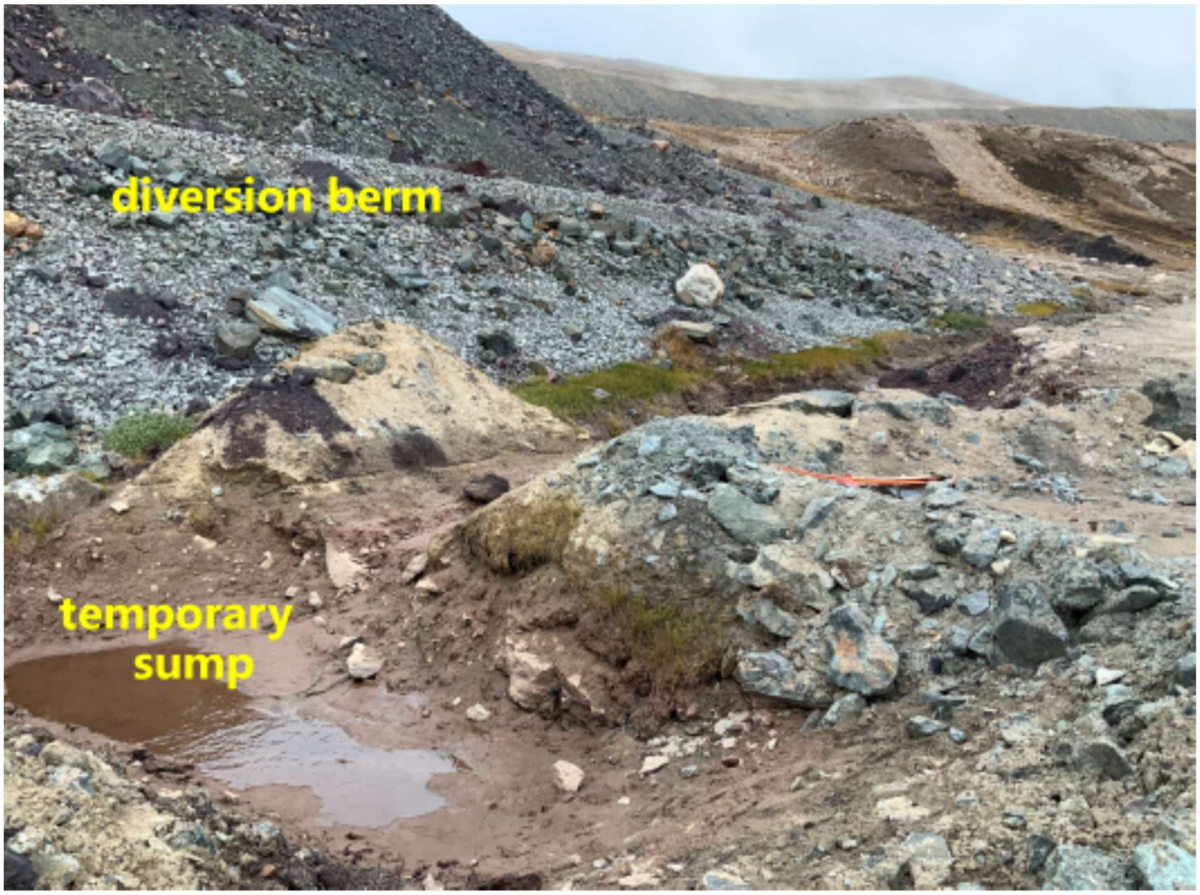

Figure 47: View of the surface water diversion berm at the new KM-106 ore stockpile area. Note the water seepage through the berm into a temporary sump, downstream from the diversion berm. The water from the sump is periodically pumped into the new nearby MS-07 surface water management pond.

Baffinland Iron Mines Corporation

November 1, 2022
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APPENDIX "B" – Milne Inlet Port Site - Photographs

Figure 48 to Figure 80

Aerial view of Milne Inlet Port – September 1, 2022

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3.0 Milne Inlet Port Site

3.1 Hazardous Waste-Cell Berms - (HWB-1 to HWB-4)

a) HWB-1

Figure 48: View of the robust, stable berm around the HWB-1 cell.

Figure 49: View of the sump at the back of the HWB-01 cell with stable berms.

b) HWB-2

Figure 50: View of the former HWB-2 cell, with only a few empty containers stored on the top of clean sand and gravel fill pad. No hazardous waste is stored in this cell.

c) HWB-3 and HWB-4 Twin Cells

Figure 51: View of the HWB-3 cell with stable berms, containing fuel barrels. The interior subgrade has been regraded/lowered, as specified in the previous inspection report.

Figure 52: Recently improved (raised) berm at the HWB-4 cell, storing jet fuel and shipping containers.

3.2 MP-01A Pond

Figure 53: View of the robust, stable berms and intact liner in the MP-01A pond.

