APPENDIX C.2

GEOTECHNICAL INSPECTION REPORT

Baffinland Iron Mines Corporation

August 23, 2021,
Project #: TC190307.2021

Annual Geotechnical Inspections – 2021 Report 1.

Mary River Project – Nunavut

Mary River – View of Deposit 1 – Source: Baffinland

August 23, 2021,
TC190307.2021

Mr. Connor Devereaux - Environmental Superintendent, 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

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (Wood), 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 first of the two required inspections for 2021 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) – SNC Lavalin
- Annual Geotechnical Site Inspections (2017) – ARCADIS Design and Consultancy
- Annual Geotechnical Site Inspections (2018) – SNC Lavalin
- 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) – Wood Environment & Infrastructure Solutions
- Construction Summary Reports – Crusher Pad Sedimentation Pond Expansion (2019); Waste Rock Pond Expansion Drainage System; and KM-106 Run of Mine Stockpile & Sedimentation Pond (2020)
- Annual Geotechnical Site Inspections (2020) – Wood Environment & Infrastructure Solutions

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,

Wood Environment & Infrastructure Solutions a Division of Wood Canada Limited

Laszlo Bodi, M.Sc.; P.Eng. – Principal Civil/Geotechnical Engineer
Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited

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1.0 Introduction

Wood Environment & Infrastructure Solutions (Wood), has completed the first geotechnical field inspection of 2021 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 (settling 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 or 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 and selected culverts) were also reviewed along the Tote Road, connecting the Mary River 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 summer (June) of 2021 included the followings:

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

B. Milne Inlet Port Site

a) Berms of hazardous waste disposal cells - (HWB-1 through to HWB-4)
b) Berms of the MP-01A pond
c) 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 Settling Ponds and drainage ditches
f) Q01 rock quarry
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)

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

a) Bridges (4)
b) Culverts (15)

The above listed infrastructure components were visually inspected between June 18 and 24, 2021, by the author of this report, Laszlo Bodi M.Sc.; P.Eng. of Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited. During the inspection the current condition of the structures were visually reviewed, and the findings are summarized in the following report. The locations of the inspected structures, berms, settling ponds and ditches are shown in the following Figures:

a) Mary River Mine site – Central Zone (Figure 1), Pit-1, waste rock and ore stockpile areas (Figure 2), Northern Zone (Figure 3), Rock quarry (Figure 4), 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 40
b) Appendix B : Milne Inlet Port site - Figures 41 to 70
c) Appendix C: Bridges and culverts along the Tote Road: Figures 71 to 108

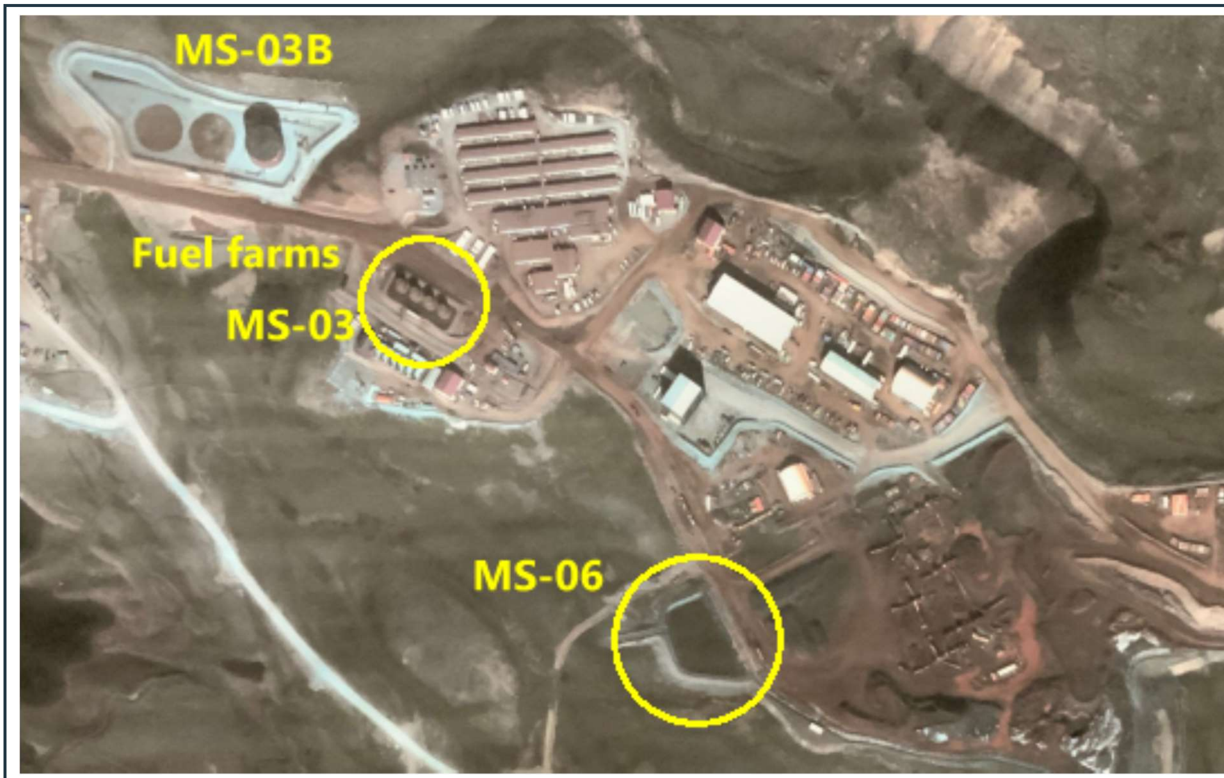

Figure 1: Site layout – Mary River Mine Site - Central Zone with fuel farms and the MS-06 settling pond

Figure 2: Mary River Site layout – Eastern Zone - Pit 1, D1Q1 rock quarry and KM106 ore stockpile areas. MS-07 and MS-08 settling ponds.

