APPENDIX E.8.4

INAC INSPECTION REPORTS AND BAFFINLAND RESPONSES

Indigenous and Northern Affairs Canada | Affaires autochtones et du Nord Canada

WATER LICENCE INSPECTION FORM

☒ Original
☐ Follow-Up Report

Licensee	Licensee Representative
Baffinland Iron Mines Corporation (BIMC)	Laura TAYLOR/Allan KNIGHT
Licence No. / Expiry	**Representative's Title**
2AM-MRY1325	Environmental Manager
Land / Other Authorizations	**Land / Other Authorizations**
8BC-MRY1416, 2BE-MRY1421	N2014X0012, N2014Q0016, N2014C0013
Date of Inspection	**Inspector**
May 29 - June 1,2017	Jonathan MESHER

Activities Inspected

☒ Camp ☐ Drilling ☒ Mining ☒ Construction ☐ Reclamation ☐ Fuel Storage
☒ Roads/Hauling ☐ Other: ☐ Other:

Conditions: **A - Acceptable** **C - Concern** **U - Unacceptable** **NA – Not Applicable** **NI – Not Inspected**

Water Use	Condition	Comment	Site Conditions	Condition	Comment	Haz/Mat Management	Condition	Comment
Intake/Screen	NI		Water Management Structures	U	1, 4	Storage	NI	
Flow Measure. Device	NI		Culverts / Bridges	U	4	Spills	NI	
Source:	A		Drainage	C	1,4	Spill Plan	A	
Water Use:	A		Erosion / Sediment	C				
Recirculation (y /n)	NA		Mitigation Measures	A		**Administrative**		
			Reclamation Activities	A		Records	NI	
			Materials Storage	C	1,4	Reports	A	
Waste Disposal			Signage	A		Plans	A	
Waste Water	A					Notifications	A	
Solid Waste	NI		**Monitoring**			**Other**		
Hazardous Waste	NI		Sample Collection / Analysis	NI		Follow-up from previous inspection	A	

**The number in the comments field will correspond with specific comments provided below.*

Samples taken by Inspector:	**Location(s): (1)** pooling water outside Ore Crusher Pad containment (figure2, Item 1) **(2)** snow dump Area at the mine site(Figure 2, Item 3) **(3)** old snow dump/ infiltration to ore stockpile pad ditches (Figure 4, item 2)
☒ Yes ☐ No	

SECTION 1 ☒ **Comments** ☐ **Non-Compliance with Act or Licence** ☐ **Action Required**

Inspectors Statement

On May 29 to June 1, 2016, a water licence inspection was conducted at the Mary River Project, Qikiqtani Region, Nunavut with Curtis DIDHAM (ECC), Laura TAYLOR(BIMC), Andrew VERMEER(BIMC), Allan KNIGHT, Justin HACK (INAC) and myself Jonathan MESHER (INAC).Sites inspected included the Mary River Mine Site, the Tote Road and the Milne Port area.

Weather Conditions on Site

Mainly cloudy with temperatures between -1 and 5 degrees Celsius. Mary River camp site and Milne Inlet port site were free of snow; however the horse shoe dam at the waste rock pile was snow covered at the time of the inspection.

Summary of Report

At the time of inspection, the Licensee was undertaking activities related to the operation of an open-pit iron ore mine at the Milne Port (Milne Inlet), Mine site (Mary River), and Tote Road. Most major construction activities have finished and BIMC is primarily mining ore and transporting it to Milne Port in preparation for open water season.

Prior to the Inspection, the Licensee had reported high levels of suspended solids (TSS) entering watercourses. These incidents were reported to relevant parties through Spill Reports #17-209 and 17-178. During the inspection, the elevated levels of TSS at Shear down Lake and Camp Lake appeared to have diminished based on the inspector's observations at the time of the inspection. BIMC had put preventative and reactionary measures in place such as silt fences, silt screens, pop-up berms, check dams, riprap and new culverts.

Sites inspected include;

1. Ore Stockpile and associated water management structures.
2. Water Management Structures along the Tote Road.
3. Water Management Structures along the Mine Haul Road.
4. Ore Crushing Pad and associated Sedimentation Ponds.
5. Waste Rock Pile water collection pond.
6. Camp lay-down pad.

Inspection

Water Management Structures:

1. Ore Stockpile Pad and associated water management structures
    a. The Ore Stockpile Pad had significant pooling inside the facility (figure 5 below); this leads the inspector to believe the facility is not being maintained properly.
    b. At the time of the inspection there was water infiltrating the ore stockpile pad, see figure 4 Item 2 below. This appears to be the reason of the unauthorized discharge from the east sedimentation pond.
        i. INAC Inspectors have expressed concern with this area where water is pooling before.
        ii. It's advised that BIMC find a way to properly divert the water away from this area.
    c. The ditches surrounding the facility do not appear to be graded properly due to water pooling within the unlined ditches.
    d. The Licensee is removing snow mixed with crushed ore from within the containment facility and dumping it outside of the facility (figure 3).
        i. The inspector is requesting that BIMC discontinue this practice and allow the facility to contain the snow/water that comes in contact with the ore stockpile pad.
    e. In the 2016 Geotechnical report the engineer recommend that repairs be done to both Sedimentation ponds, at the time of the inspection no work had been done.

2. Water Management Structures along the Tote Road
    a. The Tote Road showed signs of improvement from the previous year during freshet.
    b. The Licensee is currently developing a Tote Road Earthworks Execution Plan and has committed funds to repairing trouble areas.

3. Water Management Structures along the Mine Haul Road
    a. BIMC has completed significant work on the Mine Haul Road; there are no major concerns with the water management structures along the Mine Haul Road.

4. Ore Crushing Pad and associated Sedimentation Ponds
    a. In the previous inspection, there were concerns with the grading of the ore crusher pad at the Mine Site. This continues to be an issue and is causing the crusher pad to become saturated with iron filled mud.
    b. Ditches surrounding the facility do not appear to have been built to the specification of the "for construction" drawings that have been approved by the Nunavut Water Board. This is causing pooling within the unlined ditches.
    c. During the Inspection it was noted that there was no culvert in place to allow water from the North West unlined ditches to enter the sedimentation pond, this is a concern to the inspector because in the HATCH for construction drawings below (Figure 1) it shows that there should be a 1000mm DIA CSP culvert installed.
        i. The inspector is requesting that the culvert be installed before freshet 2018.
        ii. Samples were collected by the inspector to ensure no waste has entered the surrounding environment.
    d. After a review of the "2017 Mine Site Crusher Pad Expansion (Modification Request) Water Licence 2AM-MRY1325 – Amend. No. 1" application to the Water Board, the inspector noticed that the extent of the ore stockpile storage area doesn't appear to be consistent with the information provided in the application to the Nunavut Water Board.
        i. In the drawings provided to the Nunavut Water Board, the "oversized" ore storage area is not identified and does not appear to be surrounded by ditches as you can see in figure 7 below.
        ii. Considering the information provided the inspector is concerned that the sedimentation pond is under capacity because, the surface area/surface water calculations do not appear to be capturing the actual storage area of the crusher pad.
        iii. The inspector is requesting that the BIMC review the 2017 Mine Site Crusher Pad Expansion (Modification Request) Water Licence 2AM-MRY1325 – Amend. No. 1, provide the NWB with the correct storage area of ore and provide the NWB with revised data regarding the; surface water runoff, ditching capacity and sedimentation pond capacity.
    e. Sand Bags along the spill way have not been installed as agreed upon by the NWB and BIMC as a short term fix in order to increase capacity.
    f. The Licensee must ensure that all water generated on the facility is captured by the diversion ditches and sedimentation pond.

5. Waste Rock Pile water collection pond
    a. At the time of the inspection, the facility was covered in snow making it difficult to identify any potential issues.

6. Camp lay-down pad
   During the inspection it was noted that a camp lay-down pad had been constructed within a waterway at approximately N71° 52.529, W080° 54.379 in Milne Inlet. Due to the location this camp lay-down pad was constructed in contravention of the Water Licence 2AM-MRY1325, specifically Part D Conditions Applying to Construction and Operation;

   a. Item 2 states: The Licensee shall submit to the Board for review and acceptance, at least sixty (60) days prior to construction or in a timeframe otherwise approved by the Board in writing, final design and for-construction drawings, stamped and signed by a Professional Engineer, for all infrastructure and/or facilities designed to contain, withhold, divert or retain Water and/or Waste, as authorized under the License.
   b. Item 20: The Licensee shall not erect camps or store material on the surface of frozen streams or lakes including the immediate banks except what is for immediate use. Camps shall be located such that impacts on surface drainage are minimized.
   c. Item 21: The Licensee shall undertake necessary corrective measures to mitigate impact on surface drainage resulting from the Licensee's activities.
   d. Item 25: The Licensee shall prevent the deposition of debris or sediment from entering into or onto any Water body, with respect to the construction of access roads, site laydown pads and areas or other earthworks. These materials shall be disposed of at a distance of at least thirty-one (31) metres from the ordinary High Water Mark in such a manner that they do not enter the water.
   e. For more information on this violation of the Water Licence please read the Inspectors Direction issued to Baffinland Iron Mines Corporation on June 9, 2017.

☐ Comments	☐ Non-Compliance with Act or Licence	☐ Action Required
Inspector's Name		
Jonathan MESHER		
Signature		
Date		
June 20, 2017		

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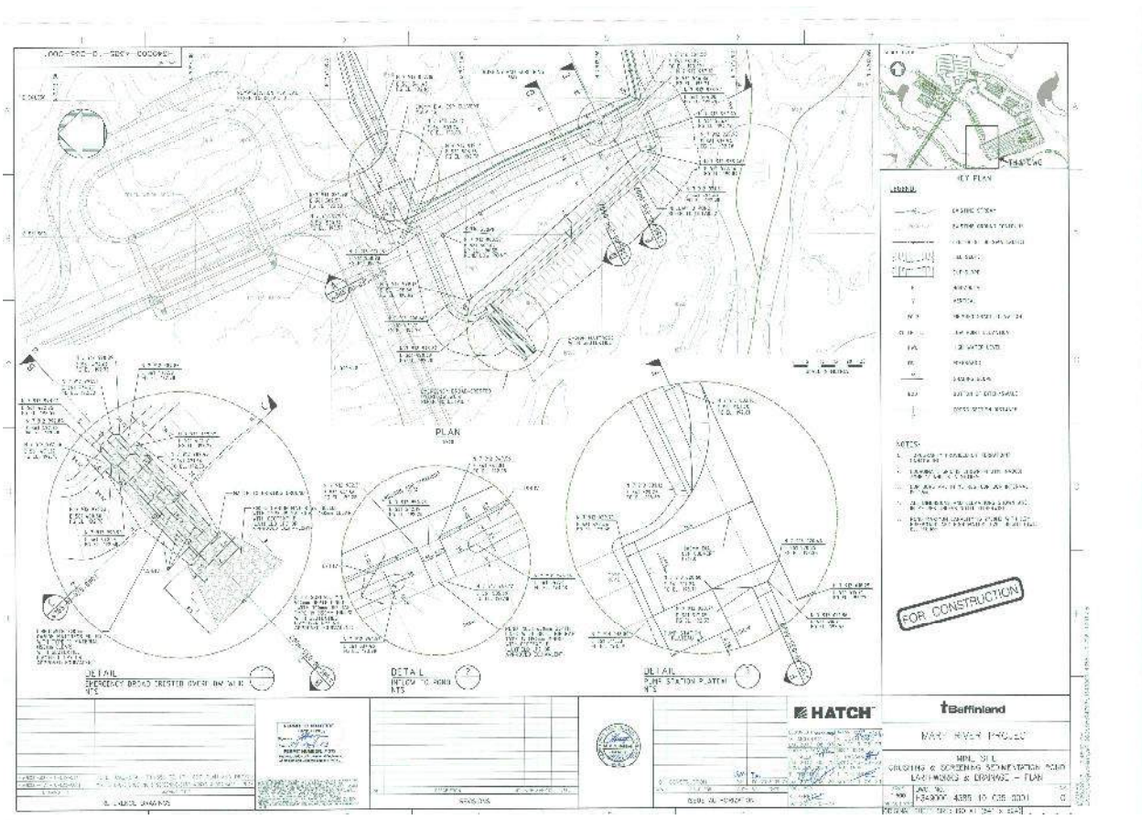

Figure 1 (HATCH drawings confirming the required culvert)

Figure 2 (**Item 1**: Oversized Ore stockpile location**. Item 2**: sampling location. **Item 3**: snow dump sampling location.

Figure 3: Snow Dump area, top left of the picture

Figure 4**: Item 1**: Washout from East sedimentation pond. **Item 2**: location of water infiltrating ditches, the old snow dump and sampling location. **Item 3:** approximate location of the Camp lay-down Pad

Figure 5: water pooling inside the ore stockpile pad

Figure 6: sandbags improperly installed

Figure 7: Oversized Ore outside of ditching

Baffinland

Table E.8.4.1 - Baffinland Response to INAC Water Licence Inspection - May 29 - June 1, 2017

Item No.[1]	Observation or Item of Concern	Baffinland Responses
Water Management - Milne Port Site		
1	***Ore Stockpile Pad and Associated Water Management Structures*** *-* *Pad is improperly graded leading to significant pooling inside the facility.* *Water east of the pad infiltrating the ore stockpile pad needs to be diverted away from this area, as it was likely the cause of the unauthorized discharge of the east sedimentation pond. Ditches surrounding the facility are improperly graded leading to pooling within the unlined ditches. 'Dirty' snow mixed with ore is being transported and stored outside of the containment facility. Neither sedimentation ponds had been repaired as per the 2016 Geotechnical report recommendations.*	The grading of the ore pad is an ongoing maintenance practice at the ore pad, entailing a significant amount of effort following each ore shipping season. Climate, conditions and practice of annual ore stockpiling poses significant challenges to keep the pad properly graded at all times. Ditching will continue to be monitored in 2018 to determine the efficacy of surface water retention and flow direction to sedimentation ponds. Ore-contaminated snow has been stored within the containment facility since the concern was raised by INAC. Baffinland is currently storing dust laden snow at the south end of the pad and has constructed a check berm to filter run off. Snow management remains a challenge and Baffinland continues to assess additional strategies for managing and storing significant amounts of snow each year. Technicians from the Layfield Group performed repairs on the two sedimentation ponds at Milne Port in July 2017, focusing on the liner key-ins at the inlets of both sedimentation ponds.
Water Management - Mine Site		
4	***Ore Crushing Pad and Associated Sedimentation Ponds*** *-* *Pad is improperly graded causing the pad to become saturated with iron filled mud.* *Surrounding ditches are not built to the specs in the approved construction drawings, causing pooling within the unlined ditches. The culvert shown in the approved construction drawings is not in place, preventing water from the NW unlined ditches to enter the sedimentation pond and must be installed before freshet 2018. "Oversized" ore storage area was not identified in the approved expansion application, and is not surrounded by ditches, therefore the Crusher Pad Expansion Modification plan needs to be reviewed and the correct storage area of ore, surface water runoff, ditching capacity and pond capacity must be provided to the NWB. Sand bags are not installed properly on the spill way to increase capacity short term.*	The grading of the ore crusher pad is an ongoing maintenance practice. Climate, conditions and practice of annual ore stockpiling poses significant challenges to keep the pad properly graded at all times. The culvert included in the approved Issued For Constructions drawings was installed in July 2017, to allow water from the northwest ditch to flow into the sedimentation pond. The expansion of the Mine Site Crusher Pad is complete with the exception of the perimeter ditching near the oversize ore stockpile. Baffinland continues to work with Golder Associates (Golder) to address concerns highlighted by INAC regarding the pad's perimeter ditching near the oversize ore stockpile. Upon addressing INAC concerns, Baffinland will provide a Construction Summary Report, including as-built drawings, to the NWB, QIA and other relevant parties. In addition, Baffinland continues to work with Golder to review the design capacity of the sedimentation pond. Upon completing the review of the pond's design, Baffinland will provide NWB and INAC with Baffinland's proposed path forward. Sand bags on the pond's spillway have been covered with geotextile liner as outlined in the modification request approved by the NWB on May 26, 2017.
Construction		
6	***Milne Port Camp Laydown Pad -*** *A new camp laydown pad was constructed within a waterway, in contravention of the Water License, specifically Part D Conditions Applying to Construction and Operation. For more information on this violation of the Water License, see the Inspectors Direction issued to BIM on June 9th, 2017.*	The new camp pad which impacted the minor ephemeral drainage was reported to the appropriate authorities and corrective actions were implemented. The contractor responsible for this non compliance was removed from site at the time of the incident. A surface water drainage diversion system was constructed in October 2017, to direct surface water flows around the pad. The modification request associated with the diversion ditch (Modification No. 3a) was approved by the NWB on September 8, 2017.

Notes:

[1] Item No. as referenced in INAC Water Licence Inspection Report May 29 - June 1, 2017

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WATER LICENCE INSPECTION FORM

☒ Original
☐ Follow-Up Report

Licensee	Licensee Representative
Baffinland Iron Mines Corporation (BIMC)	Connor Devereaux
Licence No. / Expiry	**Representative's Title**
2AM-MRY1325	Environmental Superintendent
Land / Other Authorizations	**Land / Other Authorizations**
8BC-MRY1416, 2BE-MRY1421	N2014X0012, N2014Q0016, N2014C0013
Date of Inspection	**Inspector**
November 8-9, 2017	Jonathan MESHER

Activities Inspected

☒ Camp ☐ Drilling ☒ Mining ☒ Construction ☐ Reclamation ☐ Fuel Storage
☒ Roads/Hauling ☐ Other: ☐ Other:

Conditions: **A - Acceptable** **C - Concern** **U - Unacceptable** **NA – Not Applicable** **NI – Not Inspected**

Water Use	Condition	Comment	Site Conditions	Condition	Comment	Haz/Mat Management	Condition	Comment
Intake/Screen	NI		Water Management Structures	U	1,2,3,4	Storage	NI	
Flow Measure. Device	NI		Culverts / Bridges	C	2	Spills	NI	
Source:	A		Drainage	U	3	Spill Plan	A	
Water Use:	A		Erosion / Sediment	NI				
Recirculation (y /n)	NA		Mitigation Measures	C	4	**Administrative**		
			Reclamation Activities	A		Records	NI	
			Materials Storage	A		Reports	A	
Waste Disposal			Signage	A		Plans	A	
Waste Water	C	**4**				Notifications	A	
Solid Waste	A		**Monitoring**			**Other**		
Hazardous Waste	A		Sample Collection / Analysis	NI		Follow-up from previous inspection	NA	

**The number in the comments field will correspond with specific comments provided below.*

Samples taken by Inspector:
☐ Yes ☒ No

SECTION 1 ☒ **Comments** ☐ **Non-Compliance with Act or Licence** ☐ **Action Required**

Inspectors Statement

On November 8, 2017, a water licence inspection was conducted at the Mary River Project, Qikiqtani Region, Nunavut. Sites inspected included the Mary River Mine Site, the Tote Road and the Milne Port area.

Weather Conditions on Site

Mainly cloudy with temperatures between -15 and -20 degrees Celsius. There was significant snow cover on the ground at the time of the inspection, making it difficult to determine the condition of most water and waste management structures.

Summary of Report

At the time of inspection, the Licensee was undertaking activities related to the operation of an open-pit iron ore mine at the Mine site (Mary River), Milne Port (Milne Inlet), and Tote Road. BIMC is primarily mining ore and transporting it to Milne Port in preparation for open water season. Construction activities on site include; Construction of an 800 man camp at Mary River site and work on problematic areas along the tote road.

Prior to this inspection the Licensee had been dealing with drainage with low pH and a leak in the Waste Rock Stockpile sedimentation pond. The licensee is currently reviewing and discussing a work plan with Golder Associates to develop a water and waste rock management action plan prior to freshet 2018.