3.3 MP-03 Fuel Tank Farm

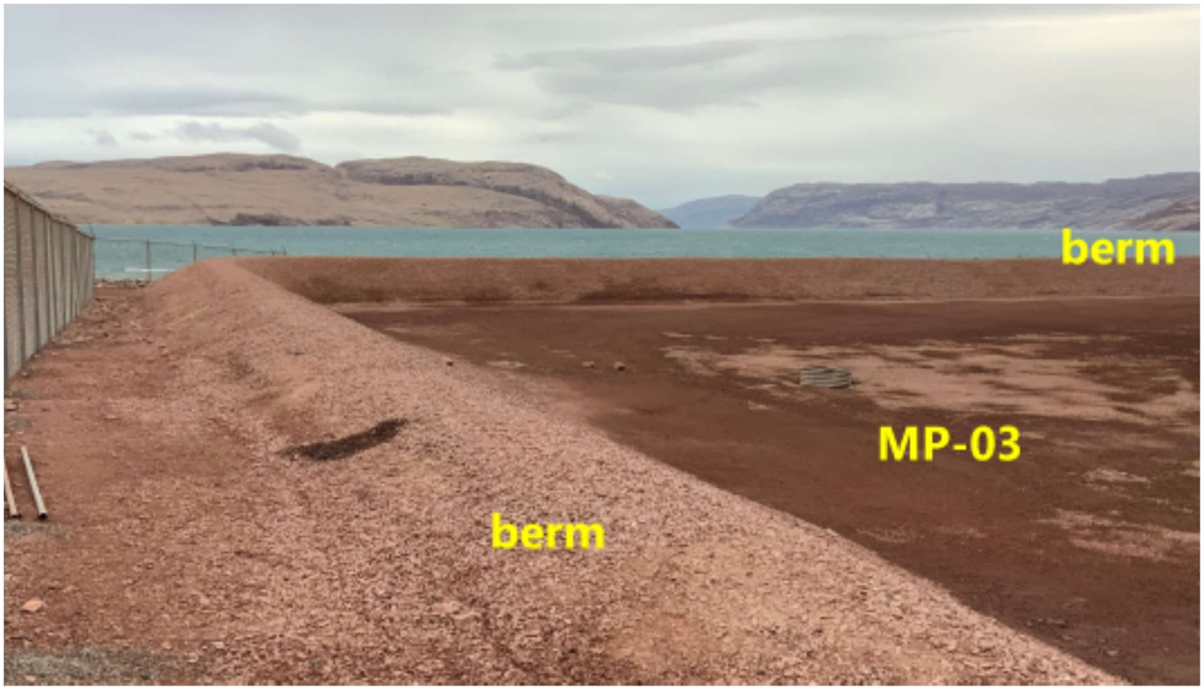

Figure 54: View of the well-maintained stable berms around the MP-03 fuel tank farm.

3.4 MP-04 and 04A Land-farm and Contaminated Snow Disposal Cell

Figure 55: View of stable berm around the MP-04 land-farm, with ponding water in one corner of the cell.

Figure 56: View of the MP-04A cell with stable berms. The ponding water indicates good liner performance.

Figure 57: View of damaged geotextile at the access ramp to the MP-04A cell. The liner is still intact, but the geotextile should be repaired, and granular fill should be placed over the ramp.

3.5 Surface Water Management Ponds and Ditches (Pond #3, MP-05, and MP-06 Pond)

a) Surface Water Management Pond #3

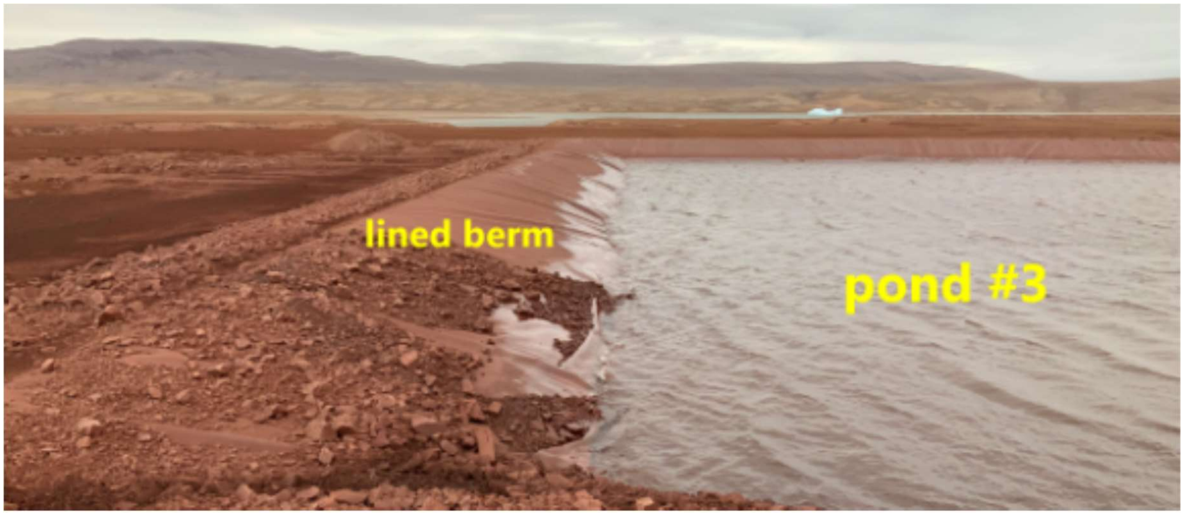

Figure 58: View of surface water management pond #3, with lined, stable berms along three sides of the pond.