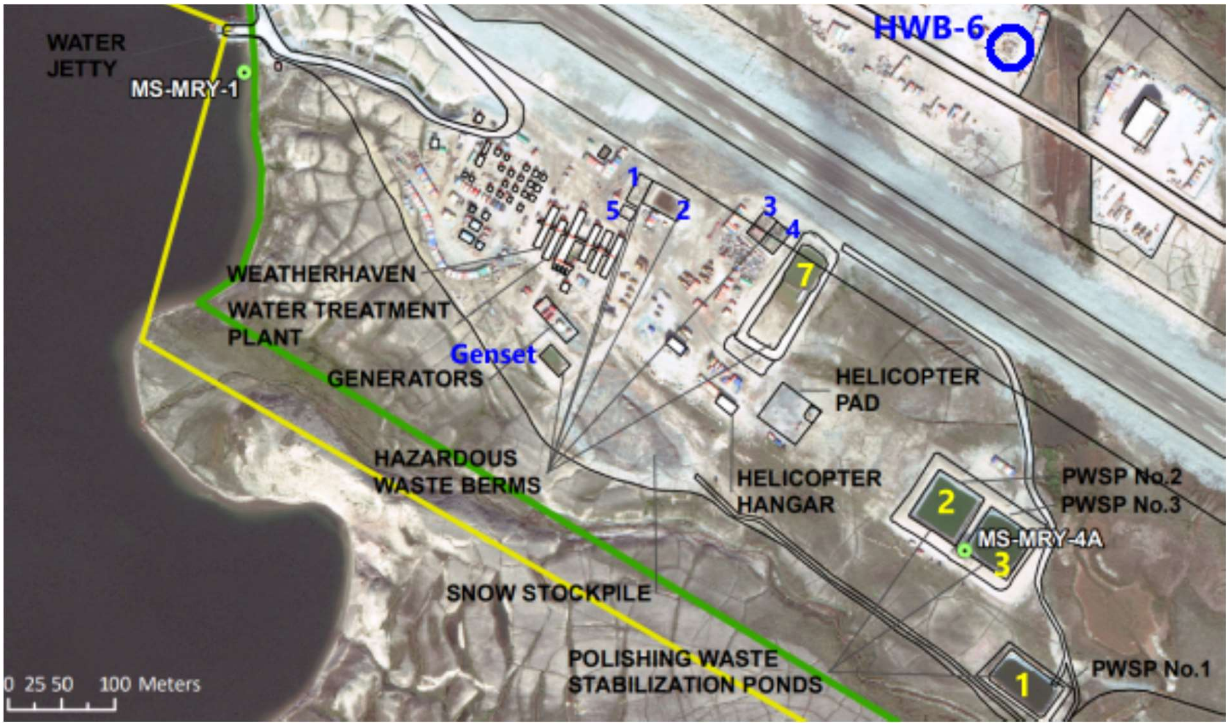

Figure 3: Site layout – Mary River Mine Site - Northern Zone with ponds and hazardous waste cells