Canada

SECTION 2 ☒ **Comments** ☐ **Non-Compliance with Act or Licence** ☐ **Action Required**

Inspection

1. **Ore Stockpile Pad and associated water management structures.**
   a. As mentioned in previous inspection reports, the Ore Stockpile pad does not appear to be graded properly. There are low points throughout this facility which may affect the flow of surface water from the unlined facility to the lined sedimentation ponds. This facility will be monitored in future inspections to ensure it is operating as intended.
   b. During inspection a large area on the West side of the East sedimentation pond had significant ore used to level an area outside of containment.
      I. Part D, Item 13 of the licence 2AM-MRY1325 states: The Licensee shall use fill material for construction from approved sources that been demonstrated by appropriate geochemical analyses to not produce Acid Rock Drainage and to be Metal Leaching properties.
      II. Please provide proof to the inspector that this ore had been approved for the use in construction.
      III. If this ore has not been approved for construction the licensee shall remove the ore from the identified area before May, 2018. See figures 1 and 2 below for pictures of the area of concern.

2. **Water Management Structures along the Tote Road**
   a. While inspecting the tote road it was difficult to determine the condition of water management structures due to snow.
   b. At the time of the inspection the licensee was working on armouring ditches and culverts at kilometer 85.
      I. INAC's senior engineer raised concerns with the size and layout of the rip rap, It does not appear to the engineer that the placement and size is compliant with best practices.
      II. This issue will be monitored during future inspections by the senior engineer to ensure that this is adequate. See Figure 3 for a picture of the area of concern.

3. **Ore Crushing Area and associated water management structures**
   a. As noted in the previous inspection, the diversion ditches around this facility do not appear to fully surround the ore crusher pad. See figure 4 for the area that is not contained by ditches.
   b. Until the facility is fully surrounded by ditches, INAC is requesting that the Licensee start bi-weekly sampling down gradient from the area where no ditches are present. The licensee is to provide the inspector with the following;
      I. Lab results for all criteria set out in PART F, Item 25 in the water licence 2AM-MRY1325.
      II. Photos of the sampling being conducted.
      III. Time, Date, GPS coordinates.
      IV. Name and position of the person sampling.
   c. During the inspection there was crushed ore and a boulder pushed into the ditches around this facility.
      I. This debris is to be removed prior to freshet 2018 to allow proper flow of water to the sedimentation ponds. See figures 5-7 for photos of debris in the ditches.

4. **Waste Rock Stockpile and associated water management structures**
   a. The Waste rock stockpile sedimentation pond has been experiencing low levels of PH due to unforeseen Acid Rock Drainage (ARD).
   b. During a Water Licence inspection on August 22-24, 2017 the INAC inspector noted "3 uncontrolled discrete seepages originating from the central toe of the waste rock water containment berm".
   c. The licensee had initially expected that the "seepages" were due to waste water flowing under the containment facility. On November 4th, 2017 the Licensee pumped rhodamine dye into the containment pond and determined that the containment structure is leaking into the surrounding environment.
   d. The Licensee is has failed to comply the following directions from, the Inspectors Direction written on September 5, 2017 to Baffinland Iron Mines Corporation;
      I. 1. To fix the Facility to the specifications provided in the approved for-construction drawing, within 30-days of this direction or prior to freeze-up, whichever occurs first. This has been determined because this facility was not initially designed to leak.
      II. 2. To prevent all uncontrolled discharges from leaving the facility. This has been determined because this facility is still leaking.
   e. The licensee is currently reviewing and discussing a work plan with Golder Associates to develop a water and waste rock management action plan prior to freshet 2018.

5. **Geomembrane liners**
   a. INAC's senior engineer has determined that the geomembranes throughout Mary River and Milne Port do not meet industry standard because of their lack of cover.
   b. BIMC is required to construct all water management structures in accordance with all applicable legislations and industry standards as stated in Part D, item 24, "The Licensee shall construct and operate all infrastructure and Facilities designed to contain, withhold, divert or retain Water and/or Waste in accordance with all applicable legislations and industry standards."
   c. The inspector is requiring BIMC to cover all exposed membranes to meet industry standards or provide justification for not doing so.

6. **Oil sumps in all garages**
   a. INAC's senior engineer has raised a concern about the oil sumps/ holding tanks.
   b. INAC is requesting that BIMC assess the integrity and performance of the oil sumps/holding tanks to ensure that no vehicle waste (engine oil, transmission fluid, brake fluid, solvents, degreasers, etc.) enters and surrounding water bodies.

SECTION 2 ☐ **Comments** ☒ **Non-Compliance with Act or Licence** ☒ **Action Required**

Action required

1. To provide the inspector with all records of weekly inspections as required in part E, item 11 of the water licence 2AM-MRY1325.
   Relevant information
   PART E CONDITIONS APPLYING TO WATER USE AND MANAGEMENT
   11. The Licensee shall carry out weekly inspections of all structures designed to contain, withhold, divert or retain Waters or Wastes during periods of flow and maintain records of the inspections and findings, for review upon the request by the Board or an Inspector.

2. To provide the inspector with proof that the ore in figure 1 and 2 has been approved for the use as fill material.
   Relevant information
   PART D CONDITIONS APPLYING TO CONSTRUCTION AND OPERATIONS
   13. The Licensee shall use fill material for construction from approved sources that been demonstrated by appropriate geochemical analyses to not produce Acid Rock Drainage and to be Metal Leaching properties.

3. INAC is requesting that the Licensee start bi-weekly sampling down gradient from the area where no ditches are present at the Ore Crusher Pad. The licensee is to provide the inspector with the following; Lab results for all criteria set out in PART F, Item 25 in the water licence 2AM-MRY1325.Photos of the sampling being conducted, Time, Date, GPS coordinates, Name and position of the person sampling.

4. To remove all debris from all diversion ditches prior to freshet 2018, so that surface water flows as intended to the sedimentation ponds.

5. To come in compliance with Items 1 and 2 of the Inspectors Direction written on September 5, 2017 to Baffinland Iron Mines Corporation.

6. To cover all exposed membranes to meet industry standards or provide justification for not doing so.

7. To assess the integrity and performance of the oil sumps/holding tanks to ensure that no vehicle waste (engine oil, transmission fluid, brake fluid, solvents, degreasers, etc.) enters and surrounding water bodies.

Inspector's Name	
Jonathan Mesher	
Signature	
Signature on original report	
Date	
June 20, 2017	

Figure 1: crushed ore being used for fill.

Figure 2: ore being used for fill

Figure 3: Km 85 construction

Figure 4: Crusher pad-There is no diversion ditches below this “oversize” ore.

Figure 5: snow pushed into the ditches.

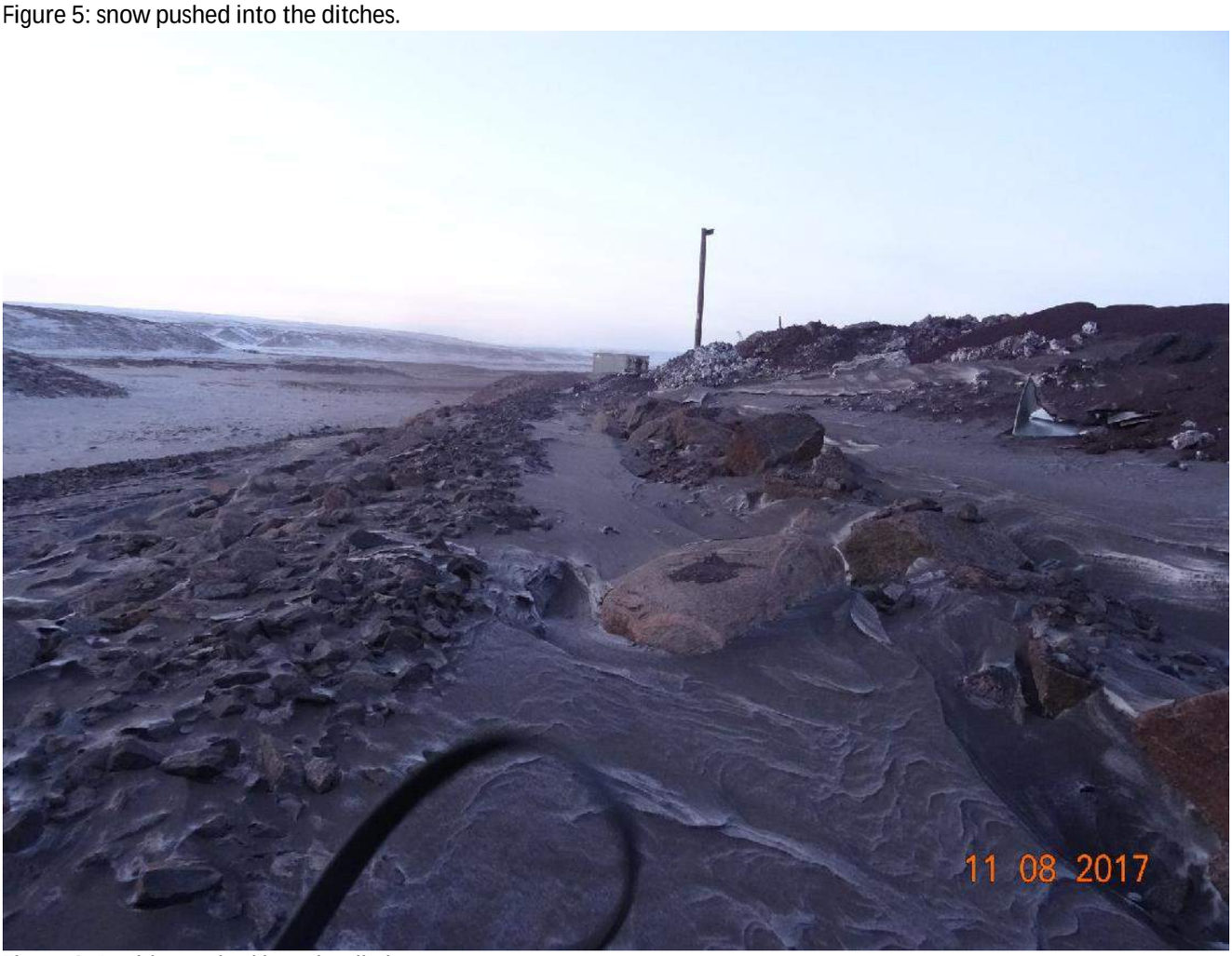

Figure 6: Boulder pushed into the ditch.

Figure 7: crushed ore pushed into the ditch.

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Baffinland

Table E.8.4.2 - Response to INAC Water Licence Inspection - November 8 - 9, 2017

Item No.[1]	Observation or Item of Concern	Baffinland Responses
Water Management		
1	***Weekly Inspections -*** *The inspector must be provided with all records of weekly inspections as required in Part E, Item 11, of the Water License, of all structures designed to contain, withhold, divert or retain Waters or Wastes during periods of flow and maintain records of the inspections and findings.*	Baffinland has compiled records of inspections of all water management structures. Records will be submitted to the INAC Water Licence Inspector upon request. Water management structures are inspected daily during discharge and weekly in open water season, however official records of these inspections are not always maintained. Baffinland is committed to implementing a more rigorous inspection schedule during open water season in 2018 to ensure compliance with the weekly inspection requirement. The 2017 geotechnical inspection reports, required by the Type A Water Licence, for water and waste retention structures were submitted to regulators on October 12, 2017 and November 30, 2017. The reports were produced by a professional engineer following onsite inspections of the Project during the 2017 open water season.
	Water Management Structures along the Tote Road - *The size and placement of the riprap at the ditch armouring at km 85 does not appear to be compliant with best practices, and will be monitored in future inspections.*	Baffinland has reviewed INAC's concern and instituted this work to reduce possible sedimentation near the crossing in continual ongoing efforts to reduce sedimentation and erosion on the Milne Inlet Tote Road. The armour rock placed at the toe of the slope on the 6" rip rap is used as protection rock for the culvert and embankment to mitigate soil sloughing and/or erosion in the water course. 6" rip rap surrounds the total length of the culvert at Km 85 as per site and industry standard.
Water Management - Milne Port Site		
2	***Ore Stockpile Pad and Associated Water Management Structures*** - *Pad is still improperly graded leading to significant pooling inside the facility. A large area on the west side of the east sedimentation pond had significant ore used to level an area outside of containment, potentially non-compliant with the Water License Part D, Item 13, and approval needs to be shown to the inspector or the ore must be removed before May 2018.*	The grading of the ore pad is an ongoing maintenance practice at the ore pad, entailing a significant amount of effort following each ore shipping season. Baffinland will remove the ore outside of containment beside the east sedimentation pond before May 2018 as accessibility and snow cover permits. Baffinland will confirm with INAC during the next on-site inspection that the concern has been addressed.
Water Management - Mine Site		
3 and 4	***Ore Crushing Area and Associated Water Management Structures -*** *Diversion ditches still do not completely surround the ore crusher pad.* *Until the facility is completely surrounded by ditches, bi-weekly samples must be collected down gradient from the area where no ditches are present. Lab results, photos of the sampling, time, date, GPS coordinates and name/ position of the sampler must be provided to inspector. Crushed ore and a boulder present in the ditches will impede flow of water to the sedimentation ponds and must be removed prior to freshet 2018.*	Baffinland is committed to directing runoff in the east corner of the crusher pad to the collection ditch to ensure contact water reports to the pond prior to freshet 2018. A design review is currently in progress with Golder Associates to address the concerns associated with the perimeter ditching. If Baffinland does not complete the ditching prior to thaw then monitoring of the downgradient tundra will occur. Additionally, prior to freshet 2018, Baffinland will ensure all ditching is free of debris to the extent practical, including ore and snow, to allow pad surface water runoff to be directed to the sedimentation pond.
5	***Waste Rock Stockpile and Associated Water Management Structures -*** *Waste Rock Stockpile sedimentation pond has not been fixed to the specifications provided in the approved for-construction drawing, nor have uncontrolled discharges been prevented as it is still leaking. Baffinland must come in compliance with Items 1 and 2 of the Inspectors Direction written on September 5th, 2017.*	Refer to the following correspondence with respect to Baffinland's plans to address concerns identified at the Waste Rock Facility during 2017. Baffinland's Waste Rock Facility 2018 Strategy sent to INAC on March 13, 2018. Baffinland Response to INAC Comments, Questions and Concerns concerning the Waste Rock Facility sent to INAC on January 15, 2018.
Water Management - Geomembrane Liners		
6	***Geomembrane Liners -*** *Geomembranes at both sites currently do not meet industry standard due to their lack of cover, therefore in non-compliance with Part D, Item 24 of the Water License, and must be covered or justification provided to inspector for not doing so.*	It is Baffinland's position that industry standards are met for geomembrane liner installations in regards to cover. Cover on the geomembrane liner is installed for the Bulk Fuel Storage Facility located at Milne Port and at the Mine Site, consistent with Part D Item 24 of the Water Licence. Industry standard for sedimentation pond design criteria is for the liners to be uncovered to reduce potential material cover interacting with the retained water and ultimately impacting water quality. Baffinland has had all water retention structures inspected annually by regulators and third party experts since installation and this issue has not been raised or identified prior. Baffinland recognises INAC's opinion in their 2017 geotechnical inspection report which states that future pond installations shall use white geomembrane to reduce temporal wear from radiation.
Water Management - Maintenance Shop Sumps		
7	***Oil Sumps in All Garages -*** *The integrity and performance of all oil sumps/ holding tanks must be assessed to ensure that no vehicle waste enters any surrounding water bodies.*	Baffinland will continue to monitor this practice and implement the appropriate controls to ensure contaminated water is contained within maintenance shops and processed on site annually through the oily water treatment facility.

Notes:

[1] Item No. as referenced in INAC Water Licence Inspection Report November 8 - 9, 2017

APPENDIX E.8.5

QIA INSPECTION REPORTS AND BAFFINLAND RESPONSES

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Qikiqtani Inuit Association

July 17, 2017

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Sanikiluaq

Mr. Todd Burlingame
Vice President, Sustainable Development
Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, ON L6H 0C3

Mr. Burlingame,

RE: BAFFINLAND IRON MINES CORPORATION'S, MARY RIVER PROJECT, JUNE 2017 INSPECTION – QIA FINDINGS AND RECOMMENDATIONS

This letter is being issued from the Qikiqtani Inuit Association (QIA) to Baffinland Iron Mines Corporation (Baffinland) providing a summary of the findings and recommendations from the QIA's June 2017 Inspection, as per Schedule E, Item 12 of the Commercial Lease No.: Q13C301 (Lease).[1] The Inspection was undertaken from June 20 to 22, 2017 by ARKTIS Solutions Inc. (ARKTIS) on behalf of the QIA.

In summary, the June 2017 Inspection included the following activities:

- A general site inspection, with focus on the Tote Road, to assess Baffinland's compliance with select environmental terms and conditions of any permits, licences, leases or other agreements that are associated with the Project.
- Assess the current status of construction and upgrades along the Tote Road.
- Review of the unapproved construction activities completed in 2017.
- Interview with Baffinland's onsite personnel to understand the monitoring and reporting activities associated with water crossings on the Tote Road during the construction and operation phases.

The findings, recommendations, and corrective actions from the June 2017 Inspection are provided in Table 1. Please ensure all submissions are issued through the Information Gathering and Locating Utility.

Finally, the Inspector observed good housekeeping on site and believes things looked generally well operated. QIA looks forward to continue to work with Baffinland to ensure the proper protection of Inuit Owned Land occurs at site.

Sincerely,

SWB

Stephen Williamson Bathory
Director, Department of Major Projects
Qikiqtani Inuit Association

[1] QIA and BIMC (2013) Commercial Lease No. Q13C301. September 6, 2013.

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Table 1 June Inspection Concerns

Id	TC[2]	Details	Corrective Actions
1	6.3b	A pad was constructed at the Milne Inlet area that is proposed to be the location of a camp. The pad and associated camp infrastructure is currently the subject of the 2017 Work Plan Addendum[3] and reclamation security update[4]. The 2017 work plan addendum and reclamation security is currently being reviewed by QIA and reclamation security has not been posted by Baffinland for this construction activity. Further, QIA understands that this pad construction is the subject of an INAC directive to cease work and provide a corrective action response. Lastly, it was noted that the pad construction materials partially were obtain from the approved Q1 quarry, but Baffinland cannot confirm if the materials were extracted from within the Q1 quarry boundary limits. The Inspector noted[5] that Q1 topographic survey data, which was due by June 30, 2017, would be evaluated to assess if material has been removed from outside the Q1 quarry boundary limits and advise accordingly	Baffinland is to cease all work associated with the 2017 Work Plan Addendum[3] until reclamation security is posted and applicable approvals are granted. QIA requires all correspondence regarding this matter with INAC to be provided to QIA and QIA will review the corrective actions and may provide further comments on the appropriateness of the plans. As per the Lease, Baffinland is to issue the Q2 quarry survey data to the QIA. To date, this information is outstanding (due June 30, 2017) is required to be submitted by Baffinland. A review of said information will be completed upon receipt. QIA request submission of these materials within 7 days of issuance of this letter.
2	2.8	Two culverts were installed (CV104 A&B, CV187)) in the winter of 2016/2017 that were included in the 2017 Work Plan for a construction activity. Further, as noted in QIA's 2017 Work Plan[6] review, QIA notified that "BIMC requires QIA's written consent for any adjustments made to the Tote Road, Section 2.8 of the Lease". Thus, Baffinland completed construction activities outside of the required QIA approvals. Culvert upgrades/installations proposed activities is currently the subject of the 2017 work plan addendum and reclamation security. The 2017 work plan addendum and reclamation security is currently being reviewed by QIA and potential implications on reclamation security amount has not yet been determined by the QIA.	Baffinland is to cease all Tote Road work associated with the 2017 Work Plan Addendum[3] until QIA written approval is provided. Baffinland is to provide the construction summary report for the installation of each culvert to the QIA, as per Part D, Item 18 of the Type A Water Licence. Further, Baffinland is to provide the digital photographic record of the watercourse crossings before, during and after completion of the construction as required by Part I, Item 15 of the Type A Water Licence. It is likely the timeframes to satisfy Part D, Item 18 and Part I, Item 15 of the Water Licence have passed, thus, QIA request submission of these materials within 15 days of issuance of this letter. QIA is not amendable to wait until submission of the March 2018 Annual Report to receive this information.
3	2.8	Environmental management plans with regards to Tote Road monitoring during construction and operation have not been completed to date. A commitment to complete this gap in the current	QIA is requesting the following information from Baffinland to evaluate the implementation of the Environmental Action Plans with regards to Tote Road

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[2] Lease Terms and Conditions reference

[3] BIMC (2017) 2017 Work Plan Addendum. May 26, 2017.