Figure 59: View of the north berm at settling pond #3, with the road regraded adjacent to the berm.

b) MP-05 Surface Water Management Pond

Figure 60: View of the robust, stable berms and intact liner at the MP-05 pond.

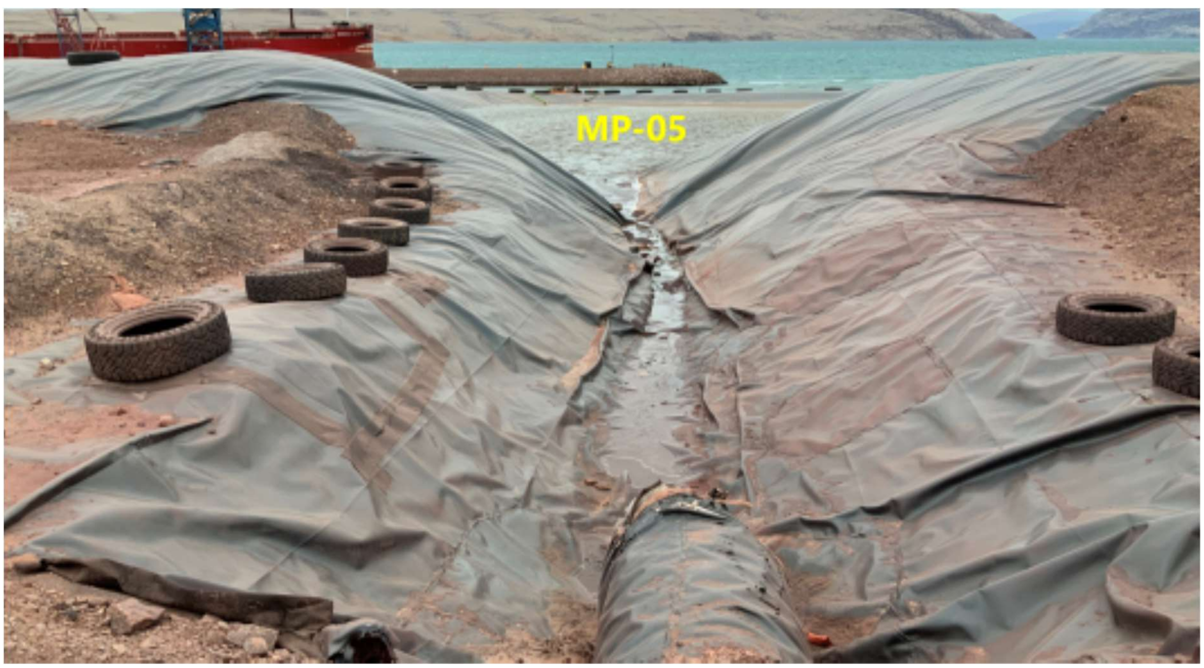

Figure 61: View of the repaired liners on both slopes of the southern inlet channel, discharging surface water into the MP-05 surface water management pond.