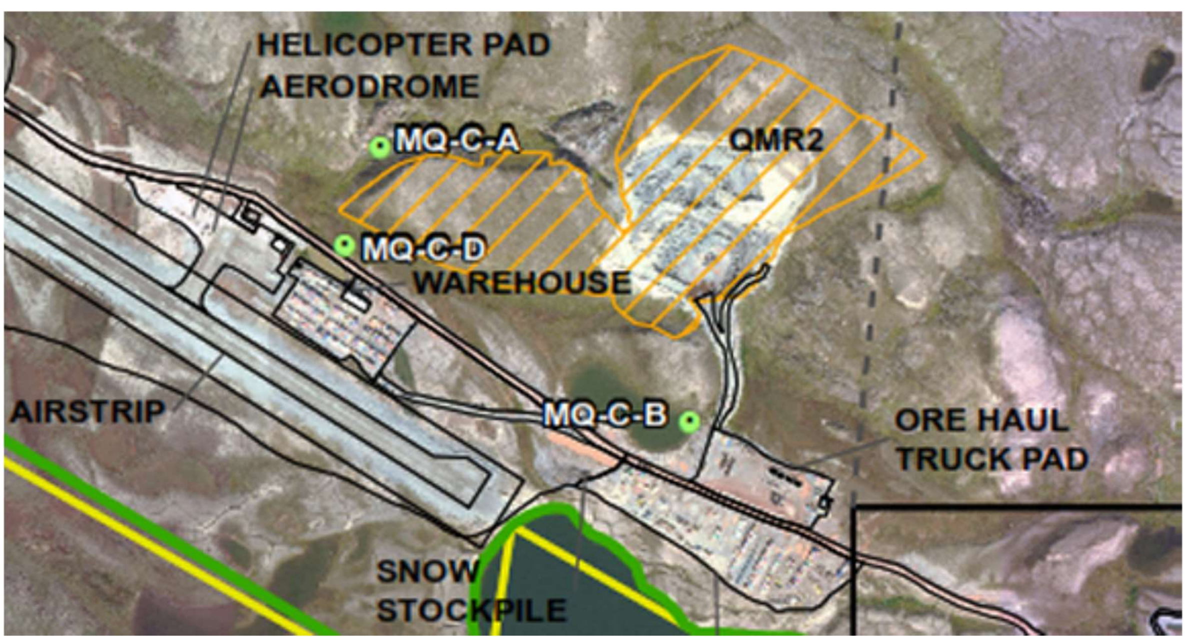

Figure 4: Site layout – Mary River Mine Site – QMR2 quarry area

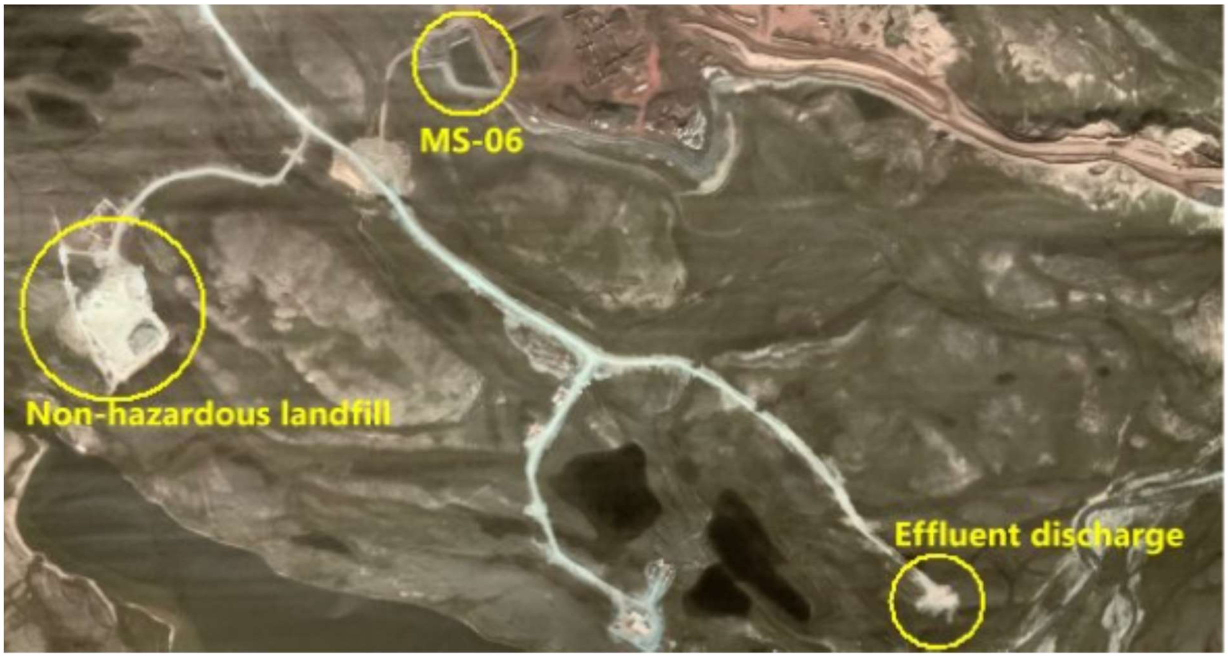

Figure 5: Site layout – Mary River Mine Site – Southern Zone

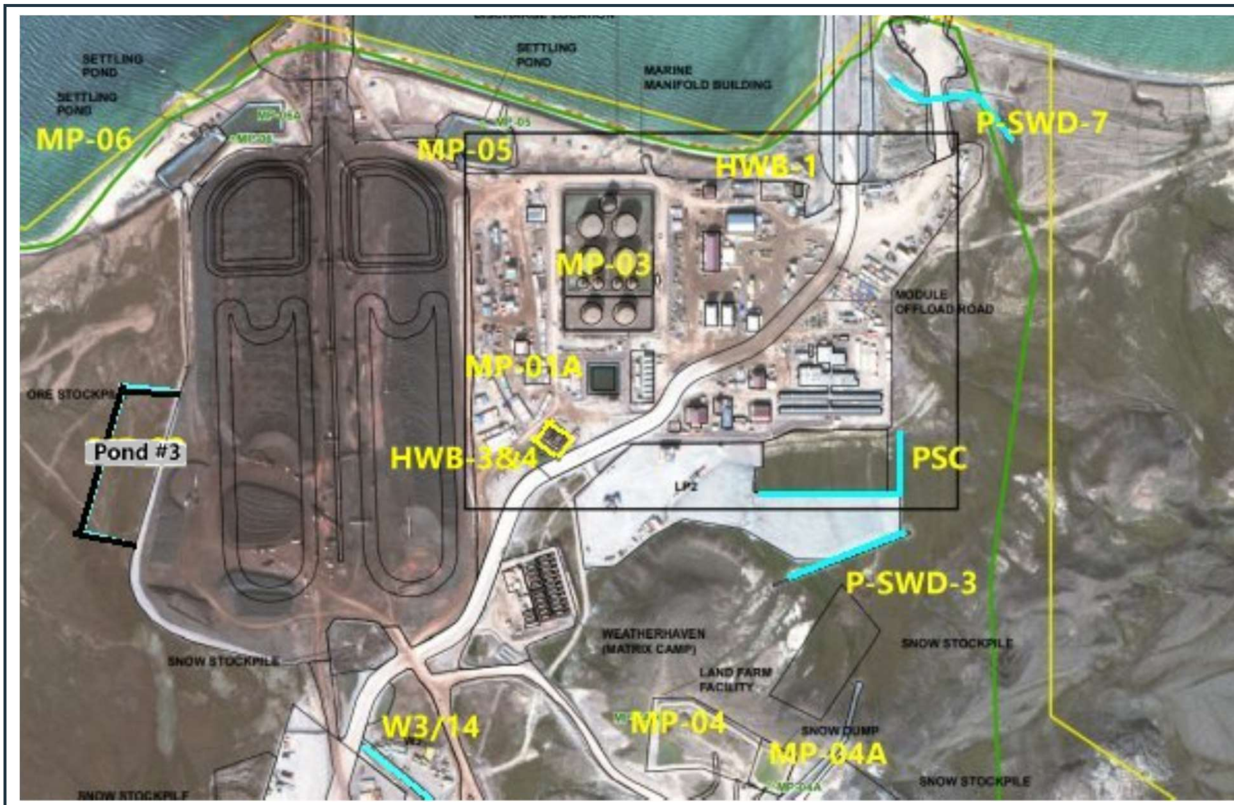

Figure 6: Site layout – Milne Inlet Port Site – Northern Zone

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 site and Milne Inlet Port (looking south). Bridge 97 is seen in the center, with two (2) culverts just south of the bridge.

Details of the recent condition survey of the individual structures, reviewed in June 2021, 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 runway, as shown in Figure 3. Pond #1 is a single structure, while Ponds #2 and #3 were constructed as twin-cells, as shown in Figure 9, which is a historic aerial image showing the robust berms around the ponds. According to 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 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 on the upstream face of the slopes (see Figures 10 to 12).

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

A relatively common issue (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 the June 2021 inspection at PWS ponds #2 and #3, as shown in Figures 11 and 12. 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 current survey/inspection.

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

There are seven (7) hazardous waste cells with perimeter berm structures located at the Mary River mine site (HWB-1 to HWB-7). HWB-6 is located at the north side of the runway near the incinerator, while the other six (6) cells are located opposite of HWB-6, at the south side of the adjacent runway, as shown in Figure 3. All HWB cells are lined with HDPE liner, and comprise shallow, stable and lined 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, with controlled/ramped access points [preferably one (1) for each berm] provided for trucks and skid-steers to dispose/remove materials in the cells.

a) HWB-1

This cell is currently empty, as shown in Figure 13. Based on information obtained during the 2019 summer inspection, 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. It may be advisable to remove the old liner from this cell and replace it with a new one and take advantage of the renewed storage capacity in the future.

b) HWB-2

As shown in Figure 14, this cell is currently empty. It is also shown in the relevant image that the perimeter berms around the cell appear to be stable. No visible seepage from the cell was noted around the berm, and the cell operates as intended, although no material is currently stored in this cell.

c) HWB-3 and HWB-4

These cells were constructed as “twin-cells” and were called “Fuel Containment” cells in historic inspection reports. As shown in Figures 15 and 16, there are fuel barrels stored on wooden pallets in both cells (jet-fuel and diesel). The berms and liner around and within the cells appear to be in good condition.

d) HWB-5

As shown in Figure 17, this cell is currently empty. It is also shown in the relevant image that the shallow berms around this cell appear to be stable and there is no visible liner damage. Should material be stored in this cell again it may become necessary to regrade the granular fill within the cell to prevent potential liner damage in the future.

e) HWB-6

The berms around this cell have been regraded and stabilized recently, and the floor of the cell is covered with new granular fill to protect the liner. The cell was almost “full” at the time of the September 2020 inspection with waste cubes and plastic containers stored on wooden pallets; however, most of that stored material had recently been removed and only a limited number of containers are currently stored in this cell, as shown in Figure 18.

f) HWB-7

Only one (1) large fuel tank is stored in this large cell, as shown in Figure 19 (white tank). The robust perimeter berms around the cell appear to be stable and the visible water (rain and melted snow) within the cell is indicative of adequate liner performance within the cell.