[4] BIMC (2017) 2017 Marginal Closure Cost Addendum - FINAL_June 16 (Rev 0). June 16, 2017

5 INAC (2017) *Nunavut Waters and Nunavut Surface Rights Tribunal* Act Inspectors Direction. June 9, 2017

[6] QIA (2016) 161212-QIA-CPL-2017WorkPlanFinalReviewLetter ENG-FINAL-signed. December 12, 2016.

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Id	TC[2]	Details	Corrective Actions
		management plans was provided to QIA in January 2015; however, after more than 2 years this commitment has not been fulfilled. Numerous communications on this matter have transpired since 2015, with the most recent from QIA on April 12, 2017[7] and June 2, 2017[8], which notifies Baffinland that environmental monitoring components associated with the Tote Road are to be provided a minimum of 1 month prior to construction and a minimum of 2 weeks prior to freshet occurrence. To date these plans have not be completed in full for QIA review. Baffinland's construction of these two culverts has no fulfilled this QIA requirement.	monitoring and reporting. Since the Tote Road monitoring and management plans are not updated to be evaluated at this time, QIA therefore requesting all monitoring and reporting information that is currently being executed to assess the environmental performance and suitability of the monitoring and management to mitigate against environmental damage. a. All monitoring data (observational/inspection logs, field water quality testing, and analytical laboratory water quality testing) completed from January 2017 to June 22, 2017 (end of inspection) associated with the Tote Road and surface water. Without limitation, the supplied information shall inform the parameters to monitor, locations that are monitored (e.g., culverts as well as upstream and downstream distances from road at each culvert), and frequency of monitoring associated with freshet, open water, and construction. The above information was requested during the close out meeting with Baffinland. QIA request that the requested information be provided within 15 days of issuance of this letter.
4	2.5 e, 3.2, 3.3	The former Mary River fuel bladder storage facility was proposed to be re-purposed as a hazardous waste containment area within the 2017 work plan. During the inspection, this area was being used as a hazardous waste storage area. In QIA's review of the 2017 work plan, QIA notified[6] Baffinland that prior to use a hazardous waste containment area that option exercise notice conditions under the lease were required. To date, this information has not been received by QIA and Baffinland has no fulfilled QIA requirements. A copy of the QIA's 2017 work plan review was provided to Baffinland after the inspection close out meeting since Baffinland personnel were not aware of this requirement.	Baffinland has not received QIA's approval to utilize this facility for waste storage as per the Lease. Baffinland is therefore required to provide the Options Exercise Notice within 15 days of issuance of this letter. If this is not achieved all hazardous wastes are to be removed for the Inspectors return visit on August 1, 2017.

[7] QIA (2017) 170412-QIA-CPL-ToteRoadManagementLetter-ENG-FINAL-signed. April 12, 2017

[8] QIA (2017) 170602-QIA-CPL-FreshetMonitoringResponseLetter-ENG-FINAL.pdf. June 2, 2017

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Qikiqtani Inuit Association

September 5th, 2017

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Mr. Todd Burlingame
Vice President, Sustainable Development
Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, ON L6H 0C3

Mr. Burlingame,

RE: BAFFINLAND IRON MINES CORPORATION'S, MARY RIVER PROJECT, AUGUST 2016 INSPECTION – QIKIQTANI INUIT ASSOCIATION FINDINGS AND RECOMMENDATIONS

This letter is being issued from the Qikiqtani Inuit Association (QIA) to Baffinland Iron Mines Corporation (Baffinland) providing a summary of the findings and recommendations from the QIA's August 2017 Inspection, as per Schedule E, Item 12 of the Commercial Lease No.: Q13C301 (Lease)[1]. The Inspection was undertaken from August 12 to 16, 2016, by ARKTIS Solutions Inc. (ARKTIS) on behalf of the QIA.

In summary, the August 2017 Inspection included the following activities:

- A general site inspection, with focus on the Tote Road, to assess Baffinland's compliance with select environmental terms and conditions of any permits, licences, leases or other agreements that are associated with the Project.
- Assess the current status of construction and upgrades along the Tote Road.
- Review of the proposed construction activities completed in 2017.

The findings, recommendations, and corrective actions from the June 2017 Inspection are provided in Table 1. Please ensure all submissions are issued through the Information Gathering and Locating Utility.

Finally, the Inspector observed good housekeeping on site and believes things looked generally well operated. QIA looks forward to continuing to work with Baffinland to ensure the proper protection of Inuit Owned Land occurs at site.

Sincerely,

SWB

Stephen Williamson Bathory
Director, Major Projects

[1] QIA and BIMC (2013) Commercial Lease No. Q13C301. September 6, 2013.

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Qikiqtani Inuit Association

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Table 1. Summary of findings, recommendations, and action items from the August 2016 Environmental Inspection.

Id	TC[6]	Concern Identified	Recommendation
1.	6.3b	A 50-person hard-wall camp was installed in May/June of 2017 and occupied in July 2017. This camp was installed near the pad that was also constructed in spring 2017. The camp as well as the pad are currently the subject of the 2017 Work Plan Addendum[2] review process with QIA. The hard-wall camp, and camp pad were constructed prior to reclamation security being held by QIA and therefore is in non-compliance with the Lease.	Baffinland is to cease all work associated with the 2017 Work Plan Addendum until applicable approvals are granted. Baffinland to acknowledge non-compliance with the Lease and propose method(s) to prevent this occurrence in the future.
2.	2.8	One culvert at KM 96.5 (no ID) was removed and a new culvert installed at the same location in July 2017. This culvert was not listed in any work plan for construction activity. In addition, the extensions of culvert CV046 A&B were removed as well as the fill material surrounding the extensions; these culverts were listed in the 2017 Work Plan Addendum for removal. Therefore, as noted in QIA's 2017 Work Plan[3] review, QIA notified that "BIMC requires QIA's written consent for any adjustments made to the Tote Road, Section 2.8 of the Lease". Thus, Baffinland completed construction activities outside of the required QIA approvals and without QIA's written consent. Culvert upgrades/installations proposed activities is currently the subject of the 2017 Work Plan Addendum[2] review process with QIA.	Baffinland is to cease all Tote Road work associated with the 2017 Work Plan Addendum until QIA written approval is provided. On July 26, 2017, Baffinland agreed to develop draft content for the Operations Guide to address the information requirements associated with the Tote Road approvals. QIA looks forward to reviewing this information. Baffinland is to provide the construction summary report for the installation of each culvert to the QIA, as per Part D, Item 18 of the Type A Water Licence. Further, Baffinland is to provide the digital photographic record of the watercourse crossings before, during and after completion of the construction as required by Part I, Item 15 of the Type A Water Licence. It is likely the timeframes to satisfy Part D, Item 18 and Part I, Item 15 of the Water Licence have passed, thus, QIA request submission of these materials within 15 days of issuance of this letter. QIA is not amendable to wait until submission of the March 2018 Annual Report to receive this information.
3.	6.3b	A 35-person soft walled camp consisting of Norseman style tents were installed at the Weatherhaven laydown area in July 2017. The camp is currently the subject of the 2017 Work Plan Addendum review process with QIA. The hard-wall camp, and camp pad were constructed prior to reclamation security being held by QIA and therefore is in non-compliance with the Lease.	Baffinland is to cease all work associated with the 2017 Work Plan Addendum until applicable approvals are granted. Baffinland to acknowledge non-compliance with the Lease and propose method(s) to prevent this occurrence in the future.

[2] BIMC (2017) 2017 Work Plan Addendum. May 26, 2017.
[3] QIA (2016) 161212-QIA-CPL-2017WorkPlanFinalReviewLetter ENG-FINAL-signed. December 12, 2016.

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Qikiqtani Inuit Association

November 11, 2017

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Mr. Todd Burlingame
Vice President, Sustainable Development and Environment
Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, ON L6H 0C3

RE: 2017 Environmental Audit

Dear Mr. Burlingame,

The Qikiqtani Inuit Association (QIA) contracted ARKTIS Solutions Inc. (ARKTIS) to complete an Environmental Audit (Audit) of the Mary River Project (Project), operated by Baffinland Iron Mines Corporation (Baffinland). The Audit was completed in accordance to Schedule D and Schedule E of the Commercial Production Lease (Lease) No.: Q13C301.[1]

The Audit took place at the Baffinland Corporate offices in Oakville, Ontario on September 12 and 13, 2017 and continued with an on-site inspection between September 14, 2017 and September 20, 2017. The Environmental Auditors were Jamie Van Gulck, Ph.D., P.Eng; Nick Jewitt, M.A.Sc.; Jason Ash; and Alan MacDougall, M.A.Sc.

In summary, the Audit included a general site inspection; an assessment of potential changes to the reclamation security estimate; and, a conformity review of Baffinland's reporting requirements. The Audit identified a number of non-compliances that are described in detail below.

QIA is concerned with the lack of attention dedicated to general compliance and administration the Lease in 2017. The nature of the non-compliances, generally, relate to the absence of committed resources, such as record management and responding to information requests. This lack of prioritization can also be illustrated by the general lack of resolution on key issues made in 2017. No work was completed on revising the Closure and Reclamation Plan or the implementation of the Water Compensation Agreement. Very limited work was completed on revising the Lease Operations Guide, or updating the security unit rates. Additionally, the Tote Road Reconciliation has not yet been completed; a resolution to which QIA strongly believes is long overdue. For your reference, QIA has also attached the January 2017 and August 2017 QIA/Baffinland Monthly Action Item Lists as Appendices B and C respectively which demonstrate overall progress in 2017.

With the appropriate commitment of resources, Baffinland and QIA can rectify the current situation. QIA recommends our Parties meet early in 2018, and no later than January 26, 2018 to develop a cooperative solution. This could include the following:

1. QIA and Baffinland set 2018 Lease & Regulatory Priorities.
2. A path forward for each Priority is determined jointly, including deadlines.
3. QIA and Baffinland assign appropriate resources for completion of the above.

[1] Qikiqtani Inuit Association and Baffinland Iron Mines Corporation (2013) Commercial Lease No. Q13C301. September 6, 2013.

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Qikiqtani Inuit Association

4. QIA and Baffinland provide progress reports monthly.
5. QIA and Baffinland meet after written deliverables are submitted by BIMC and reviewed by QIA.

Please do not hesitate to contact the undersigned should you have any questions.

Sincerely,

SWB

Stephen Williamson Bathory

Director, Department of Major Projects

Attachments: Appendix A – 2017 QIA Information Requests
Appendix B – January 2017 Action List
Appendix C – August 2017 Action List

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Qikiqtani Inuit Association

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The Audit identified the following occurrences of non-compliance with the Lease.

Lease Section 8.1 a) and d) – Construction without NWB approval

On June 9, 2017[2], Baffinland received an Indigenous and Northern Affairs Canada (INAC) Inspector Direction as allowed under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*. Within this Direction, the INAC Inspector noted that Baffinland constructed a laydown without receiving the NWB's approval and he "observed that the lay-down pad was built over top a stream, and I observed that rock fill had been placed in the stream"[2].

Lease Section 8.1 a) and d) – Waste Rock Sedimentation Pond

The seepage and controlled discharges from the Waste Rock Sedimentation Pond observed by the INAC Inspector between August 22-24, 2017[3] and the QIA's Environmental Auditors on September 15, 2017 is non-compliant. The Tenant has not complied with all Applicable Environmental Laws, Best Practices, Work Plans, and all Environmental Management and Monitoring Plans (approved by the QIA where required by this Lease).

The non-compliance of the Waste Rock Sedimentation Pond is currently subject to an Environmental Inspection[4] exterior to the Audit. The Environmental Inspection will further detail QIA's findings regarding this issue.

Lease Section 8.1 a) and d) – Q1 Quarry

During QIA's June Environmental Inspection, it was noted that material appeared to be removed from quarry Q1, outside of the approved designed boundary. Baffinland, through its submission of the 2017 2nd quarter quarry report[5] confirmed Specified Substances were removed outside of this boundary. This is in contravention of the terms and conditions 1 and 15 of the Quarry Concession Agreement[6] signed by Baffinland and QIA.

Lease Section 2.8 – Tote Road Adjustments

The construction[7] and replacement of all culverts along the Tote Road in 2017 is non-compliant. The Tenant shall obtain written consent from the Landlord for any adjustments to the Milne Inlet Tote Road, such consent not to be unreasonably withheld. In the past year,

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[2] INAC (2017) Nunavut Waters and Nunavut Surface Rights Tribunal Act Inspectors Direction. June 9, 2017

[3] INAC (2017). Nunavut Waters and Nunavut Surface Rights Tribunal Act INSPECTOR'S DIRECTION. September 5, 2017.

[4] QIA (2017) Baffinland Iron Mines Corporation's, Mary River Project, Notice of Additional Inspection, Schedule E Section 6. September 6, 2017.

[5] Baffinland (2017) 2017 Q2 - Quarries and Borrows (Zip Folder). July 27, 2017.

[6] QIA and Baffinland (2013) Quarry Concession Agreement. September 6, 2013.

[7] QIA (2017) Baffinland Iron Mines Corporation's, Mary River Project, 2017 Work Plan Addendum. June 2, 2017.

QIA has informed Baffinland multiple times in writing[8,9,10,11] and in person that Baffinland requires written approval from QIA prior to commencing these works. QIA is currently aware of unapproved culvert work at the following locations: KM 96.5 (no ID); CV046 A&B; CV104 A&B, CV187; and what the Auditors believe to be culverts CV216, BG32. Though Baffinland has submitted a process for amending the Tote Road, this does not approve or warrant current construction. It is also noted that Baffinland has submitted a request for approval for adjustments at BG-04[12], for which approval has not yet been granted.

Lease Section 5.2 item a) vii – Baffinland Response

The lack of responses to QIA's reasonable requests is non-compliant. **Table 1** summarizes the specific items that are considered non-compliant as the Tenant will not withhold such information as the Landlord may reasonably request from time to time that is relevant to ensuring compliance with and effective implementation of the terms and conditions of this Lease. **Table 1** is an excerpt from correspondences between Baffinland and QIA, where detail on each request is summarized in Appendix A.

Table 1: Summary of non-compliance reporting extracted from Appendix A.

Item #	Date Requested	Requested Information	Deficiency
25	1/26/2017	ICRP Version 5	Baffinland informed QIA during the Audit that Version 5 would not be ready until November 30, 2017. QIA does not accept this further delay
68	5/10/2017	Daily environmental logs were requested for drilling program, and the post-activity land status.	On September 29, 2017, Baffinland only provided an example of the post-activity photos and no daily logs were submitted.
108	6/14/2017	Baffinland to provide all sampling data as required under the WCA, for the 2017 unauthorized release	Baffinland to follow up with sampling results.
119	7/17/2017	Baffinland to provide corrective action regarding the building of a pad without authorization and the use of material outside a quarry boundary.	Baffinland to provide the correspondences between Baffinland and INAC, and confirm the corrective actions that have been implemented.

[8] QIA (2016) Final Review of Baffinland Iron Mines Corporation 2017 Work Plan for the Mary River Project. December 12, 2016.

[9] QIA (2017) 170717-QIA-CPL-June2017EnvironmentalInspectionLetter-ENG-FINAL-signed. July 17, 2017

[10] QIA (2017) 170602-QIA-CPL-WorkPlanAddendumIRLetter-ENG-FINAL-signed. June 2, 2017.

[11] QIA (20170 170905-QIA-CPL-August2017EnvironmentalInspectionLetter-ENG-FINAL-signed. September 5, 2017

[12] Baffinland (2017) 2017 09 18 - TRAN Submission - BG-04 Realignment. September 18, 2017.

Lease Section 6.4 item b and c) – Reporting

The construction reporting is non-compliant. QIA has not received all "As Built" or "For Construction" reports, signed and stamped by an Engineer. The availability of For Construction reports allows QIA to reconcile security estimates with what was built. These reporting is also a requirement of the Water Licence, therefore making such reports available to QIA should not represent any increase to Baffinland's resources. This has been a reoccurring concern[13]. In the 2016 Environmental Audit[13], QIA requested that Baffinland provide a link or a corresponding naming convention between the submitted documents such that QIA can ensure proper record management of construction activities is being met. To date no response has been received regarding this request. **Table 2** provides a summary of the documents that have been reviewed with outstanding submissions.

Table 2: Summary of missing construction reporting.

Nunavut Water Board File ID	Description	Missing Records
17-03-31 – 2016 QIA-NWB Annual Report for Operations	Milne Port – Stockpile Sedimentation Ponds	For Construction documents not found.
17-03-31 – 2016 QIA-NWB Annual Report for Operations	Mine Haul Road - As-built Report	Issued for Construction documentation not found.
17-03-31 – 2016 QIA-NWB Annual Report for Operations	Waste Rock Sedimentation Pond	Issued for Construction documentation not found.
170417 2AM-MRY1325 Detailed Design Crusher Pad Expansion	Crusher Pad Extension	As-Builts not filed within 90 days.
H349000 4210 10 124 0001[13]	Mary River - Explosives Facility	For Construction documents not found
E349000-PM009-50-042-0001[13]	Mary River - Sewage Treatment Plant	For Construction documents not found
140409 2AM-MRY1325[13]	Mary River - Landfarm and Snow Containment Report	As-built documents not found
H349000-2613-60-011-0013[13]	Milne Inlet – Fuel System Upgrade Loading Area Signage	As-built documents not found
H349000-2613-60-011-0011[13]	Milne Inlet – Tank Signage TK-001	As-built documents not found

[13] QIA (2017) 2016 Environmental Audit. January 26, 2017

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Table 3 lists QIA's requirements, including deadlines, resulting from the Lease Non-compliances determined through the 2017 Environmental Audit.

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Table 3: 2017 Audit Requirements

#	Topic	Requirements
1	Process Forward	**By December 1, 2017,** Baffinland responds to QIA's proposed path forward for priority setting and completion as listed on page 1 of this letter.
2	Environmental - Waste Rock Sedimentation Pond	**By December 1, 2017**, Baffinland to provide the following: 1. An update on the actions taken to date by Baffinland's regarding the Pond. 2. A summary of the correspondence made between Baffinland and other regulators regarding the Pond. 3. Baffinland's intended next steps regarding the Pond. 4. A reply to the original information request[4].
3	Process - Tote Road Adjustments	**By December 1, 2017**, Baffinland and QIA approve the Tote Road Amendment Procedure (TRAN) based on QIA's submitted comments and recommendations so that a clear process is followed when performing any adjustments of the Tote Road, and Lease compliance is maintained.
4	Record Management – information requests	**By March 1, 2018**, all yellow items of Appendix A are to be rectified. Not meeting this date shall be considered non-compliant with Section 5.2 a) item viii) of the Lease. This should ensure that such an extensive list of requests does not reoccur.
5	Record Management – pre construction	**By March 31, 2017**, QIA and Baffinland approve a procedure that lists the requirements of For Construction submissions to meet both the Water License and QIA security criteria as part of the Lease Operations Guide update.
6	Record Management – post construction	**By March 31, 2017**, QIA and Baffinland approve a procedure that lists the requirements of As Builts or post-construction submissions to meet both the Water License and QIA security criteria as part of the Lease Operations Guide update.
7	Record Management – post construction	**By December 31, 2017,** Baffinland to provide a letter reconciling all For Construction and As-Built reports submitted.

1 December 2017

Mr. Stephen Williamson Bathory
Qikiqtani Inuit Association
Igluvut Building, 2nd floor
P.O. Box 1340
Iqaluit, NU
X0A 0H0

Re: 2017 Environmental Audit Performed by QIA (11 November 2017)

Baffinland Iron Mines Corporation (Baffinland) provides the following in response to the Qikiqtani Inuit Association (QIA) letter detailing the results of the 2017 Environmental Audit[1] (the Audit) received 11 November 2017, completed in accordance with Schedule E and Schedule D of the Commercial Production Lease (Lease) No. Q13C301.

Baffinland recognizes internal challenges faced during 2017 resulted in delays and non-compliance on several key issues. In addition to the development of a Compliance Manager role within the organizational structure, Baffinland has assembled an internal Compliance Working Group with representatives from our Operations and Projects departments in an effort to address and mitigate non-compliance issues. Baffinland is fully committed to resolving all outstanding compliance issues in 2018 and working together with the QIA to achieve resolution on key issues.