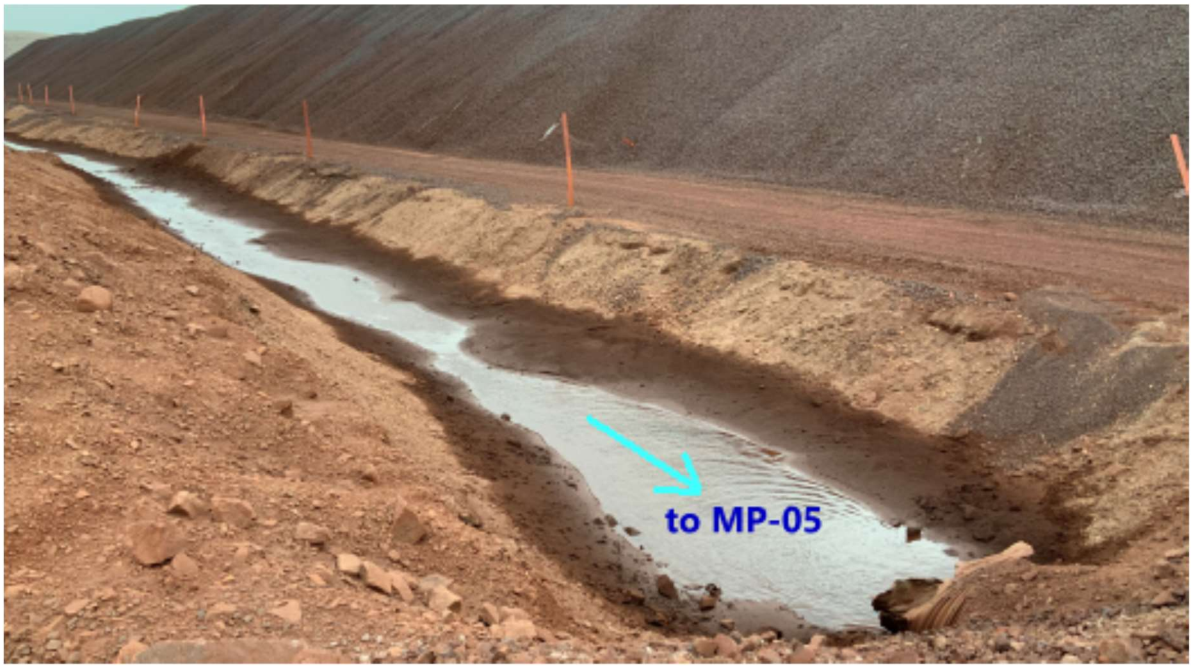

Figure 62: Surface water collection ditch adjacent (east) to the ore storage, draining to the MP-05 pond.

c) MP-06 Surface Water Management Pond

Figure 63: View of the lined MP-06 pond with robust, stable berms.

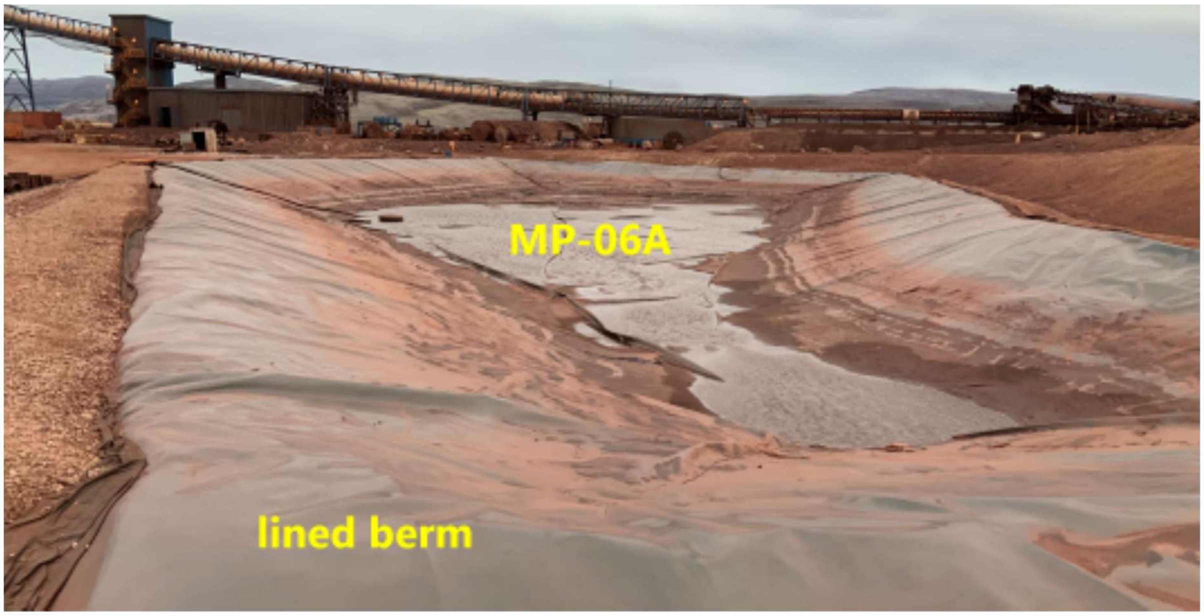

Figure 64: View of the lined MP-06A overflow pond with robust stable berms, adjacent to the ship loader.

3.6 Q01 rock quarry

Figure 65: View of stable highwalls with minor weathering and bench erosion in the Q01 rock quarry. Note the safety berm between the access road and the face of the rock wall (yellow arrows).

3.7 Surface Water Collection Ditches (P-SWD-3, P-SWD-5, P-SWD-6, P-SWD-7, W3/W14, 380-Person Camp, and PSC Ditches)

a) P-SWD-3 (south side of the LP2 laydown area)

Figure 66: View of the southern part of the P-SWD-3 surface water collection ditch with failed slope sections, and ponding water due to inadequate longitudinal channel slope.