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

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

The MS-06 settling pond generally collects surface water from the area of the crusher pad site. The water is collected in side-ditches around the crusher pad and the temporarily stockpiled ore and conveyed to the settling pond. 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 spillway has been extended in 2018/2019 and the berm's crest raised. Details of that work were summarized in a Construction Summary Report, dated December 2019. The liner within the pond and on the upstream slopes of the berm appeared to be intact (see Figure 20), and no wet downstream slopes or toe seepage were visible at the time of the inspection. The side slopes of the well-maintained surface-water collection ditches leading to the pond were observed to be stable (see Figures 21 and 22) and the ditches are unobstructed. Temporary containment berm in place to divert contact water to the settling pond observed at the time of inspection.

b) MS-07 – Surface Water Collection Pond Adjacent to the New Ore Storage

The MS-07 settling pond has been completed recently adjacent to the KM-106 ore stockpile area. The pond has robust perimeter berms and geomembrane liner, as shown in Figure 23. No stability or seepage related problems were observed at this pond during the recent site visit.

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

Waste rock from the open pit mining operation is disposed in the WRF, which consists of a waste rock stockpile, the recently reconstructed MS-08 sedimentation pond, and upgraded perimeter drainage ditches constructed around the facility. Surface runoff and seepage from the WRF is collected in the ditches and directed to the MS-08 pond. The MS-08 settling pond is surrounded by recently reconstructed stable berms, as shown in Figure 24, in Appendix A. Details of the reconstruction work were summarized in a Construction Summary Report, dated February 1, 2020. Based on that report, the berms have been completely reconstructed using generally granular soils form borrow sources similar in composition as the ones underlying the base of the pond. The pond is lined with exposed new HDPE liner that is secured in place in anchor trenches, extending down into the permafrost.

At the time of the June 2021 inspection, ice and snow still covered the entire pond, shown in Figure 24. As pointed out earlier, contact water from the WRF is collected in perimeter ditches and the collected water flows to the settling pond from the east and west. As shown in Figures 25 and 26, the drainage ditches are well maintained, having stable slopes. A few boulders have rolled into the west ditch from the adjacent waste rock pile and these boulders should be removed from the ditch.

Water from the MS-08 pond is pumped to the nearby designated facility for treatment, if required. There is a lined treatment cell in good condition located immediately next to the WRF water treatment plant with stable perimeter berms, shown in Figure 27.

2.4 Berms of the Generator Fuel Bladders

This pond has previously contained fuel bladders for the generators; however, the cell is currently empty. The pond is located immediately adjacent to the power generators, south-west of the hazardous waste cells (Figure 2). As shown in Figures 28 and 29, the perimeter berm around the pond generally comprises granular materials and the pond is lined.

A large area of the adjacent road was flooded by melting snow at the time of the June inspection, as shown in Figure 29. Trucks bypassing the ponding water continuously encroach into the toe of the berm and this encroachment requires re-establishment to the original berm configuration using compacted granular fill, to prevent potential for local berm instability (i.e., regressive erosion / sloughing). To prevent further deterioration of the pond's berm, the drainage of the melting snow in the area must be rectified. The surface water should be redirected away from the berms by excavating properly designed and constructed drainage ditches in the area.

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, as shown in Figure 30. In addition, a second berm, constructed from crushed rock fill, provides additional protection at two (2) sides (Tote Road and airport parking sides) of the facility. The facility is lined to the crest of the perimeter berms, and the liner within the cell appears to be in good condition.

b) MS-03 Diesel Fuel Tank Farm

The stable berms around the "old" diesel fuel tank farm are in excellent condition (see Figure 31) and they are well maintained. The collected rainwater (and melted snow) within the cell appears to be clean and its presence 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). There are a few wood/timber pieces visible within the facility (Figure 31) that should be removed during regular maintenance.

c) MS-03B New Fuel Tank Farm

A new, large capacity fuel tank farm is located adjacent to the Tote Road, as shown in Figure 32. Based on the field review in 2019, the new tank farm was constructed as specified in the design drawings (subgrade, berms, bedding layer, liner, and protective cover). Recent observations (ponding water as shown in Figure 32) within the facility have confirmed that the liner is intact, and all berms are stable and well maintained.

2.6 Solid Waste Disposal Area

The solid waste disposal area is located in the southern zone of the Mary River Mine Site, as shown in Figure 4. Only non-hazardous solid waste is placed into this unlined facility. The site is surrounded by a new chain-link fence and a lockable gate. As shown in Figure 33, a large quantity of surface water was ponding along a section of this new fence during the June inspection, and some of that water flows out of the facility uninterrupted. To prevent the migration of suspended solids into the surrounding area, it is suggested that erosion and sediment controls be implemented and regrading of this area to prevent pooling water.

2.7 Camp Lake Silt-sedimentation Check Dams and Berms

The Camp Lake silt sedimentation control berms and check dams (all stable) are located along the access road to the mine's water intake jetty. The primary purpose of these structures is to collect 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 34. The image shows that the cells are working well, and the silt particles are collected within them.

2.8 Water (Effluent) Discharge Area

The effluent discharge point is located south of the Mary River mine complex, as shown in Figure 4. There are two (2) discharge pipes at that location, conveying the discharged water down the slope's surface. 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 35. Some additional rock fill has been placed on the slope recently, and the slope appears to be stable.

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 visible in Figure 36. The access/haul road 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.

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

a) QMR2 Rock Quarry

There is no activity currently noted in the QMR2 rock quarry (Figure 37). The exposed slopes (rock face) in the quarry appeared to be in stable condition overall, with few localized fall hazards (loose boulders) noted at the top level of the pit walls in some areas, as shown in the relevant photograph.

As reported during the 2020 inspections, the lowest plateau (main level) of the quarry still exhibits very poor surface water control and therefore ponding rainwater and melted snow still cover a section of the quarry's main level. The excess water is still flowing uninterrupted along the access road (Figure 38), significantly eroding the road, and initiating erosion and failure of the road embankment's slope. As pointed out in the earlier (2020) report, the uncontrolled surface water presents not only potential slope stability issues in the area, but also traffic safety issues as well, particularly after freezing. To maintain traffic safety and stable side slopes, the ponding water at the quarry's main level must 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 flowing uncontrolled along the access road.

b) D1Q1 Rock Quarry

This quarry has just been opened and some rocks (generally boulders) have been excavated/removed from a relatively small area within the quarry, as shown in Figure 39. The exposed rock face visible in a small area appears to be stable.

c) KM 106 Ore Storage (former D1Q2 quarry area)

The area previously considered as the future D1Q2 rock quarry is now under development as an ore stockpile area. As shown in Figure 2, the selected area is located south of the "deposit-1" open pit, along the east side of the ore haul road. Preparation of the ore storage area and placement of diversion and drainage control berms were still in progress at the time of the June 2021 inspection (Figure 40).