In recognition of the need to set priorities on the outstanding compliance and reporting issues identified in the Audit, Baffinland would like to set a meeting with QIA and its representatives for **11 January 2018** or alternate date of 18 January 2018. We believe that a minimum of one half day should be devoted to this exercise, though a full day would allow for more thorough discussion. The meeting may be held in the Baffinland Oakville offices if that is agreeable, or an alternate location proposed by the QIA. A compliance tracking register for the purposes of assigning priority, timelines and responsible parties will be shared for review one week in advance of the meeting date. The proposed agenda for this meeting would be as follows, subject to feedback from QIA:

- Overview of audit findings
- Joint review of Compliance Tracking Register to assign priority, timelines and responsible parties
- Compile and review action items and responsible parties
- Review and set timelines for follow up meetings

The following table is provided in response to Table 3 of the Audit, which outlines QIA's requirements, including deliverables, resulting from the non-compliances.

#	Topic	Requirements	Baffinland Response
1	Process Forward	**By December 1, 2017,** Baffinland responds to QIA's proposed path forward for priority setting and completion as listed on page 1 of this letter.	Proposed date of **11 January 2018** for an in-person meeting. Alternate date of 18 January 2018.

[1] QIA (2017) 171101-QIA-CPL-2017AuditReportLetter-ENG-FINAL-signed dated 11 November 2017

#	Topic	Requirements	Baffinland Response
2	Environmental - Waste Rock Sedimentation Pond	**By December 1, 2017**, Baffinland to provide the following: 1. An update on the actions taken to date by Baffinland's regarding the Pond. 2. A summary of the correspondence made between Baffinland and other regulators regarding the Pond. 3. Baffinland's intended next steps regarding the Pond. 4. A reply to the original information request[4].	1. QIA is referred to the letter submitted by Baffinland to Environment and Climate Change Canada (ECCC) on November 21, 2017 (refer to Attachment 1) for a summary of the 2017 events and actions taken to date at the Waste Rock Stockpile Facility. 2. Please refer to Attachment #1 for a comprehensive list of all correspondence to date regarding the Waste Rock Stockpile Facility. Correspondence to ECCC and INAC not previously provided to QIA from 21 and 22 November 2017 are also provided in Attachment #1. 3. Baffinland continues to develop an action plan to address outstanding concerns regarding the Waste Rock Stockpile Facility. Golder Associates has been retained to assist Baffinland with the management of water and waste rock at the Waste Rock Stockpile Facility. Once finalized, the action plan will be submitted to the QIA and other relevant agencies for review and approval. 4. Response provided under separate cover on 1 December 2017 and uploaded to IGLU.
3	Process - Tote Road Adjustments	**By December 1, 2017**, Baffinland and QIA approve the Tote Road Amendment Procedure (TRAN) based on QIA's submitted comments and recommendations so that a clear process is followed when performing any adjustments of the Tote Road, and Lease compliance is maintained.	Baffinland acknowledges receipt of the comments on the TRAN process provided by QIA, and is working to provide a response. Finalization of this process is a priority item, however due to current resource allocation is not completed at this time. Suggest revising this deadline to **January 31, 2018** to allow time for further discussions with QIA.
4	Record Management – information requests	**By March 1, 2018**, all yellow items of Appendix A are to be rectified. Not meeting this date shall be considered non-compliant with Section 5.2 a) item viii) of the Lease. This should ensure that such an extensive list of requests does not reoccur.	Baffinland agrees with this timeline in principal, but would like to review these items in collaboration with QIA during the proposed priority setting meeting in Janaury 2018 to ensure resources are allocated efficiently to complete everything in this timeframe.

#	Topic	Requirements	Baffinland Response
5	Record Management – pre construction	**By March 31, 2017**, QIA and Baffinland approve a procedure that lists the requirements of For Construction submissions to meet both the Water License and QIA security criteria as part of the Lease Operations Guide update.	Agreed, requirements on For-Construction submissions requires clarity. Suggest setting timelines and action items during January priority setting meeting with a target completion date of **31 March 2018**.
6	Record Management – post construction	**By March 31, 2017**, QIA and Baffinland approve a procedure that lists the requirements of As Builts or post-construction submissions to meet both the Water License and QIA security criteria as part of the Lease Operations Guide update.	Agreed, requirements on As-Built submissions requires clarity. Suggest setting timelines and action items during January priority setting meeting with a target completion date of **31 March 2018**.
7	Record Management – post construction	**By December 31, 2017,** Baffinland to provide a letter reconciling all For Construction and As-Built reports submitted.	A comprehensive list of for construction and as-built drawings prepared for the Project will be provided for review. In addition, a list of Construction Summary Reports prepared to date will be provided for review.

We appreciate the concerns raised by the QIA in the Audit, and will work towards addressing the non-compliance issues with the QIA in a timely manner. We hope that the enclosed information satisfies the requests presented in the Audit, should you have any additional questions or concerns at this time please contact the undersigned.

Regards,

Christopher Murray
Environmental & Regulatory Compliance Manager

cc. Todd Burlingame, Megan Lord-Hoyle, Baffinland
Jamie Van Gulck, Jason Ash, ARKTIS

Attachments
Attachment 1: Waste Rock Stockpile Facility Supporting Information

Attachment 1: Waste Rock Stockpile Facility Supporting Information

Table A1 – Summary of 2017 Correspondence Related to Waste Rock Stockpile Facility (MS-08)

Date of Correspondence	Correspondence	Agencies Included
August 8, 2017	Baffinland reports NT/NU Spill 17-289.	NT/NU Spill Line, INAC, QIA
August 16, 2017	Baffinland provides notification of potential controlled discharge from Facility's containment (MS-08) and low pH conditions observed.	INAC, NWB, QIA, ECCC
August 24, 2017	Baffinland provides available water quality and water tracking data by email to ECCC and INAC during onsite INAC and ECCC inspection.	INAC, ECCC
August 26, 2017	Baffinland reports NT/NU Spill 17-312.	NT/NU Spill Line, INAC, QIA
August 31, 2017	Baffinland reports NT/NU Spill 17-328.	NT/NU Spill Line, INAC, QIA
September 2, 2017	Baffinland provides update on status, actions taken and planned corrective actions for the Waste Rock Stockpile Facility.	INAC, NWB, QIA, ECCC, NIRB
September 5, 2017	Baffinland receives INAC Inspector's Direction.	N/A
September 8, 2017	Baffinland submits follow-up spill report for NT/NU Spill 17-289.	NT/NU Spill Line, INAC, QIA
September 11, 2017	Baffinland reports NT/NU Spill 17-361.	NT/NU Spill Line, INAC, QIA
September 13, 2017	Baffinland receives notification of the initiation of ECCC's investigation under the Fisheries Act and MMER	N/A
September 25, 2017	Baffinland submits follow-up spill report for NT/NU Spill 17-312.	NT/NU Spill Line, INAC, QIA, ECCC
September 28, 2017	Baffinland provides status update for NT/NU Spill 17-312.	INAC, QIA, ECCC
September 30, 2017	Baffinland submits follow-up spill report for NT/NU Spill 17-328.	NT/NU Spill Line, INAC, QIA, ECCC
October 16, 2017	Baffinland submits follow-up spill report for NT/NU Spill 17-361.	NT/NU Spill Line, INAC, QIA, ECCC
October 20, 2017	Baffinland receives questions from INAC Inspector regarding follow-up spill report for NT/NU Spill 17-361.	N/A
October 27, 2017	Baffinland provides status update for NT/NU Spill 17-312.	INAC, QIA, ECCC
October 31, 2017	Baffinland provides response to Measures to be Taken, Item 4 of INAC Inspector's Direction (Hydrological Assessment)	INAC, QIA, NWB
November 6, 2017	Baffinland receives information request from INAC regarding follow-up spill report for NT/NU Spill 17-361.	N/A
November 15, 2017	Baffinland provides response to Measures to be Taken, Item 3 of INAC Inspector's Direction (Phase 1 Waste Rock Management Plan, Rev. 1)	INAC, QIA, NWB
November 21, 2017	Baffinland provides summary of events and actions taken in response to ECCC's notice of investigation.	ECCC
November 22, 2017	Baffinland provides response to INAC Inspector's questions received on October 20, 2017.	INAC

November 21, 2017

Curtis Didham
Enforcement Officer
Environment and Climate Change Canada
933 Mivvik Street
Iqaluit, Nunavut
X0A 0H0

Dear Mr. Didham,

Re: Investigation under subsection 36(3) of the Fisheries Act in regards to an effluent seepage and controlled discharges from the Waste Rock Stockpile Sedimentation Pond (WRSSP) located at Baffinland's Mary River Project (the Project).

Please find below a summary response prepared by Baffinland Iron Mines Corporation (Baffinland) in response to the investigation under the Fisheries Act and Metal Mining Effluent Regulations (MMER) initiated by Environment and Climate Change Canada (ECCC) on September 13, 2017.

Project Development

Baffinland proposed to develop the Project in a phased approach, and began construction for the Early Revenue Phase (ERP) in 2013, followed by the initial mining of Deposit 1 in September 2014. Prior to the development of Deposit 1, Baffinland had retained AMEC in 2012 to conduct water quality modelling of runoff and seepage originating from the Deposit 1 waste rock stockpile. The report concluded that, with the exception of total suspended solids (TSS), the water quality of runoff and seepage would meet the MMER discharge requirements. To address the estimated solids loading from the runoff and seepage and facilitate the monitoring of discharges, sedimentation ponds downstream of the waste rock stockpile(s) were proposed. In 2014, Baffinland retained AMEC to investigate the metal leaching and acid rock drainage (ML/ARD) potential of waste rock generated from ERP operations on Deposit 1. Results from AMEC's investigation were presented in a technical memo titled "Mary River Deposit 1, 5-Year Pit ML/ARD Characterization". AMEC had determined that approximately 85% of waste rock samples had neutralization potential ratios (NPR) greater than 2 pH and were classified as non-potentially acid generating and were unlikely to generate acidic drainage. Approximately 10% of the samples had NPR values of less than 1 pH, and 5% of the samples were classified as having uncertain acid generating potential (1<NPR<2). Humidity cell testing for historical samples of the Waste Rock Stockpile has stayed relatively consistent previous to 2017, indicating stable conditions in the majority of cells

Construction of the current WRSSP commenced in September 2015 and became operational in May 2016. A Construction Summary Report (CSR) produced by Hatch Ltd. (Hatch) for the current sedimentation pond, which was included in the 2016 Qikiqtani Inuit Association (QIA) and Nunavut Water Board (NWB) Annual

Report for Operations, was signed off by Baffinland in January 2017 and provided to regulators and stakeholders on March 31, 2017.

Under Part D, Item 18, of Baffinland's Type "A" Water License 2AMMRY1325 Amendment No. 1 (Water License), two annual geotechnical inspections are performed on water and waste retention structures. Barry H. Martin Consulting Engineer and Architect conducted two inspections in 2017. The Aug 1-10th bi-annual inspection did not identify integrity or containment issues concerning the WRSSP. Additionally, inspections of the facility from ECCC and Indigenous and Northern Affairs Canada (INAC) in 2016 and spring/early summer 2017 also did not identify seepage from the WRSSP or identify water quality concerns associated with the system. Internal compliance inspections are completed bi-monthly during the open water season on this facility and daily monitoring is completed during discharge which focuses on monitoring water quality in accordance with Baffinland's Water License and Schedule 4 of the MMER, as well as overall WRSSP conditions and operations. There were no issues of compliance with water quality limits in 2016 or in the first half of 2017.

The following summarizes the four incidents that occurred in August and September and remediation measures undertaken.

Spill Report 17-289

A heavy rain event was experienced over a period of several days in late July increasing the runoff into the pond and led to the requirement to de-water and maintain suitable pond freeboard. The pH results leading up to August 1st, which were measured by both YSI meter field readings and the ALS laboratory analyses, were consistently greater than 6.40. In early August low pH water was discharged to the environment on August 1st and 3rd. On August 1st, water chemistry and toxicity testing occurred. Results received indicated the pH of the water was below 6.0 which resulted in a toxicity failure for both Daphnia Magna and Rainbow Trout. No discharge to the environment occurred after receiving official ALS laboratory results.

August 10th - 24th:

- pH adjustment treatment of the WRSSP was planned with Wood Group PLC (formally AMEC Foster Wheeler) to determine the most effective treatment of the WRSSP with resources on site. On August 22-24th, batch treatment of the WRSSP was completed using sodium carbonate to effectively raise the pH from approximately 4 to 7.
- Golder Associates Ltd. (Golder) was consulted to commence work on increasing the storage capacity of the WRSSP.

Spill Report 17-312

On August 23, 2017 during an inspection of the WRSSP with ECCC and INAC, seepage was observed originating from the central toe of the WRSSP in approximately four discrete but closely clustered locations. Water quality samples were taken from the seepages occurring at the toe of the WRSSP in concert with ECCC and INAC on August 23rd and 24th during their on-site inspection and external

analytical results indicated that, aside from nickel and TSS, water quality was compliant under the MMER and Water License.

August 25th:

- Construction of an emergency containment ditch downstream of the seepage.

September 1st:

- Hatch was consulted to explore options to stop the seepage from the toe of the WRSSP and identify potential remedial activities to the facility.
- Hatch recommended the placement of a till blanket upstream of the WRSSP liner key-in to allow for proper re-grading in an effort to reduce pooling on the inlet, as well as constructing two sumps to tie into the emergency containment ditch downstream of the WRSSP seepage.

September 2nd:

- Baffinland submitted a notification to regulators detailing the plan to mitigate the ongoing seepage at the WRSSP.

September 7th - 17th

- Construction of the till blanket and sumps were completed to the design specifications provided by Hatch from September 7th to 17th.

On September 26th, during an inspection of the WRSSP and down gradient seepage area, discoloured water was observed outside of the emergency containment ditch under ice and snow. Water quality sampling was conducted, which included acute toxicity testing. Analytical results showed nickel and TSS above applicable guidelines, though the acute toxicity test passed.

October 4th - 24th:

- Golder and Le Groupe Desfor (LGD) consulted to assess the situation and provide expert advice on locating the source and identifying potential remedial solutions.
- LGD Director of Civil Works concluded that the origin of the seepage could not be determined at that time under the existing conditions.
- Principal Geochemist from Golder conducted a detailed hydrological assessment and concluded that the pond design appears appropriate for its intended use.

October 19th:

- Story Environmental was contacted to provide recommendations for the utilization and implementation of using rhodamine dye to determine whether the WRSSP was the potential source of the seepage.
- Monitoring of the seepage for the presence of rhodamine occurred using a YSI meter with a rhodamine sensor. Rhodamine was detected in seepage grab samples indicating that the WRSSP liner's integrity may have been compromised. Current conditions limit the ability to confirm this to be true and further investigations into the matter are required when conditions allow.

October 21st – November 06:

- Construction of a new berm was completed around the outside perimeter of the emergency containment ditch to increase the ditch's containment capacity.
- Water was pumped from the containment ditch back to the WRSSP in order to effectively place ¾ inch rock at the base of the ditch to arrest further seepage.

Spill Report 17-328 and 17-361

On August 27th, visual observations of the turbidity of the WRSSP prompted the discharge to be shut down. Samples later confirmed that the TSS exceeded the Water License and MMER guidelines for an approximate 14-hour period. Discharge resumed again on August 28th after the pond had settled and TSS criteria was found to be below guidelines.

August 24th – 28th

- An Environment Effects Monitoring (EEM) study was performed by Minnow Environmental (Minnow). No exceedances were observed or recorded under applicable guidelines in discharge exposed Tributary F or Mary River except for aluminum. The aluminum is not exposure-related as aluminum was found to be present in the reference sites and is related to known historical turbidity-related colloidal effects in Mary River. The discharge from the WRSSP travels approximately 2.2 km from the Final Discharge Point (FDP) to where Tributary F becomes a defined channel which is non-fish bearing. The confluence with Mary River is located approximately 3 kilometers in distance from that location.

Discharging to the environment continued from August 30th to September 6th and water samples analyzed using the on-site ALS laboratory equipment run by Baffinland personnel were found to be compliant up to September 6th under the MMER and Water License discharge criteria for pH. In addition to the on-site laboratory results, samples were also shipped offsite to ALS Waterloo. The pH results received from the ALS laboratory in Waterloo from September 1st to 6th were below the MMER and Water License criteria. In consultation with the ALS Environmental Technical Director, it was determined that the initial pH measurements from the on-site laboratory taken by Baffinland Staff (within one to four hours of sampling) should be the most reliable and defensible pH measurements representing the conditions of the samples at time of sampling, rather than test results measured by ALS Waterloo which represent the pH of the sample after several days of potential acid rock drainage related redox reactions. The discharge to the environment was stopped on September 6th.

September 1st:

- Aquatic Effects Monitoring Plan (AEMP) data for stations at the confluence of the tributary, (Tributary F) that receives WRSSP effluent and the nearest fish bearing waters, were examined and did not show readily detectable influence from the discharge, exhibiting pH of approximately 8.

Additional Mitigation Measures

Additional mitigation measures were taken to address deficiencies identified with internal environmental systems, protocols and procedures:

- An Emergency Response Plan has been revised for the WRSSP in accordance with MMER requirements outlined in Section 30.
- A Working Near Water Containment Facilities Procedure has been drafted to provide a set of operational standards to ensure work is conducted in a safe and environmentally-compliant manner.

- The Site Environment team reporting structure was changed to include a Site Environmental Manager that will provide leadership and oversight to all site activities.

Additional mitigation measures that are in progress or planned are:

- Initiate a geochemical review of the waste rock dump layout and materials to develop a better understanding of low pH conditions observed on site and, if necessary, develop supplemental mitigation measures to reduce or eliminate production of acidic water from entering the WRSP.
- Review on-site equipment and consider whether additional equipment could more efficiently treat and discharge water from the WRSSP.
- Revise Waste Rock Management Plan to incorporate discharge and ARD mitigation measures
- Resource additional certified ALS Technician(s) and testing equipment during the summer season
- Evaluate and source appropriate coagulants if treatment required.
- Long Term - Design and implement fit for purpose AMD containment and treatment technology for prevention, source control and remediation.

Overall no impacts were observed in the receiving water bodies as shown through Baffinland's EEM and AEMP studies. Engineered mitigation measures to address water quality, seepage and pond capacity issues are currently being reviewed. Through the rhodamine testing early indications are that the source of the seepage is related to the integrity of the WRSSP liner, although further investigations are required to confirm these findings and upon confirmation we will immediately act upon.

Regards,

Todd Burlingame | Vice-President, Sustainable Development
2275 Upper Middle Road East, Suite 300, Oakville, ON, Canada, L6H 0C3
T: +1 416 364 8820 x5010
C: +1 416 553 0062

Baffinland

Jonathan Mesher, Resource Management Officer
Nunavut Field Operations
Indigenous and Northern Affairs Canada
Nunavut Field Operations
Box 100
Iqaluit, NU X0A 0H0

22 November 2017

RE: INAC Questions Directed from Jon Mesher, October 20th, for Baffinland Regarding Acid Drainage at the Waste Rock Pile

	INAC Question	**Baffinland Response**
1	Why do all spill reports state that it occurs more than 3km from Mary River, the nearest fish bearing waters when the seeps are occurring in the in an area that drains to a Camp Lake tributary, which is fish bearing, at a distance of approximately ? m?	This statement is standard information that ECCC has requested which is for Baffinland to specify the nearest fish bearing waters in spill reports. However, the follow up spill reports 17-312 & 17-312U, were updated to specify the possible receiving environment if the seeps were to migrate a significant distance: "Camp Lake would be the ultimate receiving body of water. It is located >5.5 km away from the seepage location" and "The observed discolored water/ ice outside the emergency containment ditch is located on a flat tundra plateau which would flow through the camp lake water shed to Camp Lake approximately 5.5 km away", respectively.