Figure 67: View of the northern part of the P-SWD-3 surface water collection ditch with failed slope sections and some debris left in the channel, which should be removed.

b) P-SWD-5 (next to the Q01 rock quarry)

Figure 68: P-SWD-5 – "Q01-North" surface water collection ditch with missing riprap at a short section.

Figure 69: Clogged culvert at the entrance to the quarry in P-SWD-5/Q01-North surface water collection ditch. Should be replaced with a new, larger diameter culvert.

c) P-SWD-6 (south of the Q01 rock quarry)

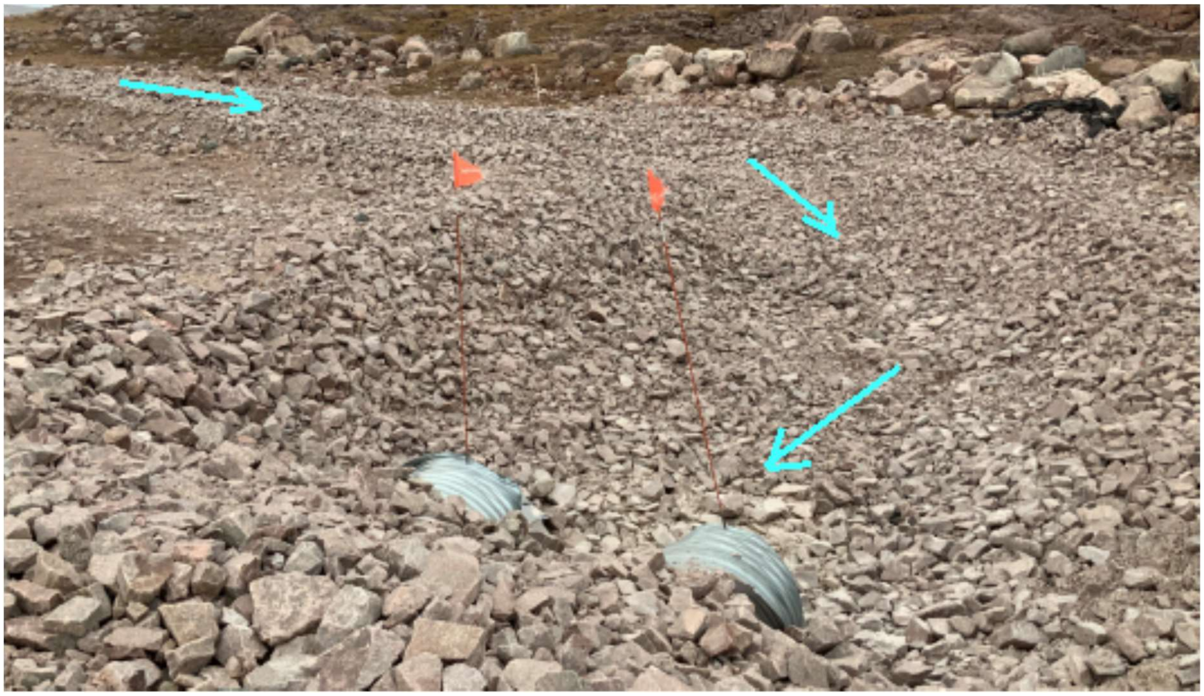

Figure 70: View of the south end of the rock fill lined P-SWD-6 surface water collection ditch.

d) P-SWD-7 (ditch and culverts adjacent to the new freight dock)

Figure 71: View of the P-SWD-7 surface water collection ditch and culverts (inlet).

Figure 72: View of the well-maintained P-SWD-7 surface water collection ditch and culverts (outlet).

e) **W3/W14** (surface water collection ditch)

Figure 73: View of the recently completed W3/W14 surface water collection ditch with crushed rock riprap slope protection.

f) 380-Person Camp (surface water collection ditch)