As shown in the image, the "diversion" berms are constructed from granular fill that may not function well in diverting all surface runoff to the adjacent MS-07 pond. The presence of ice along the downstream toe of one (1) of the berms shows that some of the surface run-off seeps through the permeable berm and the water spreads around the toe of the downstream slope instead of flowing into the MS-07 pond, as it was intended in the design. Consideration shall be given to add a fine-grained core into the granular berms at the critical locations where seepage through the berms is noted (like the area marked by the yellow circle in Figure 40).

3.0 Milne Inlet Port Site

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

There are four (4) hazardous waste-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 large fuel storage area, respectively. HWB-3 and HWB-4 were constructed as twin-cells, located south/south-west of the MP-03 fuel storage farm.

a) HWB-1

The HWB-1 is the largest cell, surrounded by stable perimeter berms constructed of granular soils, as shown in Figures 41 and 42, in Appendix B. The stored materials in the cell were placed close to the berms with the center of the cell generally empty. Ponding water was visible in the deeper area of the cell, indicating that the liner within the cell is intact. No seepage from the cell was visible around the downstream toe of the perimeter berms and the recently placed 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 43, the cell has been filled with clean granular aggregate 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 Figures 44 and 45. These cells contained only shipping containers in the past; however, the cells have been recently emptied and "refurbished". At the time of the June 2021 inspection, the cells contained fuel barrels on wooden pallets, with only two (2) shipping containers present in HWB-4 (as reported in September 2020 as well). Some of the berms around the cells have been regraded and appear to be in stable condition with no indication of slope movements or settlement. Ponding water at the back of the cells indicate that the geosynthetic liner within the ponds is intact.

3.2 MP-01A Pond

The MP-01A polishing waste stabilization pond is located immediately south of the MP-03 fuel tank farm. As shown in Figure 46, the berm around the well-maintained pond is in excellent condition and the liner appears to be intact. No sign of slope instability, settlement or seepage from the pond was noted during the field inspection. As shown in Figure 46; however, some settled soil sediment and a wooden pallet were visible in one (1) corner of the pond, which should be removed from the cell. The removal of these materials should be carried out carefully, so as not to damage the geosynthetic liner.

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 47, the facility is well maintained and all berms around the site are in excellent condition. The visible ponding rainwater and melted snow within the fuel farm is an indication of proper liner functionality. The facility is fenced in, and no indication of instability or seepage was noted on and around the berms, comprising compacted granular materials.

3.4 MP-04 and 04A Landfarm and Contaminated Snow Disposal Cells

The MP-04 cell is located south of the Port complex at a higher elevation, adjacent to the rock quarry. It is a large landfarm cell that stores contaminated soils and a few empty shipping containers. The berms around the cell are in stable condition and the ponding water in one (1) corner of the cell indicates proper liner functionality, as shown in Figure 48. No wet downstream slopes or toe seepage were noted during the June 2021 inspection.

MP-04A is a smaller cell immediately adjacent to cell MP-04, used generally for the disposal of contaminated snow. This pond was constructed immediately adjacent to the MP-04 landfarm, with the same stable perimeter berms, as shown in Figure 49. No seepage from the cell was noted anywhere around the downstream toe of the berms, and ponding water within the cell indicates that the liner is in good condition.

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

The high-grade iron ore that is mined, crushed, and screened at the Mary River mine is transported to Milne Port, and stockpiled across a large area near the ship loader. Contact water from the area is collected along the west and north sides of the ore stockpile in side-ditches and conveyed into three (3) water collection settling ponds, strategically located around the ore storage area, as shown in Figure 6.

a) Settling Pond #3

Settling Pond #3 was recently constructed west of the ore storage area, as shown in Figure 6. There are stable, lined berms along three (3) sides of the pond (Figure 50) that contains two (2) sumps. According to the design, the geomembrane and protective geotextile on the internal slope of the berms extend 2.5 m below the surface and are anchored into the permafrost zone to prevent any seepage from the pond into the ground below and around the pond. Excess water from the pond is pumped into the nearby, large capacity MP-06 settling pond if necessary.

The area of the pond and its immediate vicinity shows a distinctively 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. 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 #3 pond was 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 "eliminated" beneath the perimeter berm during its construction, and the installation (embedment) of the HDPE liner into the permafrost beneath the upstream toe of the berms. Away from the berms (inside and outside of the pond), however, the initial ground and groundwater conditions have not been changed, only some fill was placed over a few areas. The thawing ice wedges along those historic depressions have resulted in the cracking of the overlying new fill in limited areas outside of the pond, as shown in Figure 51 (green arrows). No such cracks or depressions are now visible inside the pond since that area has been covered by granular fill during the construction of the pond.

It should be noted that the surface cracks have no impact on the stability and integrity of the berms whatsoever. The cracks may seem somewhat wide locally; however, they do not extend too deep. It is also seen in Figure 51 that the cracks developed across areas where the thickness of the overlying fill is/was negligible. No cracks are visible across areas with thicker fill or within the berms. At this stage it is suggested 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. The fill should be placed over the cracked areas within approximately 3 m of the downstream toe of the berms. It should be noted that such cracks will develop in other areas in the future; however, they represent no detrimental impact on the stability and integrity of the berms and the liner.

b) MP-05 Settling Pond

The MP-05 settling pond is located adjacent to the north-east corner of the ore stockpile, while MP-06 was constructed at the north-west corner. Both settling ponds are in excellent condition with stable, well maintained berms and intact geomembrane liners, as shown in Figures 52 to 57.

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 ponds' perimeter. Minor liner damage was noted during the 2020 fall inspection on the slope of the southern intake channel to the pond. That damage has been repaired; however, new similar damages were now noted on the west slope of the intake channel, as shown in Figure 53. It appears that these damages are returning problems on the slopes of the intake channel, most likely caused by snow clearing equipment during winters. Consideration should be given to place protective berms adjacent to the slope's crest near the channel to prevent such damages.

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 54.

c) MP-06 Settling Pond

The MP-06 settling pond (Figures 55 and 56) is divided into two (2) parts by a liner-covered internal berm and the northern cell is called the "overflow pond" (Figure 57). The liner in the ponds appeared to be intact. Minor liner damage that was visible at the intake to the MP-06 pond and reported last year has now been repaired, as shown in Figure 55. Both settling ponds have emergency spillways and the water level in both ponds was well below the spillways' inverts at the time of the inspection. The berms around the ponds are in good condition, and no seepage was noted from the cells.