2) Appendix 6 of the Life-of-Mine Waste Rock Management Plan is the Phase 1 Waste Rock Management Plan. The next questions with respect to this plan:

	Section	**Description**	**INAC question regarding the Phase 1 Waste Rock Management Plan**	**Baffinland Response**
a.	Section 6.1	"Temperature modeling of the waste rock regime including climate change included in the technical memorandum will be carried out as part of the ongoing waste rock characterization program."	What has been done and can these results be shared?	No temperature modelling has occurred to date. Thermal monitoring programs are being reviewed and developed in consultation with external consultants at this time.

b.	Section 6.3	"PAG waste rock will be identified by processing on-site analytical data from blast hole drill cuttings samples."	At what frequency are samples taken?	Blast hole samples are collected on a blast by blast basis.
			Is it a fixed number per volume of rock? Per day?	Samples are collected from all blasts regardless of if they contain ore, waste, or both. From each blast pattern, approximately half of all drilled holes are sampled. During analysis, samples with Fe < 55% (waste) are automatically flagged for sulfur analysis using Leco and Acid Base Accounting.
c.	Section 6.3	"Laboratory determination of PAG waste materials will be completed using total sulphur analysis by Leco sulphur analyser and guidance provided in Appendix A. Materials identified with a total sulphur content greater than 0.20% will be considered PAG rock or subjected to standard ABA testing for confirmation as either PAG or non-PAG rock."	Can the results of these analyses be shared?	Yes, results are available for blast hole samples from the commencement of mining operations. Results are submitted annually in the Qikiqtani Inuit Association (QIA) and Nunavut Water Board (NWB) Annual Report.
d.	Section 6.3	"All material within a specified 3D radius from a sample determined to be PAG will be assigned as PAG"	What radius is used?	A unit of PAG material is defined on a blast by blast basis when there is a continuous area >125 m^2 where blasthole statistics show S >0.2%.
			To date, what volume of rock has been assigned as PAG? What is the volume of waste rock generated to date?	As of October 2017, 656,061 tonnes has been assigned as PAG and 3,309,931 tonnes of total waste rock has been generated.

			What is the spatial distribution of the PAG, is it encountered some weeks and not others or is it consistently around? The plan stated there were no visual cues that could be used to separate PAG from non PAG rock – with the experience gained since 2014 when the plan was written, is this still the case?	PAG rock may be encountered in two areas within the pit: 1) when internal waste zones containing an abundance of sulfides are encountered and 2) in waste along the ore/waste contact. These areas also contain clean waste and there are no visual cues to differentiate between non PAG and PAG rock. Depending on where mining operations are situated within the pit at a given time, PAG rock may or may not be encountered.
e.	Section 6.3	"When that material is loaded into the haul truck it will be directed according to the mine scheduling plan to a specific section of the waste stockpile where all the PAG rock will be encapsulated together within non-PAG waste rock."	Where is the PAG section of the rock pile, and to what side does it drain? How is the PAG section of the rock pile delineated? On what time scale is the encapsulation planned – a yearly basis, once for the early revenue phase, only once at the end of the mine life?	PAG rock is stockpiled on top of a 3-4 m thick lift of non PAG waste rock. Drainage occurs on west-northwest side of the stockpile. When construction of the phase 1 waste rock pile nears completion, it will be encapsulated with a defined 3 m lift of clean waste rock, above, below and surrounding the PAG waste rock within the dump. PAG is currently being dumped in the center of the waste pile on a 3m thick layer of clean waste rock. PAG limit no-dump stakes are laid out at the northern end of the waste dump.
f.	Section 7.0	"The sedimentation pond will be lined and is sized to contain the 1:10 year 24 hr storm event falling on the waste rock stockpile area."	If the sedimentation pond is sized to contain a 1:10 year storm, why is it risking of overtopping several times this summer?	At the end of June, the rate of freshet caused the pond (and catchment area) to go from frozen to flowing in a matter of days. Determining the treatment in August for low pH caused delays in discharge, and a major precipitation event occurred.

g.			Given the difficulties that have been encountered, how soon will Baffinland be updating the waste rock management plan?	Currently reviewing and discussing a work plan with Golder Associates to develop a water and waste rock management action plan prior to freshet 2018.

	INAC Question	**Baffinland Response**
3)	The nickel concentrations in the seeps, as reported in the September 25, 2017 follow-up report, are above the water licence discharge criteria. Does the sulphide mineralogy indicate possible sources of nickel? Are the sources of nickel known?	Current blast hole analysis does not test for nickel. Sulfide mineralogy is primarily pyrite +/- chalcopyrite with no indications of nickel. BIM in discussions with Golder Associates to develop an updated geochemistry evaluation program considering existing pile conditions. This work to be complete prior to freshet 2018.

Regards,

Connor Devereaux,
Environmental Superintendent

cc. Sarah Forte, Spencer Dewar, Wajid Daouda (INAC), Gerald Rogers, Adam Gyorffy, Cody Gagne, Megan Lord-Hoyle, Tim Sewell, Christopher Murray, William Bowden, Andrew Vermeer (Baffinland)

APPENDIX E.8.6

WSCC INSPECTION REPORTS

20170318

email Sylvain.Proulx@baffinland.com

Sylvain Proulx
Chief Operating Officer
Baffinland Iron Mines Corporation
2275 Upper Middle Road East - Suite 300
Oakville ON L6H 0C3

Dear Mr. Proulx:

Further to the **Mine Health and Safety Act article 26** attached is the 20170318 Mary River project inspection report.

As per **MHSA article**

28. Please post a copy of this inspection report in a conspicuous location, and

29. Advise the chief inspector within 30 days of the remedial measures taken and the remedial measures still to be taken in respect of the inspection report.

32.(1) A person who is adversely affected by a decision or order issued by an inspector may appeal the decision or order, in writing, to the chief inspector within 30 days after its issue.

The WSCC is committed to service excellence. If you have any questions or concerns about this inspection report, please feel free to contact my supervisor Fred Bailey or myself. His phone number is 867 669 4430 or email fred.bailey@wscc.nt.ca.

Sincerely
Workers' Safety and Compensation Commission of the NWT and NU Mine Safety

Martin van Rooy
Engineer/Mines Inspector

cc OHSC c/o tony.noseworthy@baffinland.com hal.finely@baffinland.com

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

Mine:	Mary River project	Location:	~950 km NW of Iqaluit
Operator:	Baffinland Iron Mines Corp.	Lat. 71-19'N	Long. 79-24'W
Manager:	Sylvain Proulx	Inspection Date:	20170301 to 07
Address	2275 Upper Middle Road East - Suite 300 Oakville ON L6H 0C3		

Martin van Rooy, WSCC's engineer/mine inspector, conducted a general safety inspection of Baffinland's Milne Inlet and Mary River sites. Items checked at Milne were fixed plant shop, maintenance garage, Toromont's shop, welding shop, grease bay, east tower building, power plant's e-house 1 and 2, incinerator building, warehouse and fountain tire's shop. At Mary River, the open pit, waste dump, explosive and cap magazine, bit grinding shop, crushing plant, crushing welding shop, mobile maintenance shop, truck wash building, Toromont shop, welding shop, Winterhaven camp, helicopter garage, power plant's e-house 1 and 2, incinerator building, MRT building, sewage treatment building, water treatment building, cone crusher rebuild building, LAS laboratory, kitchen and emulsion plant.

Robert Bateman, Steve Gogo, Roland Hardy, Chris Holt, Mark Ipeelie, Steve Janknegt, Kenneth Jensen, Matthew Johnson, Dustin Lanyon, Josh Manning, Gordon Mudryk, Kenneth Mullen, Elwin Murley, Deon Pope, Michael Stoddart, Stephen Thorlacius, Doug Whitfield assisted Hal Finely and Martin van Rooy for parts of this inspection

Noticed there are a number of mechanical failures that have occurred with the ore hauling equipment. These mechanical failure such as wheel stud breaking causing the loss of wheel sets, a broken trailer frame causing the separation of a pup trailer, cracked trailer frames, cracked fifth wheel support frames, worn trailer kingpins... are of concern as the frequency of these failure events, may result in human injuries. These failures are a function of loaded trips, truck and trailer speed and the condition of the Tote road... however, when checked, the loaded trips completed prior to the component failure, is not readily available. The condition of the road is also difficult to gauge for at present (March 1, 2017 on truck #41 to Milne) the rough snow packed road is probably a lot smoother now, than when there is no snow pack. There are also a number of horizontal curves, vertical SS curves, and SS bends in addition to the roughness of the road contributing to these mechanical failures.

1 Please

Date of Report_____ **Inspector**_____

a) implement a tracking system for each haul truck, each trailer, and each pup that records the total number of loaded trips made by the truck, by the trailer, by the pup, before the component on the truck or on the trailer or on the pup failed.
b) install accelerometer to measure and record the acceleration in the XYZ directions on the truck, on the trailer and on the pup as the loaded ore truck travels on the Tote road from Mary River to Milne Inlet, and .
c) implement a road improvement program to remove the vertical SS bends, the horizontal SS bends and rough road sections.

MHSA art 2.(1) *The owner of a mine shall take every reasonable measure and precaution to protect the health and safety of employees and other persons at the mine.*

(2) *The owner of a mine shall*
(a) implement and maintain work practices that are safe and that do not present undue risk to health; and
(b) provide and maintain healthy and safe worksites.

Noticed there is a Teck cable, lying on the floor of the Milne Inlet fixed plant shop, feeding a 600 V heater. The reason the Teck cable is lying on the floor of the shop is because the heater is moved about on the shop floor.

2 Please review the operation of the heater and either install it in a fixed location with the Teck cable power supply or make it moveable with a flexible cable power supply as per code.

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines.*

Noticed the safety clip was missing from the hook on a 3,000-lb line pull winch, stored in the Milne Inlet fixed plant shop.

Date of Report_____ **Inspector**_____

3 Please install a safety latch in the hook before using the winch

MHSR sect 10.126.(4) *A lifting device, pulling device, or utility hoist and its support or anchorage system shall be maintained by a qualified person so that it does not endanger the safety of workers.*

Noticed a compressed air blowgun attached to a high pressure air hose, in the fixed plant shop. There is no signage at the blowgun, restricting its use or warning of the hazard of using compressed air for cleaning, and specifying the appropriate personal protection equipment that must be worn, while using compressed air for cleaning.

4 Please note this is a repeat infraction, see inspection report 22 September 2016. Please direct all supervisors to remove compressed air blowguns from service and as previously noted review the practice of using compressed air for cleaning. Where this procedure is required, ensure-
a) a safe work procedure is developed that addresses without limiting, personal protective equipment, hearing protection, maximum air pressure to the blowgun, barricades around the work area...
b) people, authorized to use compressed air for cleaning, are trained in this safe work procedure,
c) submit a copy of the safe work procedure for using compressed air for cleaning, and
d) identify the areas where an ***authorized person*** may use compressed air for cleaning.

MHSR sect 10.121.(1) *The manager shall identify and supply all suitable personal protective equipment to be worn by the operator for the safe operation of all miscellaneous tools including grinders, chain saws, pneumatic tools and all power activated tools.*

(2) *No person shall use any miscellaneous tool unless*
(a) the person is trained and authorized to use the tool;
(b) the person is wearing, and has received training on, the proper personal protective equipment required for the safe operation of the equipment; and
(c) the personal protective equipment is in good condition.

Date of Report_____ **Inspector**_____

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

Noticed the coiled-up welding cable, hanging from a bench in the fixed plant welding shop, is blocking clear access to the wall mounted welding outlets.

5 Please move the bench and coiled-up welding cable away from the front of the electrical welding outlets, to provide clear access to the switch gear.

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines.*

Noticed there are no protective covers over the hoses and cables lying indiscriminately on the floor of the fixed plant welding shop. Hoses and cables left lying indiscriminately on the floor without protection, are a potential trip hazard and could be damaged by falling objects.

6 This is a repeat infraction, see inspection report 22 September 2016, 19 May 2016, 12 October 2015… please instruct all supervisors to check in their areas of responsibility, to ensure no electrical cords, hoses and other items... are allowed to lie indiscriminately and without protection over the ground or across a floor, where they are a potential trip hazard and or other hazard if un-intentionally cut or damaged.

MHSR sect 5.07. *Every shift boss or supervisor shall, within his or her area of responsibility and authority,*
(e) be knowledgeable about essential safeguards against hazards and about safe working procedures at the worksites for which he or she is responsible so that he or she can routinely assess the safety of the environment and operations affecting persons in those worksites;

MHSR sect 9.04. *The manager shall develop and implement an effective housekeeping program to ensure that*
(a) all worksites and travelways are maintained in a safe condition;
(b) materials and equipment are stored in a manner so as not to endanger persons; and
(c) appropriate action is taken whenever necessary to maintain a hazard-free environment.

Date of Report_____ **Inspector**_____

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

Noticed the flashback arresters are missing from the regulators of the oxygen an acetylene cylinder set, installed on service truck HTP 035.

7 Please instruct all supervisors to check in their areas of responsibility, the oxygen and acetylene cylinder sets in use in the shop and on service vehicles, to ensure flashback arrestors are installed at the regulators.

MHSR sect 5.07. *Every shift boss or supervisor shall, within his or her area of responsibility and authority,*
(d) ensure compliance with the relevant provisions of the Act and these regulations;

MHSR sect 10.135.(2) *The hot work procedure required by subsection (1) shall provide that…*
(c) before any gas welding, cutting or heating equipment is used, the person using the equipment shall ensure that it is free from defects and leaks and that…
(ii) flashback arrestors are installed on each regulator to prevent reverse gas flow,

Noticed cardboard boxes and other miscellaneous combustible products stored near the electrical panel area in Milne Inlet's fixed plant shop and the maintenance shop however, these items are a potential fire hazard and should not be stored in a building.

8 Please remove the combustible material stored in the fixed plant shop and the maintenance shop and store these items in suitable dumpster located outside the building to minimize the potential fire hazard in the building.

MHSR sect 9.04. *The manager shall develop and implement an effective housekeeping program to ensure that*
(a) all worksites and travelways are maintained in a safe condition;
(b) materials and equipment are stored in a manner so as not to endanger persons; and
(c) appropriate action is taken whenever necessary to maintain a hazard-free environment.

Date of Report_____ **Inspector**_____

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

Noticed there was a layer of ice and gravel caked onto the frame of an ore haul truck and trailer, parked in Milne Inlet's maintenance shop. The equipment was in for maintenance work however, before it could be worked on, it had to be thawed out. The maintenance shop is not designed for thawing-out and cleaning the equipment and the lack of such a facility is of concern, as a person working under uncleaned equipment is exposed to the hazard of falling debris, from the equipment.

9 Please review the practice of trying to thaw-out ore hauler truck and trailers in the Milne Inlet maintenance shop and construct a thaw shed where this equipment can be thawed-out and cleaned before it is worked on in the maintenance shop.

MHSA art 2.(1) *The owner of a mine shall take every reasonable measure and precaution to protect the health and safety of employees and other persons at the mine.*

(2) *The owner of a mine shall*
(a) implement and maintain work practices that are safe and that do not present undue risk to health; and
(b) provide and maintain healthy and safe worksites.

Noticed the Manufacturer's instructions are not attached to the work orders (WO) issued for maintenance of equipment at Baffinland. These instructions are available in the manufacturer's literature however, without these instructions attached to the WO, the Manufacturer's warning and safety instructions may not be followed in performing the work.

10 Please attach a hard copy or the electronic file of the Manufacturer's instructions to the equipment WO and instruct the person(s) performing the work to read it, before starting the work, to ensure the Manufacturer's instructions and warnings are reviewed and followed.

MHSA art 10.(1) *The manager shall take every reasonable measure and precaution to protect the health and safety of employees and other persons at a mine.*

Noticed at Milne Inlet, extension cords used to supply power to the Herman Nelson heaters in the

Date of Report_____ **Inspector**_____

grease bay building, the east tower building, the incinerator building and the fountain tire shop.

11 Please provide electrical outlets at these heaters plug the heater directly into the outlet and remove the extension cords.

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines.*

Noticed the Milne Inlet Fountain Tire shop and the Mary River crushing plant welding shop are structures that are fabricated from sea containers.

12 Please conduct an engineering assessment of the Fountain tire shop at Milne Inlet and the crushing plant welding shop at Mary River and submit the certified engineered drawings for each structure certifying it complies with national building code, national fire code and national electrical code.

MHSA art 2.(1) *The owner of a mine shall take every reasonable measure and precaution to protect the health and safety of employees and other persons at the mine.*

(2) *The owner of a mine shall*
(a) implement and maintain work practices that are safe and that do not present undue risk to health; and
(b) provide and maintain healthy and safe worksites.

Noticed a 20-lb propane cylinder stored inside the Milne Inlet incinerator building, it was removed from the building.

13 Please instruct all supervisors to ensure there are no empty or full propane cylinders/bottles stored inside the buildings, under their control. These cylinder/bottles when not in use must be stored outside, in a well-ventilated area.

Date of Report_____ **Inspector**_____

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

MHSR sect 10.101.(1) *All gas fired appliances, equipment and pipelines shall be installed and maintained in accordance with the standard CAN/CGA-B149.1-M95, Natural Gas Installation Code and CAN/CGA-B149.2-M95, Propane Installation Code, and the system shall comply with the requirements of the Gas Protection Act and the regulations under that Act.*

Noticed the heavy Down-The-Hole drill hammers stored on the floor of the drill bit grinding shop. The storage of these hammers on the floor is a concern as their weight, about 230-lbs, has to be manhandled to or from the floor.

14 Please review the storage the DTH drill hammers to ensure effective protection is provided for any person exposed to the risk of injury, from manually handling this equipment. In addition, ensure each person engaged in the bit and hammer handling cycle, receives routine training in manual lifting procedure(s).

MHSR sect 9.72.(1) *The manager shall ensure that suitable mechanical equipment is provided and used for the handling of heavy or awkward loads.*

(2) *Where the use of mechanical equipment is not practicable, the manager shall take all practical means to adapt heavy or awkward loads to facilitate lifting, holding or transporting by employees or to otherwise minimize the manual handling required.*

Noticed a person with a dirty face working in the drill bit grinding shop, he was not wearing a mask or respirator. He did confirm when he blew his nose into a tissue, the presence of grinding dust residue. He indicated he was being trained to be the operator of the bit sharpening equipment however, he was not aware he needed respiratory protection for this work.

15 Please ensure the operator wears suitable respiratory protection during the bit grinding operation.

MHSR sect 9.03.(1) *The manager shall ensure that a hazard analysis is performed at least once every 3 years and where the analysis shows that it is necessary, the manager shall*

Date of Report_____ **Inspector**_____

(a) implement measures to reduce the effect at a worksite of potentially hazardous agents and conditions on the health and safety of employees;
(b) institute engineering controls to ensure that employees are not exposed to a level of any physical, chemical or radiation hazard in excess of the limits in the regulations; and
(c) where the necessary engineering controls required by paragraph (b) cannot be achieved, inform the Committee which shall investigate the situation and make recommendations to the manager.

Noticed the outer cover of the high-pressure air hose to the bit grinding machine is cracked and is attached to the equipment by means of a screw clamp. This type of clamp must not be used on high-pressure air service, as the flat screw surface of these clamps, could become a potential cutting hazard, when the fitting lets-go under pressure and the hose flips back and forth, from the discharging air jet

16 Please replace the cracked high-pressure air hose and remove the screw clamp and ensure a crimp type fitting is used to attach the high-pressure air hose to the equipment.

MHSA art 10.(1) *The manager shall take every reasonable measure and precaution to protect the health and safety of employees and other persons at a mine.*

Noticed a berm constructed below the loose on the crest of the catchment bench on the top level of the open pit however, there is no berm constructed below a wedge in the wall, on a lower level of the pit.

17 Please scale the loose, from the crest of the upper catchment bench and construct a berm, below the wedge in the wall of the lower bench, to prevent access to the area.

MHSR sect 1.03.(1) *The owner of a surface mine or an underground mine shall maintain a mine design, acceptable to the chief inspector, assessing the ground stability of the active and proposed workings of the mine.*

Date of Report_____ **Inspector**_____

Noticed some of the loose inventory pages, in the explosive magazine checked, did not have the magazine data recorded on them.

18 Please ensure each explosive magazine inventory page has the magazine number recorded on it, and when the sheet is completed, bring the full pages to the office for storage and checking versus the electronic record for the magazine.