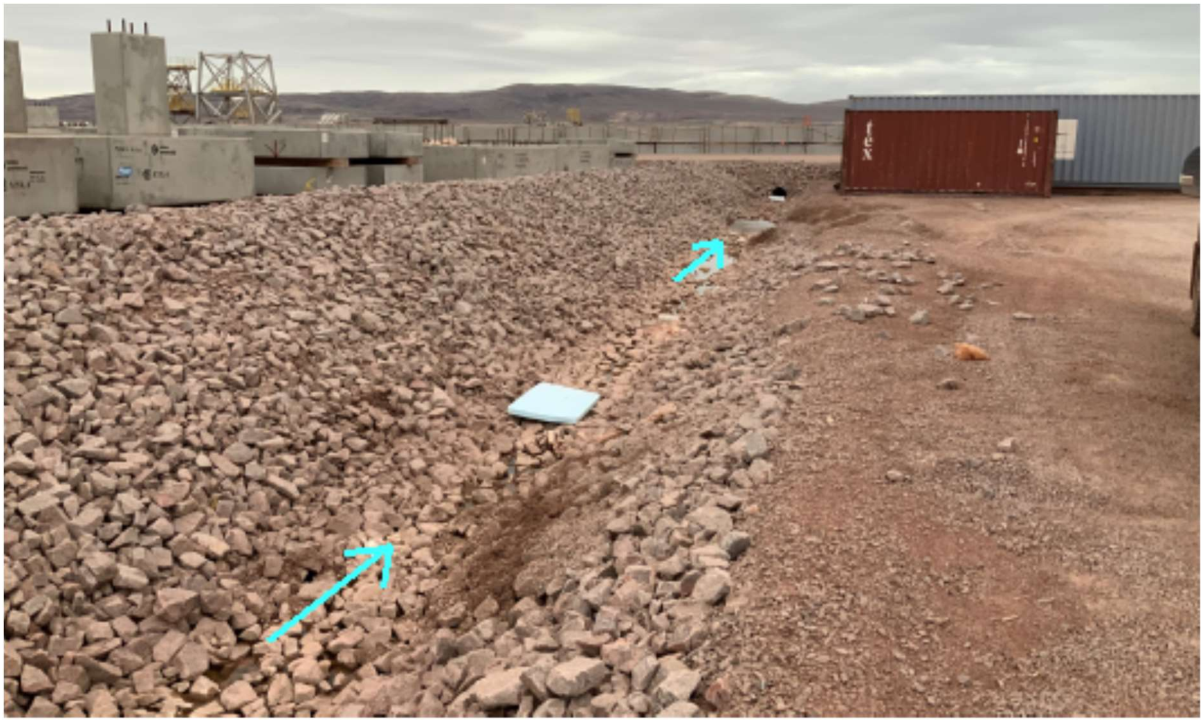

Figure 74: View of the south section of the 380-Person Camp surface water collection ditch.

Figure 75: View of the east section of the 380-Person Camp surface water collection ditch in good condition.

g) PSC (new surface water collection ditch)

Figure 76: View of the PSC surface water collection ditch. Note the localized slope degradation due to frequent water seepage from the granular fill of the LP-2 laydown pad (blue arrows).

3.8 Tote Road Ditch and Culverts

Figure 77: View of twin culverts, draining surface water from the quarry area under the tote road (inlet).

Figure 78: View of twin culverts, draining surface water from the quarry area (outlet).

3.9 Effluent Discharge Pipe and Slope

Figure 79: View of the water discharge pipe with rockfill riprap on the adjacent stable slope. More well-graded rockfill riprap should be placed over geotextile along the valley floor (yellow circle), to prevent erosion of finer soil from that area.

3.10 LP-5 Storage Pad

Figure 80: View of a network of natural cracks and depressions on the surface in the area at and adjacent to the LP-5 storage area. The depressions across the storage area should be filled with more sand and gravel and the surface shall be regraded.

Baffinland Iron Mines Corporation

November 1, 2022
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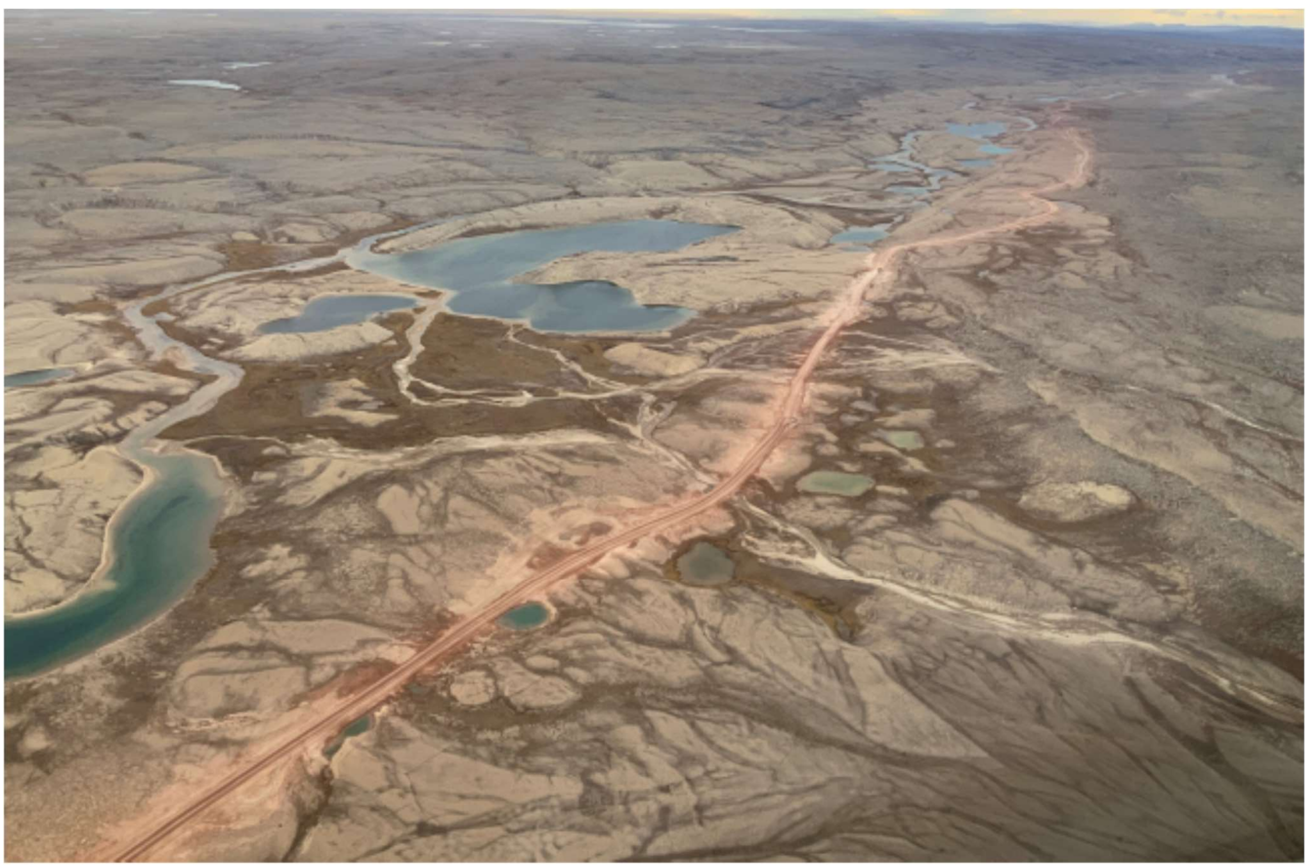
Annual Geotechnical Inspections – 2022 Report 2.