3.6 Q01 Rock Quarry

No activity was noted in the upper levels of the Q01 quarry at the time of the inspection. The rock slopes in the quarry appeared to be in stable condition (still covered with snow in some areas), as shown in Figure 58. Crushing of the previously quarried cobbles and boulders was in progress at the lower level of the quarry only.

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

There are several surface water collection drainage ditches (listed above) at Milne Port, some of which are still under construction or improvement, as shown in Figures 59 to 68. These open ditches are excavated somewhat into the native soils and then their sides and inverts received erosion protection layers comprising fine to coarse crushed rock aggregate. It was noted during the inspection that geotextile has been used wherever the native subgrade was composed of fine-grained material to prevent migration of fines into the rockfill and eventually into the ditches. The issues that were identified at these ditches during the June 2021 inspection are summarized below:

- As noted during last year's (2020) inspections and visible even more distinctively this year, sloughing of the sides of the P-SWD-3 ditch, adjacent to the LP2 laydown area, has occurred at several locations along the ditch, as shown in Figures 59 and 60. 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-dump and quarry diversion runoff), continuously flowing into the ditch that is not able to convey the collected water to a discharge location. As shown in Figure 59, the native ground adjacent to the ditch slopes toward south-west, while the ditch was designed and excavated to drain the water toward north-east; however, is currently not draining as designed. It is suggested that the existing condition of the P-SWD-3 drainage ditch and adjacent topography be re-evaluated in detail, and that the ditch be redesigned and reconstructed to drain the large amount surface water to the correct direction
- Sections of the P-SWD-5 ditch were noted with missing riprap, as shown in Figure 61. These sections should be repaired, and the slopes of the ditch regraded to facilitate uninterrupted flow in the ditch.
- The P-SWD-6 drainage ditch (Q01 South) was designed and constructed to collect surface water from the southern part of the rock quarry and convey the collected water toward the Tote Road. As shown in Figure 62, a section of the quarry was over-excavated somewhat and as a result seasonal ponding water is visible adjacent to the northern end of the ditch. Since the invert of the ditch is located at higher elevation it is suggested that a pump be installed, and the ponding water be pumped into the ditch whenever needed (most likely after snowmelt and after heavy rains).
- Minor sloughing of the riprap in the 380M ditch was visible that should be repaired (Figure 67).
- The PSC drainage ditch is still under construction. A localized slope failure at the west end of the ditch was noted during the June inspection, as shown by the yellow circle in Figure 68. The failed slope should be repaired, regraded and the riprap rock fill cover reinstated.

3.8 Tote Road Ditches and Culverts

As noted above, surface water from the drainage ditch P-SWD-6 is conveyed down the slope through corrugated galvanized steel culverts, installed under an internal haul road adjacent to the rock quarry and then under the Tote Road (Figures 69 and 70). The water in the ditches is conveyed through the culverts to small natural ponds, located along the west side of the Tote Road. Minor siltation is visible at the inlet of the culverts; however, all culverts appear to be clean, and the seasonal flow is uninterrupted.

4.0 Tote Road Between Mary River and Milne Inlet - Bridges and Culverts

Four (4) bridges and fifteen (15) culverts were visually inspected during the recent site visit. The general conditions of those structures 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 Port)

As shown in Figures 71 and 72, the abutments of this bridge are stable and no scour in the riverbed around the abutments was noted during the recent site visit in June. 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 72. The metal bin structures of both “old” abutments have suffered some damages in the past, particularly the south abutment. As pointed out in earlier reports, the two (2) old (somewhat damaged) abutments should be kept in place since they provide additional support to the adjacent “new” abutments.

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

As shown in Figures 73 and 74, the abutments of this bridge are stable and no scour around the abutments was noted during the recent site visit in June. 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 two (2) historic abutments (visible in Figure 74), 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, the two (2) old abutments should be kept in place since they provide support to the adjacent currently used abutments.

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

As shown in Figures 75 and 76, the abutments of this bridge are stable and no scour in the riverbed and around the abutments was noted during the recent (June) site visit. The abutments show no differential settlement or any structural discrepancy like deterioration of the metal bolt-a-bin structures supporting the bridge.

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

As shown in Figures 77 and 78, 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. There are two (2) culverts installed under the Tote Road just south of the bridge, to convey some of the water in the river channel to the west side of the tote road (bypassing the bridge, as shown in Figure 8). Due to the local topography of the riverbed, some of the water flows from the front of the culverts toward the bridge immediately adjacent to the toe of the south approach embankment. No scour at the toe of the embankment was noted (Figure 78).

4.2 Culverts (15)

Fifteen (15) culverts (BG-033, CV-030A&B, CV-038, CV-076, CV-078, CV-083, CV-094, CV-102, CV-107, CV-110A, CV-111, CV-112D, CV-114D, CV-202, and CV-225) installed beneath the Tote Road between Mary River and Milne Port were inspected during the recent site visit in June. As reported in earlier inspection documents (2019 and 2020), the majority of the culverts are in good condition, and they facilitate uninterrupted flow of water from their upstream to their downstream sides.

Photographs of the inlet and outlet ends of all (15) inspected culverts are shown in Figures 71 to 108, in Appendix C. Sketches of typical problems with corrugated pipe culverts and their suggested repair alternatives are shown in Figures 109 to 111.

No issues were noted at six (6) of the fifteen (15) culverts, at BG-33, CV-78, CV-94, CV-111, CV-112D, and CV-225. Culverts (9) that require some repair/rehabilitation works are listed below:

CV-030 A&B (Figures 81 and 82): As shown in the images, one (1) of these two (2) pipes is completely clogged with silt (yellow circles). It is suggested that the clogged pipe be replaced, and both ends of the pipes be protected from siltation by placing riprap around them as per the approved Civil Design Criteria.

CV-038 (Figures 83 and 84): The inlet of this culvert is too short, and the riprap is missing from around the pipe. This problem may result in slope erosion of the road embankment around the pipe and early siltation and potential clogging of the pipe. The suggested repairs are in alignment with the current approved Civil Design Criteria for the Project.

CV-076 (Figures 85 and 86): The inlet of this culvert is too short. As shown in Figure 85 this problem resulted in too steep slope of the road embankment and its erosion around the pipe. The suggested repairs are in alignment with the current approved Civil Design Criteria for the Project.

CV-083 (Figures 89 and 90): The outlet of this culvert appears to be somewhat short. As a result, erosion of the road embankment is visible around the culvert. The pipe should be extended by about 1.5 m and the regraded slope of the road embankment around the pipe shall be covered by the placement of crushed rock riprap, as per Civil Design Criteria.