MHSR sect 14.08.(1) *Each magazine shall be operated and maintained in accordance with the following rules:*
(a) the magazine shall be in the charge of an authorized person who shall carry out a weekly inspection of the magazine and record the results in a log-book;
(b) at a mine, a record shall be kept of all explosives issued and received and the inventory of the surface magazine in a log-book, and all entries shall be signed by the authorized person...

Noticed the conveyor pull-cords on crusher 'B' and 'C', did not trip the emergency stop when the cord is pulled towards the emergency stop. Crusher 'A' was not checked as it was running during this inspection.

19 Please note this is a repeat infraction, see inspection report 20 July 2016, 12 October 2015… please ensure conveyor operators are trained to routinely check their conveyor e-stops, to ensure it activates, for all directions of pull on the pull-cord.

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines.*

Noticed the dust plumes, emitted from crushing and screening plant 'A's feed hopper and conveyor transfer points, is carried by the wind contaminating the air inside the crusher control room, the crusher coffee room, E-house 8, the surrounding surface area and buildings. The requirement by Baffinland to implement a dust control system for the crushing and screening plant, has been noted in previous inspection reports, see 19-May-16, 21-Mar-15, 26-Jul-14 and 28-May-14.

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20 Please submit the up-to-date dust monitoring program results, and advise what procedures Baffinland will implement, to prevent this fugitive dust plume, from the crushing and screening plant equipment, from contaminating the ambient air, inside and outside the buildings located near the plant.

MHSR sect 9.03.(1) *The manager shall ensure that a hazard analysis is performed at least once every 3 years and where the analysis shows that it is necessary, the manager shall*
(a) implement measures to reduce the effect at a worksite of potentially hazardous agents and conditions on the health and safety of employees;
(b) institute engineering controls to ensure that employees are not exposed to a level of any physical, chemical or radiation hazard in excess of the limits in the regulations; and
(c) where the necessary engineering controls required by paragraph (b) cannot be achieved, inform the Committee which shall investigate the situation and make recommendations to the manager.

MHSR sect 9.03.1 *Wherever practicable, the manager, after consultation with the Committee, may develop procedures for the use of water sprays and other dust suppression devices or personal protective equipment to be used at every dusty worksite.*

Noticed the workers on the ground at the crusher, were wearing a dust mask however, the men inside the crusher control room were not wearing a dust mask. As noted in previous inspection reports, the crusher operator must wear respiratory protection inside the control room because of the dust in the ambient air.

21 Please note, the requirement for the crushing and screening plant operator to wear respiratory protection from the dust was previously noted see inspection reports 19 may 2016, 21 March 2015, 26 July 2014 and 28 May 2014. Therefore please establish a crushing and screening plant work-zone area where every person within the work-zone must wear suitable respiratory protection at all times while in the work-zone when any one of the three crushing plants is running.

MHSR sect 9.02.(1) *Employees shall not be exposed to airborne concentrations of chemical or physical substances in excess of those specified in the 1994-1995 Threshold Limit Values for Chemical*

Substances and Physical Agents and Biological Exposure Indices published by the American Conference of Governmental Industrial Hygienists.

(2) *Where shifts are worked longer than eight hours a day or more than 40 hours a week, the airborne concentration of chemical and physical substances shall not exceed the threshold limit value established under the formula set out in Schedule 4.*

Noticed there is an excessive amount of dust all over the inside of the operator compartment of loader #7, the crushing and screening plant discharge loader. Dust is also expelled, into the cab's ambient air, when the air vents were tapped. Noticed the operator face was dusty and he confirmed dust residue present in a tissue, when he blows his nose however, he is not wearing any respiratory protection.

22 Please
a) clean the air ducting of the crusher discharge loader(s) and maintain them clean,
b) clean the inside of the cab and maintain it clean,
c) ensure the cab is sealed and pressurized to prevent the dust from entering the operator's compartment.
d) instruct the operator to wear respiratory protection, and
e) instruct the operator to vacuum the operator compartment at the end of each shift

MHSR sect 9.02.(1) *Employees shall not be exposed to airborne concentrations of chemical or physical substances in excess of those specified in the 1994-1995 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices published by the American Conference of Governmental Industrial Hygienists.*

(2) *Where shifts are worked longer than eight hours a day or more than 40 hours a week, the airborne concentration of chemical and physical substances shall not exceed the threshold limit value established under the formula set out in Schedule 4.*

Noticed covers are missing from an electrical panel in the crushing plant welding shop's office, exposing the bare electrical bus duct in the panel and it is missing its maximum voltage sign.

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23 Please cover the open slots in the electrical panel and attach a maximum voltage label to the front of the panel.

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines.*

Noticed the hammer end, of a pin driver tool stored in the mobile maintenance shop, is mushroomed

24 Please dress the hammer end of the pin driver tool, to prevent slivers from flying off when struck by a hammer.

MHSA art 10.(1) *The manager shall take every reasonable measure and precaution to protect the health and safety of employees and other persons at a mine.*

Noticed there was a person, working on top of the king pin area of a pup trailer in the mobile maintenance shop. He was cleaning off the frozen and cemented material caked on the platform, in order to inspect the king pin structure. This work platform is about six-foot above the ground and therefore it requires a handrail around it

25 Please install a suitable handrail system around the king pin structure of the pup trailers and check the lead trailer to determine if it also requires a suitable handrail above the king pin area.

MHSR sect 1.91. *The manager shall provide every walkway and every working platform more than 1.5 m above the ground with*
(a) a handrail not less than 910 mm nor more than 1.07 m above the floor of the walkway or platform;
(b) a second rail placed at mid-point between the top rail and the floor of the walkway or platform, unless the space between the top rail and the floor is closed by a screen; and
(c) toeboards that extend from the floor to a height of not less than 100 mm.

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Noticed chain falls, come-a-longs and shackles hung on racks which are about six-feet above the ground of the mobile maintenance shop and the cone crusher rebuild shop. However, some of these items are heavy and awkward to lift-up to place them on or lift them off the six-foot high rack and this lifting process is a potential source of injury.

26 Please review and establish a right height standard for Baffinland, for the placement of a hanging object storage rack, and ensure it is placed at a convenient height above the ground, for ease of lifting heavy or awkward items on or off the rack.

MHSR sect 9.72.(1) *The manager shall ensure that suitable mechanical equipment is provided and used for the handling of heavy or awkward loads.*

(2) *Where the use of mechanical equipment is not practicable, the manager shall take all practical means to adapt heavy or awkward loads to facilitate lifting, holding or transporting by employees or to otherwise minimize the manual handling required.*

Noticed there is an extension cord passed through the outside door of the light vehicle bay of the mobile maintenance shop.

27 Please check the reason for the extension cord to the outside and install outdoor 120V receptacles where tools or other devices are required to be used outside the door. It is a Code violation to run an extension cord through doors, windows or other openings in structures.

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines.*

Noticed there is long high-pressure airline hose and a long electrical cord used to feed the tire equipment in the Fountain Tire bay of the mobile maintenance shop. The high-pressure airline hose and

electrical cord are not covered and if cut, the airline could become a whipping hose, from the discharging air jet.

28 Please review the tire equipment installation and either cover the hose and cable for protection or install an air header and electrical outlet at the equipment.

MHSA art 10.(1) *The manager shall take every reasonable measure and precaution to protect the health and safety of employees and other persons at a mine.*

Noticed a 10-ton Gantry crane in use in the Toromont shop however, this unit cannot be used until it is certified. Noticed the push buttons on the pendant did not agree with the N.S.E.W markings on the underside of the crane.

29 Please lock-out this Gantry Crane until a professional engineer certifies
a) the concrete floor on which the gantry crane operates, can safely handle the maximum wheel load of the crane, and as per dwg A1002010 rev 1 this is the maximum load per wheel of 15,234 lbs at approx. 160 ins apart for the end frame, and
b) the gantry crane complies with Mine Health and Safety Regulations section 10.127 and its commissioning tests have been successfully completed, and
c) the directions of travel are clearly marked on the crane and pendant to prevent movement errors.

MHSR sect 10.127.(2) *A new or used production crane or service crane shall not be put into service unless*
(a) a certificate has been obtained from the manufacturer or from a professional engineer competent in design of hoisting equipment, certifying
(i) the maximum load capacity and maximum operating speed of the hoisting system, and
(ii) that all critical load-bearing components of the complete assembly and accessories have been inspected and non-destructively tested; and
(b) all the commissioning tests specified by the manufacturer have been successfully completed and the requirements of CSA Standard B167-95, Safety Standard for Maintenance and Inspection of Overhead Cranes, Gantry Cranes, Monorails, Hoists and Trolleys have been met.

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(4) *A service crane shall be provided with an audible and visible alarm to warn persons in the vicinity of the crane when the crane is operating on*
(a) pendant control, where the operator of the crane does not have a clear view of the area in which the crane is operating; or
(b) radio frequency control.

Noticed there is no vacuum exhaust system installed on the bench grinder in Toromont's shop, to capture the dust generated by grinding.

30 Please note this is a repeat infraction see inspection reports 29 Jan 2016, 12 October 2015… ensure before a grinder is authorized for use on site, it is equipped with a suitable vacuum exhaust system, to capture and remove the dust, generated by the grinding process.

MHSR sect 10.122.(7) *Powered grinding wheels, other than portable hand held machines, shall be equipped with an exhaust system or other means for removing dust produced during the grinding operation.*

Noticed the homemade fabricated aluminum platform hung on the back bumper of the plane's refueling tanker truck. This platform is heavy, awkward, and has to be manhandled on or off the back bumper of the truck and this is a potential hazard.

31 Please review the plane refueling procedure(s) and determine the appropriate system to be used to reach the refueling nozzles on the various planes.

MHSR sect 1.90. *Where workers are required to work, operate, maintain or service equipment, a safe means of access shall be provided as required by section 1.89.*

MHSR sect 9.72.(1) *The manager shall ensure that suitable mechanical equipment is provided and used for the handling of heavy or awkward loads.*

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Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

(2) *Where the use of mechanical equipment is not practicable, the manager shall take all practical means to adapt heavy or awkward loads to facilitate lifting, holding or transporting by employees or to otherwise minimize the manual handling required.*

Noticed the sewage treatment plant operator has to step over a large diameter pipe(s), on the path to the water treatment plant.

32 Please install a walkway over the large diameter pipe(s) on the path to the water treatment plant, to minimize this potential trip hazard.

MHSR sect 1.89. *The manager shall provide a safe means of access to a work site*

Noticed the fire pump system at Mary River is settling, and this is placing strain and stress on the diesel fire pump's exhaust bellows and on all the fire pumps' inlet and discharge piping system. This strain and stress in the piping system is a concern, as this could cause a failure of the fire line and or exhaust system, during a fire.

33 Please implement a monthly survey monitor system at Mary River of each fire pump support skid's frame ends and midsection elevations, and implement a permanent solution, to stop the fire pump system from settling.

MHSA art 10.(1) *The manager shall take every reasonable measure and precaution to protect the health and safety of employees and other persons at a mine.*

Noticed the bottom step, of the Mary River's water treatment plant, is a very narrow step and a potential trip hazard.

34 Please correct the bottom step so that it is the same width, as the steps above it

MHSR sect 1.89. *The manager shall provide a safe means of access to a work site*

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REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

Noticed there are bare electric cable ends located in the wall of the layout room of the LAS laboratory.

35 Please remove the wires or cap the ends

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines.*

Noticed there is no fall protection for a tall vertical ladder used to access the communication equipment installed on top of a sea container.

36 Please equip the communication equipment access ladder, with fall protection or remove it from its installed location.

MHSR sect 1.98. *Except in an underground mine, a ladderway at an angle steeper than 70 to the horizontal shall be fixed in place and be provided with*
(a) platforms at intervals not greater than 7 m;
(b) a safety cage; or
(c) a protective device that, when used, will prevent a worker from falling.

Noticed the firestop is missing around some electrical cables passing through the floor of the kitchen's hot prep section.

37 Please install the firestop around the cables passing through the kitchen floor.

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines.*

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REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

Noticed a homemade and spliced ladder arrangement installed to access the top of the ISO tanks in the emulsion plant.

38 Please remove the homemade and spliced ladder arrangement and replace it with a suitable ladder or steps to access the top of the ISO tanks.

MHSR sect 1.89. *The manager shall provide a safe means of access to a work site*

Noticed there is no vacuum exhaust system installed on the bench grinder in the emulsion plant, to capture the dust generated by grinding.

39 Please ensure, before a grinder is authorized for use on site, it is equipped with a suitable vacuum exhaust system, to capture and remove the dust, generated by the grinding process.

MHSR sect 10.122.(7) *Powered grinding wheels, other than portable hand held machines, shall be equipped with an exhaust system or other means for removing dust produced during the grinding operation.*

Noticed a screw type hose clamp used on a 120-psi airline hose in the emulsion plant. This type of clamp must not be used on high-pressure air service, as the flat screw surface of these clamps could become a potential cutting hazard, when the fitting lets-go under pressure and the hose flips back and forth, from the discharging air jet

40 Please replace any gear or screw type hose clamp, used on high-pressure air service, with a crimping device.

MHSA art 10.(1) *The manager shall take every reasonable measure and precaution to protect the health and safety of employees and other persons at a mine*.

Date of Report_____ **Inspector**_____

WSCC Workers' Safety & Compensation Commission | ᐃᖅᑲᓇᐃᔭᖅᑎᓄᑦ ᐊᑦᑕᓇᖅᑐᓂᒃ
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20170530

email Sylvain.Proulx@baffinland.com

Sylvain Proulx
Chief Operating Officer
Baffinland Iron Mines Corporation
2275 Upper Middle Road East - Suite 300
Oakville ON L6H 0C3

Dear Mr. Proulx:

Further to the **Mine Health and Safety Act article 26** attached is the 20170530 Mary River project inspection report.

As per **MHSA article**

28. Please post a copy of this inspection report in a conspicuous location, and

29. Advise the chief inspector within 30 days of the remedial measures taken and the remedial measures still to be taken in respect of the inspection report.

32.(1) A person who is adversely affected by a decision or order issued by an inspector may appeal the decision or order, in writing, to the chief inspector within 30 days after its issue.

The WSCC is committed to service excellence. If you have any questions or concerns about this inspection report, please feel free to contact my supervisor Fred Bailey or myself. His phone number is 867 669 4430 or email fred.bailey@wscc.nt.ca.

Sincerely
Workers' Safety and Compensation Commission of the NWT and NU Mine Safety

Martin van Rooy
Engineer/Mines Inspector

cc OHSC c/o tony.noseworthy@baffinland.com hal.finely@baffinland.com

WSCC Workers' Safety & Compensation Commission | ᐃᖅᑲᓇᐃᔭᖅᑎᓄᑦ ᐊᑦᑕᓇᖅᑐᓂᒃ ᐊᒻᒪ ᓇᖕᒥᓂᖅᑕᖃᕐᓂᒃ ᖃᐅᔨᓴᖅᑏᑦ

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

Mine:	Mary River project	Location:	~950 km NW of Iqaluit		
Operator:	Baffinland Iron Mines Corp.	Lat.	71-19'N	Long.	79-24'W
Manager:	Sylvain Proulx	Inspection Date:		20170509 to 16	
Address	2275 Upper Middle Road East - Suite 300 Oakville ON L6H 0C3				

Martin van Rooy, WSCC's engineer/mine inspector, conducted a general safety inspection of Baffinland's Milne Inlet and Mary River sites. Items checked at Milne were the water treatment plant, sewage treatment plant, incinerator building, sewage truck building, ERT building, maintenance garage, Toromont's shop, welding shop, grease bay, east tower building, warehouse and fountain tire's shop, site services shop, Milne Inlet quarry and crushing plant. At Mary River, the open pit, waste dump, explosive and cap magazine, bit grinding shop, crushing plant, mobile maintenance shop, welding shop, water pump house, Winterhaven camp, helicopter garage, Nuna's garage, incinerator building, site services building, warehouse, crushing plant welding shop, sewage treatment building, water treatment building, cone crusher rebuild building, power plant's e-house 1 and 2

Sarah Allman, Tess Daoust, Andrew Esak, Darryl Finlay, Steve Gogo, Jerry Hodnett, Brian Hynes, Steve Janknegt, Nuyalea Kipanik, Brian Larson, Corey Leclair, Quincy Lewis, Ambrose Maher, Kevin Meaney, Warren Messervey, Alexandra Ozaruk, Ken Steitzer and Al Wertz, assisted Martin van Rooy for parts of this inspection

Noticed there are two tie-down straps attached to the drinking water filtration tank in Milne Inlet's water treatment plant. Each strap is tied back to a building column and the straps prevent the tank from tipping over. This problem exists because the ground below the end of the tank has sunk and the blocking arrangement installed at the sunk end; a 2" x 4" on top of a 4" x 4" sitting on a 2" x 4", is unstable. The two building columns, to which the tie-down straps are hooked, are not designed for the potential horizontal load that would be applied to them, to prevent the tank from tipping over.

1 Please lift without further delay, the sunken end of the drinking water filtration tank, remove the unstable blocking and replace these with a stable crib arrangement capable of supporting the full load of a filled tank and remove the two tie-down straps from the building columns.

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WSCC Workers' Safety & Compensation Commission | ᐃᖃᓇᐃᔭᖅᑎᓄᑦ ᐊᑦᑕᓇᖅᑐᓂᒃ ᐊᒻᒪ ᓇᓪᓕᐅᒃᑯᒥᓂᒃ ᖃᐅᔨᓴᖅᑎᑦ

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

MHSA art 10.(1) *The manager shall take every reasonable measure and precaution to protect the health and safety of employees and other persons at a mine.*

Noticed the Milne Inlet diesel fire pump exhaust bellow has stretched further, since the September 10, 2016 inspection. The bellow is stretching because of the ground below the diesel pump area is sinking. This sinking is impacting the stability of equipment, tanks, piping and cable runs in the area. The sinking ground has also caused uneven settlement of the fire water reservoir tanks reducing the water available for fighting a fire.

2 As per the 22 September 2016 inspection report, Baffinland must implement without further delay, a permanent solution to the fire pump sinking problem, to prevent a catastrophic failure of the fire protection system, during a fire, as a result the stress and strain imposed on the suction and discharge piping, caused by the uneven sinking of the ground.

MHSA art 2.(1) *The owner of a mine shall take every reasonable measure and precaution to protect the health and safety of employees and other persons at the mine.*

(2) *The owner of a mine shall*
(a) implement and maintain work practices that are safe and that do not present undue risk to health; and
(b) provide and maintain healthy and safe worksites.

Noticed two red gas cans with some gas in them stored in line with the electrical panel in the incinerator building. This storage location, in line with the electrical panel, is a potential fire hazard, should there be a catastrophic failure in the electrical panel.

3 Please remove these gas cans and store them in suitable location outside the building to minimize the potential fire hazard in the building.

MHSR sect 9.04. *The manager shall develop and implement an effective housekeeping program to ensure that*

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REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

(a) all worksites and travelways are maintained in a safe condition;
(b) materials and equipment are stored in a manner so as not to endanger persons; and
(c) appropriate action is taken whenever necessary to maintain a hazard-free environment.

Noticed there was a 3-foot stepladder stored inside Milne building 2752, designed for housing the sewage truck and at Mary River, a 3-foot and 4-foot stepladder were stored in the welding shop

4 Please review the reason for using a 3-foot or 4-foot step ladder and remove these from site to prevent a potential fall by a person standing on the top of the stepladder or on the step below it.

MHSA art 10.(1) *The manager shall take every reasonable measure and precaution to protect the health and safety of employees and other persons at a mine.*

Noticed there is an open breaker slot in the 600V electrical panel located in the Milne inlet Maintenance shop.

5 Please cover the open slot and ensure all electrical panels have their empty breaker slots covered, with a proper blank.

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines.*

Noticed there is a plywood constructed dumpster located in line with the electrical panel in Milne Inlet's maintenance shop. This storage location, in line with the electrical panel is a potential fire hazard for when the dumpster is loaded with combustible waste, a short in the electrical panel could cause molten metal from the panel, to be ejected on or in the dumpster. As noted in the 18 March 2017 inspection report, these combustible waste dumpsters are a potential fire hazard and should not be stored in a building.

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REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

6 Please ensure combustible waste dumpsters are located outside the building to minimize the potential fire hazard, in the building.