APPENDIX "C" – <u>Tote/Haul Road</u> - Photographs

Figures 81 to 96



Aerial view of a section of the Tote Road - 107 km between the Mary River Mine and Milne Inlet Port

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4.0 Tote Road – Bridges - Slopes at Former Borrow Areas - Section of the Haul Road Between the Crusher Pad and the Open Pit

4.1 Bridges (4)

a) Bridge 17 (located approximately 17 km from Milne Inlet port)

Figure 81: View of the north side of “bridge 17”, with stable riprap scour protection at the abutments.

Figure 82: View of the stable abutments with riprap erosion protection at the south side of “bridge 17”.

b) Bridge 63 (located approximately 63 km from Milne Inlet port)

Figure 83: View of the west side of bridge 63, with stable abutments.

Figure 84: View of the stable abutments with low flow at the east side of bridge 63. Also note one of the two "old" abutments with riprap erosion protection.

c) Bridge 80 (located approximately 80 km from Milne Inlet port)

Figure 85: View of the west side of bridge 80, with stable abutments and riprap scour protection.

Figure 86: View of stable abutments with riprap scour protection at the east side of bridge 80.

d) Bridge 97 (located approximately 97 km from Milne Inlet port)

Figure 87: View of the stable abutments with riprap scour protection at the west side of bridge 97.

Figure 88: View of the two stable abutments with riprap scour protection at the east side of bridge 97.

4.2 Representative Former Borrow Areas (4)

a) KM 06+900

Figure 89: View of a section of the tote road around KM 06+900. No drainage ditch is provided although the ground level adjacent to the road is higher than the road level.

b) KM 07+700

Figure 90: View of a section of the tote road around KM 07+700. No drainage ditch is provided although the ground adjacent to the road is higher than the road level and sloping toward the road.

c) KM 09+700

Figure 91: View of the face of the slope at KM 09+700. Note the large distance of the exposed slope from the tote road (the picture was taken by standing near the edge of the road).