CV-102 (Figures 93 and 94): As shown in Figure 93 (yellow circle), one (1) of the pipes has suffered some damages possibly during snow clearing in the winter. The hole on the top of the pipe has no impact on the flow of water at this stage; however, the condition of this pipe should be monitored during regular maintenance.

CV-107 (Figures 95 and 96): This is a short, small diameter culvert that was installed at somewhat higher elevation instead of the lowest point of the native ground in the area. Consideration shall be given to replace this culvert with a longer and somewhat larger pipe a few meters south of the current location, shown by the yellow question mark in Figure 96. It is visible around that question mark in the image that most of the water is seeping through the road embankment at that location, instead of flowing through the culvert. Such internal seepage within the embankment may result in erosion and instability of the road, hence the installation of a new culvert at this location is suggested.

CV-110A (Figures 97 and 98): Minor damage was visible on the outlet of this culvert last year; however, the long end of the pipe has recently been cut off, as shown in Figure 98. The image also shows some erosion on the road embankment's slope adjacent to this culvert, which shall be repaired by placing and compacting soil fill into the embankment first, followed by the placement of crushed rock riprap as specified earlier for other culverts as per Civil Design Criteria.

CV-114D (Figures 103 and 104): Both ends of the two (2) culverts are damaged and they are too short, particularly at the outlet ends. Both pipes should be repaired and extended (preferably replaced with new, longer culverts). Once the pipes are replaced, the road embankment should be widened at the downstream end of the pipes, and riprap should be placed around the culverts at both ends, to provide stable embankment slopes, and protection from erosion. The extension of these culverts at their outlets is particularly necessary since the increased erosion of the road embankment in this horizontal road curve may become a traffic safety issue.

CV-202 (Figures 105 and 106): There are two (2) problems with this culvert, which were previously reported in 2020. At the inlet end, the eroding embankment material has resulted in some siltation and clogging of the pipe. The second issue is visible at the outlet end of the pipe where its invert is located below the original ground level, which has resulted in continuous ponding water around the pipe end. It is suggested that the native ground at the front of the pipe be regraded, and uninterrupted flow be provided.

As suggested for the above listed culverts, the approved civil design criteria document for the Project should be reviewed and the repair work at the identified culverts should be carried out. Note that to be effective in surface water drainage, culverts must be laid in the correct position and the surrounding slopes and drainage areas may have to be graded and reinforced (geotextile and riprap). Also note that positioning a culvert too low will make it prone to accumulating soil and subsequently becoming blocked, while positioning a culvert's discharge ends too high may cause unwanted erosion.

5.0 Conclusion

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (Wood), has completed the first of the two (2) required geotechnical field inspections of 2021 at the Mary River Project in Nunavut. Based on field observations, the condition of the inspected infrastructure components can be summarized as follows:

- All settling ponds and waste 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 (based on observations of adjacent areas along their footprints). Minor disturbance on the surface of the slopes and crests were noted during the field inspection at some of the berms, however, these discrepancies can be rectified by a more frequent maintenance (regrading) program. Foot and truck traffic on the berms (crest and slopes) must be limited.
- The water and waste storage settling ponds and cells comprised of HDPE/LLDPE liners are in good condition. No seepage from the currently operating ponds and cells was noted. Minor damages to the liner were noted at a few locations above the water lines, as detailed in this report. As specified, these minor damages to the liners should be repaired as soon as practically possible, preferably prior to next year's inspection. It appears that the damages are most likely caused by snow clearing equipment during winters. Consideration shall be given to install protective soil berms wherever ponds and cells with geosynthetic liner are present close to the edge of roads (Figure 53 for example).
- Open drainage ditches across the Mary River and Milne Port sites are generally in good condition with some erosion and slope sloughing visible at a few locations, particularly where riprap slope protection is missing. 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. One (1) of the drainage ditches in the port (P-SWD-3) requires special attention. Currently the floor of this drainage ditch slopes away from the designed and constructed discharge point, which resulted in a situation where the ditch is almost always full of seepage water (particularly during snowmelt) and the side-slopes of the ditch have failed along almost the entire length of the ditch. It is recommended that this ditch be redesigned and reconstructed to facilitate efficient drainage of all surface water from the area. The design must consider the fact that a large amount of snow is stockpiled adjacent to this ditch every

winter and runoff that is diverted from the north end of the quarry which generates run-off water in the spring/summer that must be drained efficiently.

- The abutments at the four (4) inspected bridges appear to be in good condition and no scour in the riverbed and around the abutments was noted at the time of the site visit in June 2021.
- Water crossings by culverts along the Tote Road at the inspected locations are generally in good condition. At several locations, however, culverts were noted as being either too short, or somewhat damaged, and their inlets and outlets lack riprap erosion protection. As specified within the report, those culverts should be repaired/replaced as soon as practically possible, preferably prior to next year's inspection. The Project's Civil Design Criteria must be followed during culvert maintenance activities.

6.0 Closing Remarks

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

Sincerely,

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

Prepared by:

Laszlo Bodi, M.Sc., P.Eng.
Principal Geotechnical Engineer
Tel: +1 905 815-2944
laszlo.bodi@woodplc.com

Reviewed by:

Mickey Davachi, Ph.D., P.Eng., D.GE, FASCE
Principal Engineer
Tel: +1 403 387 1917
mickey.davachi@woodplc.com

Baffinland Iron Mines Corporation

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Annual Geotechnical Inspections – 2021 Report 1.

APPENDIX "A" - Mary River Mine Complex - Photographs

Figure 9 to Figure 40

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1.0 Mary River Mine Complex

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

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

Figure 10: PWS pond #1. Well maintained stable perimeter berm and liner.

Figure 11: PWS pond #2 – Stable, well-maintained berm around the pond. – A small "floating" section of the liner is visible in the center of the pond (yellow circle).