MHSR sect 9.04. *The manager shall develop and implement an effective housekeeping program to ensure that*
(a) all worksites and travelways are maintained in a safe condition;
(b) materials and equipment are stored in a manner so as not to endanger persons; and
(c) appropriate action is taken whenever necessary to maintain a hazard-free environment

Noticed there were cracks passing through the previously welded sections of the king pin support frame on ore haul trailer 2002. The re-welding of these cracked welds is of concern as the integrity of these two structural beams, holding the trailer's king pin support in place, is compromised.

7 Please submit a copy of the manufacturer's instructions on how to repair a previously welded and re-cracked king pin support beam, and if available, the number of loaded trips trailer 2002 made before the first weld repairs were made to these two beams and the number of loaded trips that were made after the first weld repairs to the second weld repairs of these beams

MHSR sect 10.01.(1) *All mechanical equipment used at mines shall be*
(a) designed in accordance with good engineering practice;
(b) constructed in accordance with a design and plans that have been certified by a professional engineer; and
(c) acceptable to the chief inspector.

Noticed the front edge, of the step to the maintenance shop floor from the side door, is broken making it a trip hazard.

8 Please repair the step and ensure it is wide enough to accommodate a winter booth

MHSR sect 1.90. *Where workers are required to work, operate, maintain or service equipment, a safe means of access shall be provided as required by section 1.89.*

Date of Report 20170530 Inspector [signature]

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

Noticed there were four homemade tools in the Milne maintenance shop and one homemade tool in the Mary River crushing plant welding shop. These homemade tools were removed and placed in the waste bin. A large homemade socket, to fit about a 6" hexagon nut on the new ore haul trucks was allowed to remain in service until it is replaced by a manufacturer's 6" socket

9 Please ensure the proper tools are provided to do the work and instruct all supervisors to discard all homemade tools in their area of responsibility unless it has been designed and certified in writing by a profession engineer stating its end use.

MHSR sect 10.01.(1) *All mechanical equipment used at mines shall be*
(a) designed in accordance with good engineering practice;
(b) constructed in accordance with a design and plans that have been certified by a professional engineer; and
(c) acceptable to the chief inspector.

Noticed the sling, chain and chainfall storage rack at the end of the maintenance shop is located at an awkward height, and at an awkward reach for a person plus the access to it, is obstructed by 44 gallon drums on pallets.

10 Please review the location of the sling storage rack and ensure access to it and reach to the hooks for storage of slings, chains and chainfalls is convenient and not a potential injury problem.

MHSR sect 9.70. *The manager shall provide effective protection for any worker who may be at risk of injury from work that*
(a) takes place in a manner that imposes limitations on motion or action;
(b) is of a repetitive manner;
(c) requires constant and uninterrupted mental concentration; or
(d) requires excessive or awkward physical effort.

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REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

Noticed there are open cardboard boxes, loose nuts and bolts, other items... lying on the concrete foundation wall next to the bolt and nut storage unit of the maintenance shop. Clear access to this storage unit is partially blocked by a step ladder and lube cubes.

11 Please clean-up this storage area and provide clear access to the storage shelves.

MHSR sect 9.04. *The manager shall develop and implement an effective housekeeping program to ensure that*
(a) all worksites and travelways are maintained in a safe condition;
(b) materials and equipment are stored in a manner so as not to endanger persons; and
(c) appropriate action is taken whenever necessary to maintain a hazard-free environment

Noticed there were two small propane cylinders thrown in the waste storage container with the empty spray cans stored in the Milne maintenance shop. These two small propane cylinders were removed and taken outside for storage. As previously noted in the 22 September 2016 inspection report these small propane cylinders must not be stored in a container inside a building for a leaking cylinder would allow propane to accumulate in the container awaiting ignition.

12 Please ensure people authorized to use propane are instructed to store empty or full propane cylinders/bottles outside in a well-ventilated area, when not in use.

MHSR sect 10.101.(1) *All gas fired appliances, equipment and pipelines shall be installed and maintained in accordance with the standard CAN/CGA-B149.1-M95, Natural Gas Installation Code and CAN/CGA-B149.2-M95, Propane Installation Code, and the system shall comply with the requirements of the Gas Protection Act and the regulations under that Act.*

Noticed there are metal cuttings accumulating at the hack saw and drill press of the Milne welding shop

13 Please ensure the metal cuttings are cleaned off the equipment after a cutting or drilling operation, to prevent these from becoming a hazard

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REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

MHSR sect 9.04. *The manager shall develop and implement an effective housekeeping program to ensure that*
(a) all worksites and travelways are maintained in a safe condition;
(b) materials and equipment are stored in a manner so as not to endanger persons; and
(c) appropriate action is taken whenever necessary to maintain a hazard-free environment

Noticed there is an open breaker slot in the 208V electrical panel located in Toromont's Milne inlet shop.

14 Please cover this empty slot and ensure all electrical panels have their empty breaker slots covered, with proper blanks.

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines.*

Noticed there are some fire extinguishers placed on the floor in Toromont's Milne Inlet's shop and these need to be hung-up, to prevent corrosion of the extinguisher base.

15 Please note this is a repeat infraction by Toromont see inspection report 19 May 2016, ensure all fire extinguishers are hung-up and not set on a flat surface where moisture may collect, corroding the bottom of the extinguisher.

MHSR sect 12.16.(1) *The manager shall ensure that all fire fighting equipment provided at the mine is maintained by an authorized person.*

(2) *The manager shall ensure that all fire fighting equipment provided at the mine is inspected by an authorized person at least once each month and that the results of the inspection are*
(a) noted on the fire fighting equipment's tag;
(b) entered in a logbook kept for that purpose; or
(c) entered in the mobile equipment logbook.

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REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

Noticed there is a tote with waste cardboard stored in Toromont's Milne Inlet shop. As previously noted in the 18 March 2017 inspection report, these combustible waste dumpsters are a potential fire hazard and should not be stored in a building.

16 Please ensure combustible waste dumpsters are located outside the building to minimize the potential fire hazard in the building.

MHSR sect 9.04. *The manager shall develop and implement an effective housekeeping program to ensure that*
(a) all worksites and travelways are maintained in a safe condition;
(b) materials and equipment are stored in a manner so as not to endanger persons; and
(c) appropriate action is taken whenever necessary to maintain a hazard-free environment

Noticed there was a personal lock and tag applied to the master switch of a Caterpillar 988 loader parked in Toromont's Milne Inlet shop. The lock was not latched and therefore anybody could remove the lock from the master switch and turn it on, defeating the purpose of the equipment lockout system.

17 Please ensure Mr. Len Right, as per the lockout tag, has received Baffinland's lock out training and complies with the Baffinland lockout system. A personal lock and tag must be removed from the equipment at the end of the shift and a department lock and tag applied for a shift change.

MHSR sect 10.22.(3) *Where equipment is to be locked out, each person working on the equipment shall be responsible for affixing his or her own lock and tag to the lock-out device and for removing them on the completion of the work.*

Noticed the original (thick paper) WSCC issued supervisor certificates for the construction supervisors Hatch, Nuna, McCaw... and the original WSCC issued blasting certificates for the construction blasting, were not available on site and were not supplied to the mine manager for safe keeping

Date of Report 20170530 **Inspector** [signature]

REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

18 Please ensure before a supervisor or blaster starts work on site, their original WSCC issued Nunavut Supervisor and or Blasting certificate is submitted to the Mine Manager or designate for safekeeping as proof their certificate is not cancelled or suspended.

MHSR sect 7.52. *When a person commences employment at a mine in a position that requires the person to hold a certificate issued under these regulations, that person shall deliver his or her certificate to the manager before undertaking any duties in relation to the position and the manager shall keep the certificate in safekeeping during the employment of that person.*

MHSR sect 7.53. *The manager shall return a certificate delivered pursuant to section 7.52 to the person who delivered it when the employment of that person terminates unless the certificate has been suspended or cancelled.*

Noticed the men, working at Milne Inlet's quarry at the crusher and screening plant, all had beards. The beards are a concern, as these interfere with sealing of their respirator required for protection from the dust, when the crusher and screening plant is running.

19 The requirement for the crushing and screening plant operators to wear a respirator for protection from the dust was previously reported see inspection reports 18 March 2017, 19 May 2016, 21 March 2015, 26 July 2014 and 28 May 2014. Therefore establish a work zone for the Milne Inlet crushing and screening plant, and ensure every person within the work-zone wears a suitable respirator at all times while the crushing and screening plant is running, for protection from the dust.

MHSR sect 9.02.(1) *Employees shall not be exposed to airborne concentrations of chemical or physical substances in excess of those specified in the 1994-1995 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices published by the American Conference of Governmental Industrial Hygienists.*

Noticed when the vent ducts, in the cab of the loader working at the Milne Inlet quarry, were tapped, dust expelled into the cab, exposing the operator to this dust.

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REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

20 Please ensure as part of –

a) the pre-op inspection on equipment, the operator checks the fresh air intake of their cab's pressurizing air system to ensure it and the filter(s) are free from dust, and

b) the routine maintenance system, the cab's pressurizing air ducts are vacuumed clean to remove any accumulated dust, in the air duct system.

MHSR sect 9.02.(1) *Employees shall not be exposed to airborne concentrations of chemical or physical substances in excess of those specified in the 1994-1995 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices published by the American Conference of Governmental Industrial Hygienists.*

Noticed there is a berm constructed to prevent access to the wall on the upper bench of the Milne Inlet quarry. The wall needs scaling and the overburden on top of the rim needs to be pulled back from the face of the rim. It was not clear if the mine's technical service staff is inspecting the Milne Inlet quarry development

21 Please ensure

a) as per the 23 September 2016 quarry Q1, QMR2 and D1Q2 approval, the quarry is managed under the Mine's Ground Control Management Plan, and that weekly audits are conducted by the mine's technical service staff, of quarry Q1, and

b) the loose material lying on top of the rim is pulled back for at least 2 meter from the rim.

MHSR sect 1.135. *All trees and other vegetation, clay, earth, sand, gravel, loose rock or other unconsolidated material lying within 2 m of the rim of a working face or wall in a surface mine shall be removed and beyond this distance all unconsolidated material shall be sloped to an angle less than the natural angle of repose.*

Noticed there is a berm constructed along the wall of the 630 bench and along the wall of the 640 bench of the pit as protection from the loose on the face and on top of the wall however, the berms did not extend for the full length of the exposed face.

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Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

22 Please extend the berms for the full length of the face and scale the loose from the walls. Ensure when a berm is constructed on a bench to prevent falling to the bench below, it is constructed at least 2 meters back from the rim.

MHSR sect 1.135. *All trees and other vegetation, clay, earth, sand, gravel, loose rock or other unconsolidated material lying within 2 m of the rim of a working face or wall in a surface mine shall be removed and beyond this distance all unconsolidated material shall be sloped to an angle less than the natural angle of repose.*

Noticed in checking the logbook of magazine
a) PQ 0482, it was recorded that 1800 units were transferred out however, it did not state to what magazine they were transferred to, and
b) AO 204 the November 13, 2016 entry noted 735 units however the December 13 2016 entry noted 699 units, there was no explanation in the logbook of why the difference.
c) PQ 0470 recorded 105 bags of ANFO were transferred in however there was no record of where they came from -

23 Please ensure accurate records are maintained in the explosive magazine logbook and that discrepancies in recording are immediately investigated to determine why the physical count did not match the logbook entry. Ensure the logbook records, agree with electronic accounting system used to track the explosives removed from each magazine and used in the blasts.

MHSR sect 14.15. *The manager shall authorize and require one or more qualified persons to make a thorough weekly inspection of all magazines, day benches, shift boxes or shift containers used for storing explosives or detonators and to report, in writing, to the manager stating that the required inspection has been made and indicating the conditions found.*

Noticed the cover is missing on an electrical box located on the wall in the bit grinding shop lube storage room.

24 Please place a cover over the electrical box of the bit grinding shop's lube storage room.

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MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines.*

Noticed there is an extension cord used to power the air compressor located in the bit grinding shop and another extension cord used to power the Hermon Nelson heater in the shop.

25 Please install an electrical outlet at the air compressor and at the heater, plug the units directly into the outlet, and remove their extension cord.

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines.*

Noticed at crushing plant 'C', there is no pinch pint guard at the tail end of the tertiary crusher feed conveyor and the pull cord does not extended to the tail end of this conveyor.

26 As previously noted in inspection report 29 January 2016, please install a barricade at the tail end area of the tertiary crusher feed conveyor, to prevent access to the conveyor when the equipment is running, or else install a nip point guard and extend the pull cord to the tail end of this conveyor.

MHSR sect 10.118.(1) *Every accessible section of a conveyor shall be provided with a pull cord to stop the conveyor in an emergency and the controls shall be arranged so that they have to be reset manually before the conveyor can be restarted after an emergency stop.*

(3) *All accessible head, tail, drive and tension pulleys of a conveyor shall be effectively guarded at their nip points and the guards shall extend for a distance of at least 1 m from the nip point.*

Noticed an open bottom transformer installed on the wooden floor of Crusher plant 'A's' millwright shop.

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27 Please install a metal plate below the transformer, for fire protection.

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines.*

Noticed the millwrights were overhauling the crushing plant's accumulators in their shop.

28 Please submit the manufacturer's details for these high pressure accumulator bottles and record in the maintenance records, for each accumulator that is overhauled the:-
a) manufacturer,
b) date of manufacture,
c) Canadian Registration Number (CRN),
d) Maximum Allowable Working Pressure (MAWP)
e) serial number,
and ensure all accumulators in service and or overhauled have a CRN number.

MHSR sect 10.97.(1) *Boilers, compressors and pressure vessels and associated piping and fittings shall be installed and maintained in accordance with CSA Standard B51-95, Boiler, Pressure Vessel and Pressure Piping Code, and the heated or refrigerated fluid plant shall comply with the requirements of the Boiler and Pressure Vessels Act and the regulations under that Act.*

(2) *A boiler, compressor or pressure vessel to which the Boiler and Pressure Vessels Act and the regulations under that Act do not apply shall be maintained in a proper and safe condition by a qualified person.*

Noticed there was a 100lb and a 20lb propane cylinder stored in the Mary River mobile maintenance shop.

29 Please ensure people authorized to use propane are instructed to store empty or full propane

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cylinders/bottles outside in a well-ventilated area, when not in use.

MHSR sect 10.101.(1) *All gas fired appliances, equipment and pipelines shall be installed and maintained in accordance with the standard CAN/CGA-B149.1-M95, Natural Gas Installation Code and CAN/CGA-B149.2-M95, Propane Installation Code, and the system shall comply with the requirements of the Gas Protection Act and the regulations under that Act.*

Noticed there was about 30-ft of compressed air hose lying on the ground from the Fountain tire shop at Mile Inlet to the rear wheel of an ore haul trailer parked on the access road near the shop. A similar set-up i.e. a long high pressure air hose lying on the ground from the Fountain Tire shop to the access road was observed at Mary River. The air hose on the ground is a trip hazard, and if cut under pressure, the hose would become a long whip, as it flips back and forth from the discharging air jet

30 Please provide a retractable real or equivalent at the Fountain Tire shop at Milne and at Mary River to ensure the air hose when not in use is removed from lying on the ground.

MHSA art 10.(1) *The manager shall take every reasonable measure and precaution to protect the health and safety of employees and other persons at a mine.*

Noticed in the Mary River welding shop, a homemade 992 loader boom support consisting of a 6-ft post welded to a small square base.

31 Please note this is a repeat infraction see inspection report 19 May 2016, ensure before using any homemade support, a professional engineer certifies the maximum safe load that may be applied to the support and records it on the support

MHSR sect 10.01.(1) *All mechanical equipment used at mines shall be*
(a) designed in accordance with good engineering practice;
(b) constructed in accordance with a design and plans that have been certified by a professional engineer; and
(c) acceptable to the chief inspector.

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REPORT OF AN INSPECTOR OF MINES

Issued pursuant to Section 26(2) of the *Mine Health and Safety Act*

Noticed a heater is installed in front of an electrical panel in the helicopter garage and a stack of cardboard is stored in front of the electrical panel in Nuna's shop.

32 Please move the heater and remove the cardboard to provide at least 1-meter clear access to the electrical panel

MHSR sect 1.90. *Where workers are required to work, operate, maintain or service equipment, a safe means of access shall be provided as required by section 1.89.*

Noticed the shelving units in the new core processing buildings, have no maximum load limits noted on the shelves.

33 Please check the core processing shelving units and ensure each is marked with the maximum safe load that may be stored on the shelf.

MHSR sect 10.01.(1) *All mechanical equipment used at mines shall be*
(a) designed in accordance with good engineering practice;
(b) constructed in accordance with a design and plans that have been certified by a professional engineer; and
(c) acceptable to the chief inspector.

Noticed a personal lock and tag is attached to a locked out electrical switch in the Winterhaven kitchen. This personal lock and tag was applied 27 September 2015 and therefore this should be an out of service lock and tag not a personal lock and tag.

34 Please have the person remove his lock and tag and ensure Out-of-Service tags (and department locks if required) are used for out of service equipment and not a personal lock and tag.

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MHSR sect 10.21.(2) *The manager shall ensure that each person required to operate or work on any equipment or system is adequately trained in the lock-out procedure and that a written copy of the procedure is made available to each person*

Noticed the fire extinguisher in the Winterhaven camp have not been checked since March 2017

35 Please ensure fire extinguishers in service on site are checked monthly

MHSR sect 12.16.(2) *The manager shall ensure that all fire fighting equipment provided at the mine is inspected by an authorized person at least once each month and that the results of the inspection are*
(a) noted on the fire fighting equipment's tag;
(b) entered in a logbook kept for that purpose; or
(c) entered in the mobile equipment logbook.

Noticed there is an extension cord used to supply power to
a) the ECO panel in the Winterhaven camp's laundry room, and
b) the microwave and coffee maker in the Mary River warehouse.

36 Please install an electrical outlet at the ECO panel, at the microwave, at the coffee maker and plug the equipment directly into the outlet and remove the extension cord.

MHSR sect 13.01.(2) *Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA-M421-93, Use of Electricity in Mines.*

Noticed there are welding cables lying across the ground in and outside the crushing plant welding shop.

37 As previously noted inspection reports 18 March 2017, 22 September 2016... please instruct all supervisors to check in their areas of responsibility, to ensure no electrical cords, hoses and other

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items... are allowed to lie indiscriminately and without protection over the ground or across a floor, where they are a potential trip hazard and or other hazard if un-intentionally cut or damaged.

MHSR sect 5.07. *Every shift boss or supervisor shall, within his or her area of responsibility and authority,*
(e) be knowledgeable about essential safeguards against hazards and about safe working procedures at the worksites for which he or she is responsible so that he or she can routinely assess the safety of the environment and operations affecting persons in those worksites;

MHSR sect 9.04. *The manager shall develop and implement an effective housekeeping program to ensure that*
(a) all worksites and travelways are maintained in a safe condition;
(b) materials and equipment are stored in a manner so as not to endanger persons; and
(c) appropriate action is taken whenever necessary to maintain a hazard-free environment.

Noticed there is no vacuum exhaust system installed on the pedestal grinder in the crushing plant welding shop, to collect the dust generated during grinding.

38 Please note this is a repeat infraction see inspection reports 18 March 2017, 29 Jan 2016, 12 October 2015... ensure before a grinder is authorized for use on site, it is equipped with a suitable vacuum exhaust system, to capture and remove the dust, generated by the grinding process.

MHSR sect 10.122.(7) *Powered grinding wheels, other than portable hand held machines, shall be equipped with an exhaust system or other means for removing dust produced during the grinding operation.*

Noticed there were a number of grinding/cut-off discs lying on a flat surface in the crushing plant welding shop. A grinding/cut-off disc lying on a flat surface is a concern, as it is exposed to impact damage from object falling on it.

39 Please advise all staff of the hazard of placing a grinding/cut-off disc on a flat surface and ensure

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these are stored in a manner where they will not be damaged.