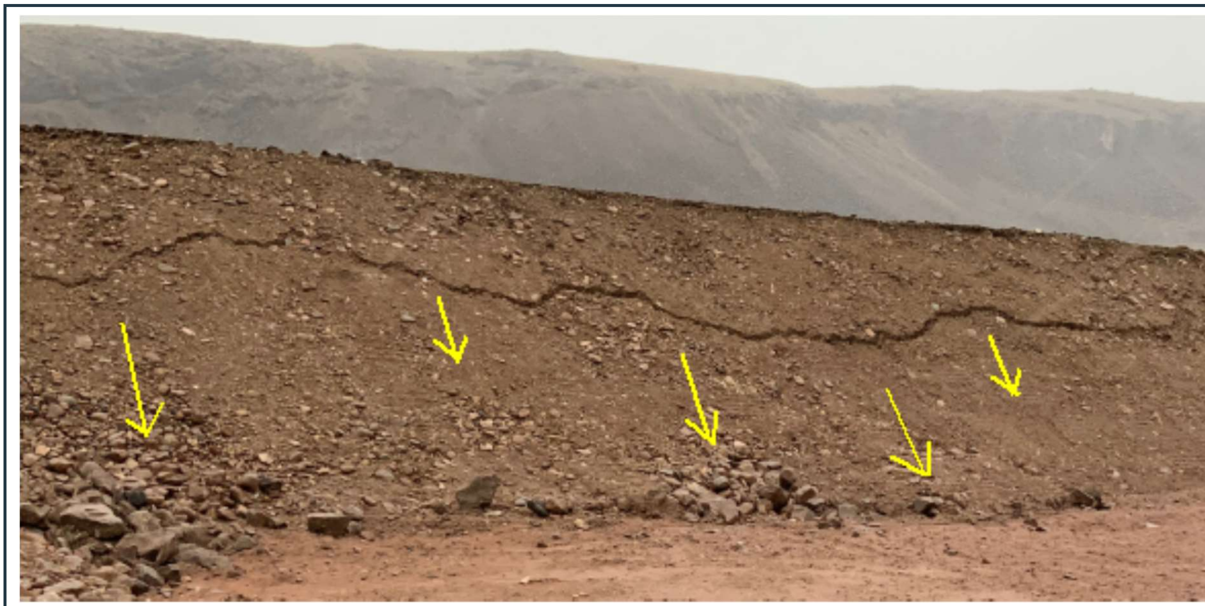

Figure 92: View of the face of the slope at KM 09+700. Note the slumping/spalling/raveling of material trickling/rolling down on sections of the face of the slope without endangering the traffic on the tote road, located well away from the slope.

d) KM 28+900 – KM 29+000

Figure 93: View of the slope at a cut section of the tote road at KM 28+900.

Figure 94: View of the slope at a cut section of the road at KM 28+900. Note the tension cracks on the crest of the slope due to freezing and thawing action in the ground. The slope is located somewhat closer to the road, but at this stage it may not present any risk to the traffic on the road or to the stability of the road. However, the slope should be monitored and reshaped to shallower inclination if necessary.

4.3 Section of the Haul Road Between the Crusher Pad and the Open Pit

Figure 95: View of the haul road between the crusher pad and the open pit around KM-107. Note the standard road components in the image, the safety berm along the fill (left) side of the road and the drainage ditch along the cut side (right) of the road.

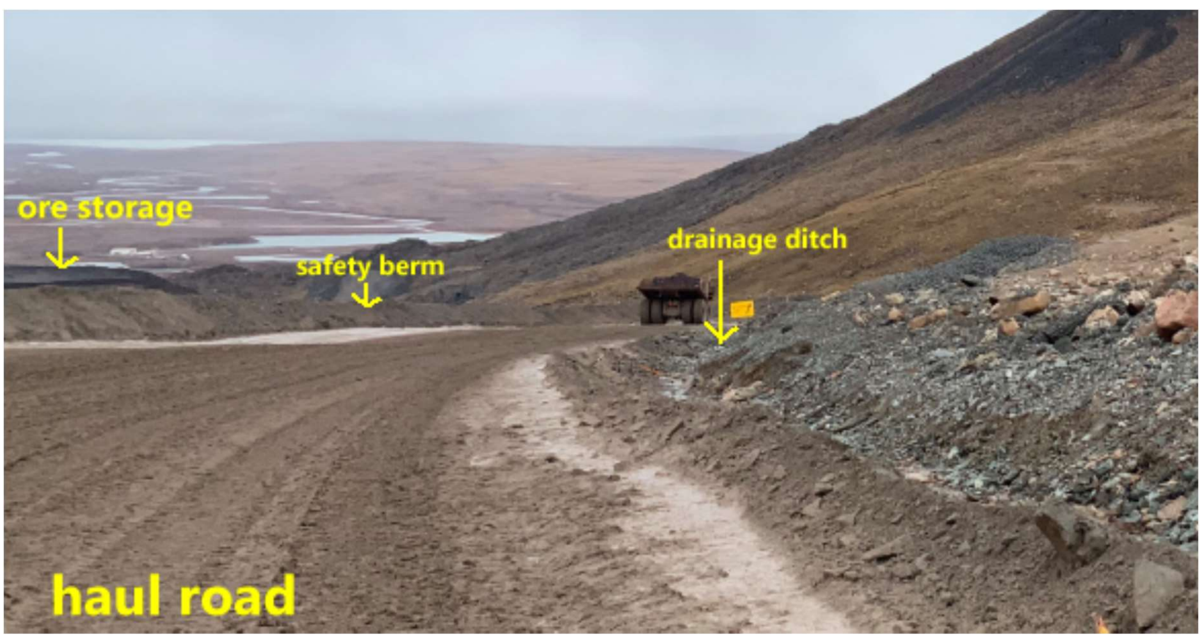

Figure 96: View of the haul road between the crusher pad and the open pit, near the ore storage at KM 106. Note the standard road components in the image, the safety berm along the fill side and the drainage ditch along the cut side of the road.