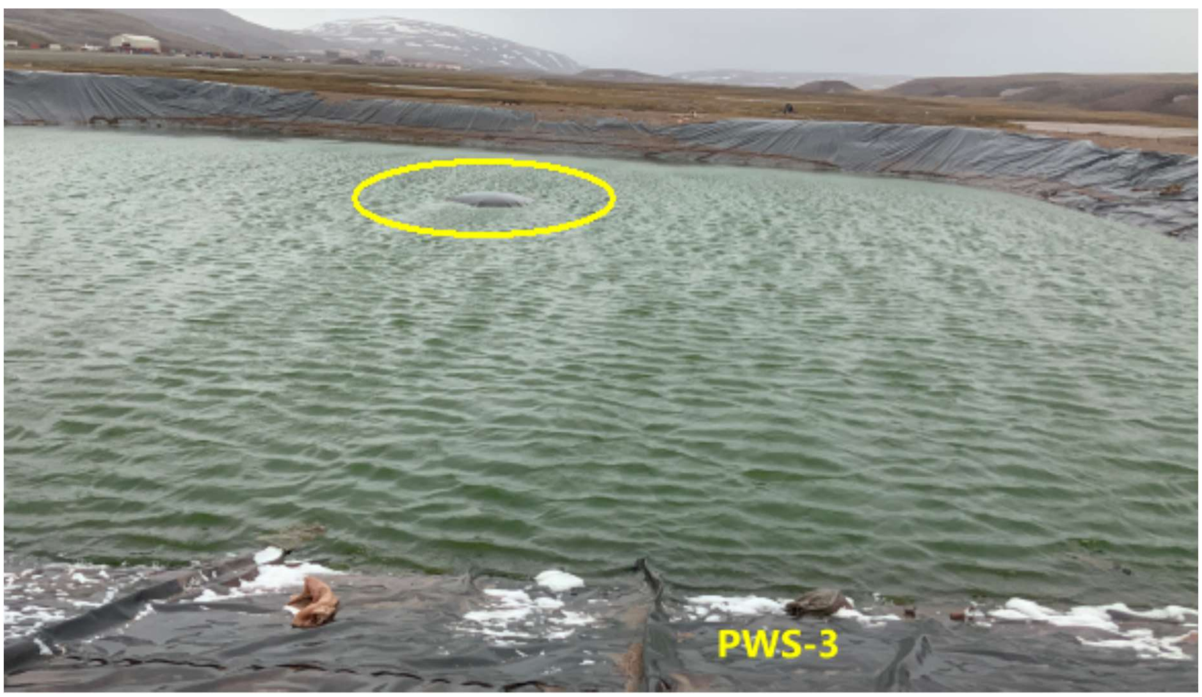

Figure 12: Stable perimeter berms around PWS pond #3 – A small "floating" section of the liner is visible in the pond (yellow circle).

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

a) HWB-1

Figure 13: View of HWB-1 – Currently this cell is empty.

b) HWB-2

Figure 14: View of stable berms around HWB-2. The cell is currently empty.

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 at HWB-4, with jet-fuel barrels stored on wooden pallets.

d) HWB-5

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e) HWB-6

Figure 18: View of the recently upgraded stable berm and interior granular fill protecting the liner at the HWB-6 cell.

f) HWB-7

Figure 19: View of the large, flooded HWB-7 cell, with only one fuel tank stored.

1.3 MS-06, MS-07 and MS-08 Surface Water Collection Ponds and Ditches

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

Figure 20: MS-06 surface-water collection and settling pond with robust, stable berms and intact liner.

Figure 21: Well-maintained drainage ditch next to the crusher plant, leading to the MS-06 pond.

Figure 22: Drainage ditch next (south-west) to the crusher plant, leading to the MS-06 pond.

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

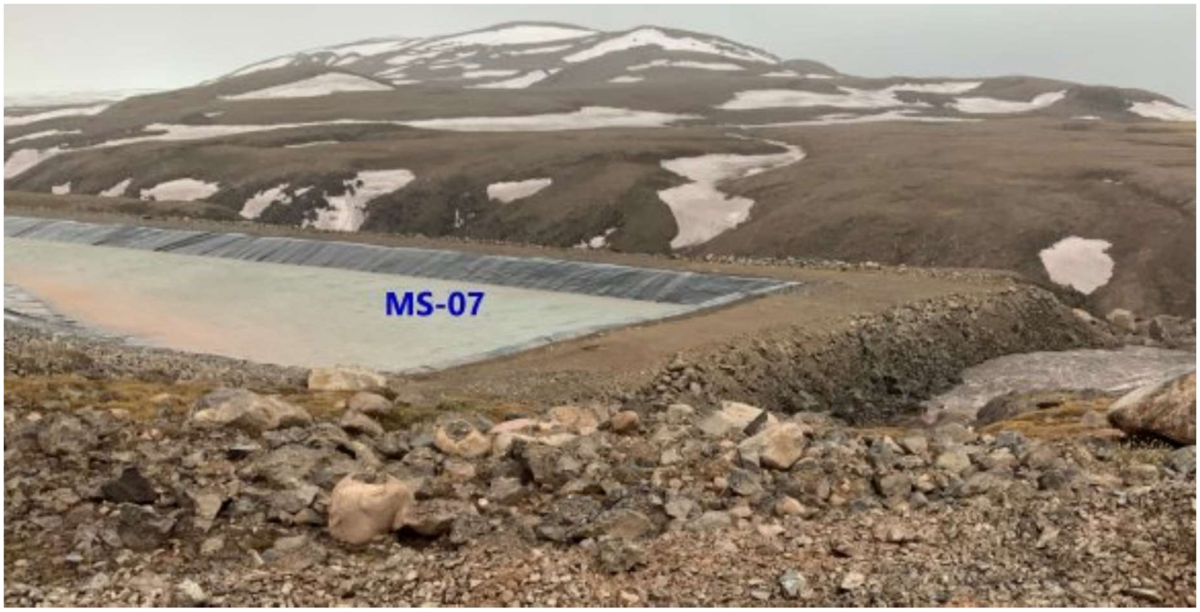

Figure 23: View of the recently completed MS-07 surface-water collection pond with robust, stable berms and intact liner.

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. Ice is still present at the end of June.

Figure 25: Drainage ditch around the west side of the waste rock facility. Boulders should be removed.

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

Figure 27: Stable rock fill berm at the water treatment pond, adjacent to the waste rock facility.

1.4 Generator Fuel Berm

Figure 28: View of the stable berm around the "generator fuel bladder" cell. The cell is currently empty.

Figure 29: View of ponding water adjacent to the north-east berm of the "fuel bladder" cell. Trucks bypassing the ponding water on the road are "cutting" into the toe of the berm (yellow circle).

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Figure 30: View of the well-maintained sand and gravel berm at the lined jet-fuel storage facility, with the additional rock fill protective berm, constructed between the cell and the tote road.

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Figure 31: Well-maintained, stable berms around the MS-03 diesel fuel farm, with some ponding water.

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Figure 32: View of the well-maintained new fuel tank farm, with some ponding water.

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Figure 33: Solid waste landfill facility with ponding water along a section of the new perimeter fence.

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1.8 Rock Fill Slope at the Water Discharge Area

Figure 35: Stable rock fill riprap slope protection at the water discharge area.

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1.10 Rock Quarries and KM106 Ore Stockpile Area

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Figure 38: Erosion and stability problem along the access road to the quarry.

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Figure 39: View of the early stage of rock excavation in the new D1Q1 rock quarry.

c) KM106 Ore Stockpile area

Figure 40: View of the surface water diversion berm at the new KM-106 ore stockpile area.