MHSR sect 10.122.(3) *A grinding wheel shall be*
(b) stored where it will not be damaged by impact, moisture, extreme heat or cold; and

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Inspection Report

Mining

Report Reference:
Inspection #: 2017-LL-00652

OPERATOR
AGNICO EAGLE MINES LTD
10, 200 Route de Preissac
Meadowbank Div. Attn Carol Heywood
Rouyn-Noranda, Quebec J0Y 1C0

MINE
Meliadine Project
MINE MANAGER
Luc Chouinard

INSPECTOR
Lex Lovatt

Inspection Date: August 16, 2017

Inspection Details:

Michael Cullen completed a geotechnical review of the Meliadine Mine Project on August 16 and 17, 2017. During the review technical discussions were held with mine personnel including Vanessa Smith, Morgan Hjorth, Jennifer Pilot, Philemon Desroches and Guylain Boucher. The underground tour included the following areas: DP300-155, Meliadine Ramp 375-350, Level 225W and Level 400E.
The surface tour included Portal 2, West exhaust raise collar, FAR collar, DCP 1 and DCP 5.
There are no compliance issues regarding the geotechnical review.

WSCC Workers' Safety & Compensation Commission

Inspection Report

Mining

Report Reference:
Inspection #: 2017-LL-00652

Regulatory Requirements

This report has been issued pursuant to Section 26 of the *Mine Health and Safety Act* which states that a closeout meeting will be held with the manager after completing the inspection and that a written report will follow within 72 hours after the last day of the inspection.

Pursuant to section 28 the manager shall post all inspection reports and orders issued by an inspector in a conspicuous place at the mine for at least 30 days after the manager receives the inspection report or order. Furthermore; pursuant to section 29. (1) the manager shall, within 30 days after receiving an inspection report, submit a written report to the Chief Inspector outlining the remedial measures taken and the remedial measures still to be taken in respect of the inspection report.

Pursuant to section 32. (1) A person who is adversely affected by a decision or order issued by an inspector may appeal the decision or order, in writing, to the Chief Inspector within 30 days after its issue.

Please return a signed copy of this page as confirmation of receipt.

Received By: ______________________ ______________________

Employer Representative (Print) — *Signature*

____

Inspector Signature

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Workers' Safety and Compensation Commission
PO Box 8888
Yellowknife, NT
X1A 2R3

August 22, 2017

Attn: Fred Bailey P.Eng.
Chief Inspector of Mines

Subject: Meliadine Project Geotechnical Inspection August 16 and 17, 2017

Introduction

As requested by the Workers Safety and Compensation Commission (WSCC) Michael Cullen completed a geotechnical review of the Meliadine Mine Project on August 16 and 17, 2017. The purpose of this review was as follows:

1. To assess if the operation is meeting the intent of the Mine Health and Safety Regulation (MHSR) as it applies to geotechnical stability.
2. To assess if the operation is following generally accepted engineering practices for geotechnical design, construction, and operation that may affect health and safety.
3. To provide general comment on geotechnical conditions at the mine that may affect health and safety.
4. To provide direction to the WSCC Inspectors on geotechnical issues affecting health and safety.

This report has been prepared in a manner consistent with the level of care and skill ordinarily exercised for such work. This report is based on a review of select engineering reports, technical discussions with site personal, and a tour of select work areas at the Mine. Professional reliance has been used throughout.

During the review technical discussions were held with mine personnel including Vanessa Smith, Morgan Hjorth, Jennifer Pilot, Philemon Desroches and Guylain Boucher. A close out meeting was held with Mine Management at the end of the site visit.

A "high level" review was completed of the reports listed below. The review focused on assessing if the intent of geotechnical requirements of the MHSR are being met, and if the investigations, analysis, results, and recommendations are consistent with accepted engineering practices for mines in the NWT and Nunavut.

- Meliadine Annual Plan Submission for 2017, prepared by AEM, dated March 2017
- Notice of Intention to Commence Work Second Portal, prepared by AEM, dated May 18, 2017
- Meliadine Intake Raise Slashing Request 125-200 approval follow up, prepared by AEM, dated August 10, 2017
- Meliadine Western Exhaust Raise Collar 2017 R2, prepared by AEM, dated July 29, 2017.

- Meliadine Standard Ground Support Plan Rev 17, prepared by AEM, dated August 3, 2016.
- Meliadine -P-Area Containment Construction Record Report, prepared by Tetra Tech EBA dated July 5 2016.
- Design Report for Dike D-CP1, Prepared by Tetra Tech EBA dated August 2016
- Geotechnical Specifications for Construction of Saline Water Storage /Transfer Pond and Berm, prepared by Tetra Tech EBA dated September 2016.
- Design Report for Dike D-CP5, prepared by Tetra Tech EBA dated August 2016.
- Design Report for Berm3 and Channel 5, prepared by Tetra Tech EBA dated September 2016.
- Design Report for Saline Water Storage Pond and Berm, prepared by Tetra Tech EBA dated July 2016.
- Meliadine Ramp 375-350 Rehabilitation – Ramp Reopened, prepared y AEM, dated August 15, 2017.

MCG recommends that any written recommendations made by a professional engineer relating to health and safety or geotechnical stability be followed by the Mine unless an alternative course of action is provided in writing by a qualified professional engineer.

Observations and Comments Underground

The underground tour included the following areas:

DP300-155: heading where a round had just been blasted. Support from the last round was noted to be up to the face, and consistent with the Mine's support standard. Very little loose was accumulated in screen indicating good blasting and scaling practices.

Meliadine Ramp 375-350; this is the area of ramp that was recently rehabilitated due to ice jacking and formation of large wedge. The work appears to have been well executed and the area now looks secure. MCG reviewed the summary documents prepared by AEM and consider that the work was well thought out and documented. The work included some important QA/QC work on grout use at the Mine.

Level 225W: recent rehabilitation completed at a pillar that was being undercut due to failures on foliation, see Photo 1. The work appears to have been well executed and the area now looks secure.

Level 400E: heading was being bolted. Discussions with bolter confirmed that he was knowledgeable about the Mine's ground support standards, and was performing the work in a diligent manner.

Ground conditions in all the areas inspected were found to be good. Support was installed to the face, the installed support met or exceeded the Mine's Ground Support Standards, areas of unsupported ground were barricaded off. Very little loose was observed to be accumulating in the screen, and drill hole traces are common on the walls and back indicating that good scaling and blasting procedures are being implemented. During our inspection we did not observe any areas of unidentified or unmanaged geotechnical hazard that could affect worker health and safety.

The Mine is continuing to encounter modest flows of saline water and has implemented a probe hole and grouting program. It is understood that controlling the water is primarily required for environmental and permitting requirements. The saline water is accelerating ground support corrosion. To address this issue the Mine has indicated that it will be changing to resin rebar in all areas that are not in perma-frost, or are experiencing saline water inflow. A program will also be implemented to eventually replace existing support in areas of high corrosion.

We previously noted that drifts and ramps running parallel to foliation (especially in the footwall drives) are subject to planar and block failures from the walls as the foliation relaxes or is loosened by blasting and equipment damage. The Mine has implemented a scaling program to mitigate this hazard. It is also understood that the Mine is assessing strategies such as extending bolts and mesh lower on the walls to address this issue.

Operations staff make daily visits to all work areas to assess ground conditions. Technical Services Staff make regular inspections. An effective system is in place to identify, assess, communicate, and mitigate ground stability hazards. Operational information such as instability, support requirements, and unusual ground conditions are recorded on tracking board, and in the Ground Control Registry

Based on this review we consider that underground is being designed, constructed, and operated in conformance with the geotechnical requirements of the Mine Health and Safety Regulation, as well as accepted engineering practices. Based on our review we consider that geotechnical hazards potentially affecting health and safety are being managed appropriately.

Observations and Comments Surface

The surface tour included Portal 2, West exhaust raise collar, FAR collar, DCP 1 and DCP 5.

Portal 2 has now advanced about 20m into rock, the box cut and portal are shown on Photo 2. The box cut and portal are being excavated and supported as per the designs (which MCG previously reviewed). We did not observe any areas of unmanaged geotechnical concern that could potentially affect worker safety. Based on this review we consider that the portal is being constructed in conformance with the geotechnical components of the Mine Health and Safety Regulation as well as accepted engineering practices. Based on our review we consider that geotechnical concerns potentially affecting health and safety are being managed appropriately.

DCP 1 and DCP 2 are the 2 largest dam structures at site, they were constructed in 2016. DCP 1 is shown in Photo 3. MCG previously reviewed the design documents for these dams prepared

by Tetra Tech. The dams are classified as Low consequence in terms of worker safety as it would only be through mis-adventure that a worker would be in the potential inundation zone in the unlikely event of a breach. AEM personal complete regular visual inspections of the dams as well as collect instrumentation data. Tetra Tech are the Engineers of Record (EOR) for the dams, they review instrumentation results on an ongoing basis and complete an annual geotechnical inspection. It is understood that observations and instrumentation results to date are consistent with the design expectations and that there are no indications of anomalous behavior or potential instability. AEM, the Mine's Consultants are satisfied with performance of all the dams. Based on this review we consider that the dams are being constructed and operated in conformance with the geotechnical components of the Mine Health and Safety Regulation as well as accepted engineering practices.

The west vent raise was being drilled at the time of this review. MCG previously reviewed the plans for the raise collar and raise support and considers that they are consistent with the requirements of the MHSR and accepted engineering practice. No areas of geotechnical concern were noted.

Compliance with the Mine Health and Safety Regulation

Table 1 lists the relevant geotechnical requirements of the Mine Health and Safety Regulation. The table provides MCG's opinion on if the Mine is meeting the intent of the Regulation, and if not what is required by the Mine, and what action should be completed by WSCC. Sections left blank were not assessed during this review or are not relevant.

Conclusions and Recommendations

No unidentified or unmanaged worker safety hazards were observed during our site review. The Mine is following the recommendations of their geotechnical engineers and consultants, whose designs are considered to be consistent with accepted engineering practices. We consider that the intent of the Mine Health and Safety Regulation as it relates to geotechnical stability and worker safety is being met at the Mine.

Limitations and Closure

Michael Cullen prepared this report for the use of the WSCC. This report provides comments and opinions only based on limited observations and review of the work of others; it is not intended to be used in engineering design. Michael Cullen does not accept responsibility for damages suffered by any third-party reliance on this document. A record copy of this document is on file at MCG that takes precedence over any other copy or reproduction of this document.

We trust that this report satisfies your present requirements. Should you have any questions or comments, please do not hesitate to contact us.

Sincerely

Michael Cullen, P.Eng.
Cc Lex Lovatt (WSCC)

Photo 1. Pillar rehabilitation. Note foliation planes opening

Photo 2. Box cut for Portal 2. Supported as per design. A multi-plate culvert will be socketed into the rock and then backfill placed.

Photo 3: DCP-1. Thermistors indicated core is freezing as per design

Table 1: Relevant Geotechnical Requirements of the Mine Health and Safety Regulation

Section of Regulation	Comments	Recommended Action
1.03.(1) The owner of a surface mine or an underground mine shall maintain a mine design, acceptable to the chief inspector, assessing the ground stability of the active and proposed workings of the mine. (2) The mine design that the owner is required to maintain shall be prepared by or under the direction of a professional engineer experienced in ground stability design and shall bear the engineer's seal and signature.		Mine is in conformance with the regulation. No action is required at this time.
1.04. The mine design shall consist of drawings, plans, calculations, specifications and written descriptions and shall (a)describe the geology of the mine; (b) outline the geometry of existing excavations, if any, and proposed excavations; (c) provide the rock mass characteristics that are representative of the ore, footwall and hanging wall rock that will be encountered most frequently and identify the orientation of the most common joint sets; (d) describe the hydrological features that may affect the working of the mine; (e) describe previous occurrences of ground instability and include recommendations from reports of investigations; (f) describe, for surface mines, expected climate conditions, the presence of permafrost, if any, and average monthly precipitation; (g) describe the mining method including bench or stope sequencing and blasting methods; (h) specify ground support systems, including pillars, backfill, timber support, tendon support and any other type of support, the criteria used concerning their selection, dimension, spacing and extent; (i) describe measures used and planned to assess potential ground instability; (j) include specific precautions to be taken concerning parts of the mine where bodies of water, overburden, tailings, gas, low oxygen or water soaked material may inrush or flood the workings; and (k) include such other information as the chief inspector may require.		Mine is in conformance with the regulation. No action is required at this time.
1.05. The mine design shall be assessed and updated by an authorized person annually and before any major change is made to the mining method or the equipment used.		Mine is in conformance with the regulation. No action is required at this time.

Table 1: Relevant Geotechnical Requirements of the Mine Health and Safety Regulation

Section of Regulation	Comments	Recommended Action
1.13. The manager shall develop a quality control program for ground support systems in an underground mine to ensure that support systems specified in the mine design are correctly installed and effective.	A QC program is provided in the report Meliadine Project Ground Control Program	Mine is in conformance with the regulation. No action is required at this time.
1.15. The manager of an underground mine shall prepare procedures to be used concerning (a) activities relating to the installation of ground support systems in a worksite; and (b) activities that may require a person to be exposed to unsupported ground before support is installed.	Information in Meliadine Project Ground Control Program.	Mine is in conformance with the regulation. No action is required at this time.
1.16. Methods for undertaking the ground support activities and for preventing exposure of persons to unsafe conditions shall be set out in the procedures.	Information in Meliadine Project Ground Control Program.	Mine is in conformance with the regulation. No action is required at this time.
1.17. The procedures shall be developed from a report of an investigation of ground conditions to identify ground fall hazards prepared by or under the direction of a professional engineer.		Mine is in conformance with the regulation. No action is required at this time.
1.20. Employees engaged in ground support activities shall be trained in the procedures and the recognition of ground instability.	Information in Meliadine Project Ground Control Program.	Mine is in conformance with the regulation. No action is required at this time.
1.22. The training required in the procedures referred to in section 1.15 shall (a) explain the function of the support system; (b) describe the installation method and the equipment to be used; (c) detail the adverse effects of poor installation and the reasons for quality control standards; (d) provide an understanding of monitoring systems; (e) give instruction on methods to identify signs of deterioration of supported or unsupported ground and of support systems; and f) give "hands-on" instruction respecting support installations.	Information in Meliadine Project Ground Control Program.	Mine is in conformance with the regulation. No action is required at this time.

Table 1: Relevant Geotechnical Requirements of the Mine Health and Safety Regulation

Section of Regulation	Comments	Recommended Action
1.24. A ground control logbook shall be maintained for surface and underground mines (a) the time, date and location of all tests relating to the requirements of the quality control program for ground support systems specified in section 1.13; (b) if there is any ground movement in the mine, details of the records of the ground monitoring devices in the area affected before the ground movement; (c) details of uncontrolled falls of ground; (d) details of working ground, tension cracks or other signs of instability; (e) details of rockburst and seismic events; (f) damaged supports; and (g) measurements taken from monitoring devices.	Ground Control Registry was reviewed and found to be up to date.	Mine is in conformance with the regulation. No action is required at this time.
1.26. The shift boss shall convey the information contained in the ground control logbook referred to in the paragraphs 1.24(c) to (f) to every employee, worker and any other person working in the area under the shift boss' supervision before the employee, worker or other person begins working in the area.	Information is conveyed at pre-shift lineup	Mine is in conformance with the regulation. No action is required at this time.
1.27. The ground control logbook shall be read and signed each day by the shift boss and by the mine engineer designated by the manager.	Ground Control Registry was reviewed and found to be up to date.	Mine is in conformance with the regulation. No action is required at this time.
1.31. Where in an underground mine a potential or actual danger to the health and safety of a person has not been remedied or removed at the end of a work shift, (a) the supervisor of the work shift shall make, and sign, a record in writing describing the dangerous condition and the state of corrective measures taken; (b) the shift boss responsible for the work shift shall read and sign the record referred to in paragraph (a); (c) the shift boss of the next work shift shall read and countersign the record referred to in paragraph (a) before any person on that shift does any work in the area of the dangerous condition; and (d) the shift boss referred to in paragraph (c) shall advise the employees on his or her shift who may be affected by the dangerous condition of (i) the dangerous condition, (ii) the state of corrective measures undertaken, and (iii)the work required to remove or remedy the dangerous condition.	Information is recorded in active work tracking board, in the Ground Control Registry, and is conveyed to crews during pre-shift lineup.	Mine is in conformance with the regulation. No action is required at this time.

Table 1: Relevant Geotechnical Requirements of the Mine Health and Safety Regulation

Section of Regulation	Comments	Recommended Action
1.114. All active workings in an underground mine shall be surveyed and the plans updated as frequently as necessary to protect the health and safety of employees when mining close to other workings, diamond drill holes and dominant geological features and these workings, holes and features shall be identified on the plans.	All exploration drill holes are now filled with grout at completion	Mine is in conformance with the regulation. No action is required at this time.
1.116. The manager shall make and keep complete and accurate plans acceptable to the chief inspector of (a) the boundaries and workings of the mine, and of any other workings, whether or not the workings have been discontinued or abandoned; and (b) geological features that may affect the safety of the mine.	Geologic structure is identified on plans and is projected on drive layouts	Mine is in conformance with the regulation. No action is required at this time.
1.119. The plans required to be kept by section 1.116 shall include (a) a surface plan showing the claims, licences or leases on which mining is being conducted, and lakes, watercourses, naturally unstable ground such as peat bogs or sloughs, main roads, railways, power transmission lines, buildings, magazines, shaft openings, adits, surface workings, diamond drill holes collared on the surface, dumps, dams, tailings ponds and their overflow channels and topographic contours; (b) a separate underground plan of every level showing all workings including shafts, tunnels, pillars, diamond drill holes, dams, bulkheads, electrical substations, explosive storage areas, fuel lines, permanent backfill lines, fuel storage lines, shop areas, permanent seals and stoppings and geological features; (c) vertical mine sections at suitable intervals and azimuths showing all shafts, tunnels, drifts, ramps, rooms, stopes, diamond drill holes and the location of the top of the bedrock, surface and type of the overburden and the bottom and surface of any known body of water or watercourse;		Mine is in conformance with the regulation. No action is required at this time.
1.144. The manager shall make an application to the chief inspector, complete with the supporting documents required by the chief inspector, for the written approval of the design of a proposed waste dump, dam or impoundment, and copies of the complete application shall be sent to regulatory agencies specified by the chief inspector.	Dam and impoundment designs, prepared by a professional engineer, have been reviewed and are consistent with accepted practices.	Mine is in conformance with the regulation. No action is required at this time.

Table 1: Relevant Geotechnical Requirements of the Mine Health and Safety Regulation

Section of Regulation	Comments	Recommended Action
1.145. Any work required to collect information for the preparation of an application under section 1.144 is subject to the requirements of section 17.01. 17.01. (1) An application to commence shaft sinking, underground development work or the surface stripping of an open pit for the purpose of production of minerals, shall be submitted, in writing, to the chief inspector and shall include a plan of the system under which the work is to be performed. (2) The plan shall include (b)a plan at a scale of 1:10,000 or less, showing topographic contours, claims, leases or licences, lakes, streams, roads, landing strips and the location of all proposed mining works and related facilities and also showing the relationship to the Universal Transverse Mercator (UTM) grid; (c)the basis of design, details of geological structure, materials handling, buildings, processing plants and facilities, stockpiles, tailings transportation and impoundment, water supply and storage facilities; (d)for underground development, plans of present and proposed underground workings and a plan of the mine openings in relation to the surface installations; (g)any other information required by the chief inspector.		Mine is in conformance with the regulation. No action is required at this time.
1.146. The manager shall ensure that no work is commenced on a waste dump, dam or impoundment until the manager has received the written approval of the design by the chief inspector and possesses the applicable permits and licences.	Dam and impoundment designs, prepared by professional engineer, have been reviewed and are consistent with accepted practices.	Mine is in conformance with the regulation. No action is required at this time.
1.147. The manager shall implement and maintain a surveillance and instrumentation program recommended in a waste dump design approved by the chief inspector.		Mine is in conformance with the regulation. No action is required at this time.

Table 1: Relevant Geotechnical Requirements of the Mine Health and Safety Regulation

Section of Regulation	Comments	Recommended Action
1.159. (1) The manager shall prepare a procedure for the examination of worksites that provides for examination (a) of the condition of access routes, haulage roads and travelways; (h) of the security of ground conditions and effectiveness of the support; (k) of any other matter that affects health and safety. (3) The manager shall make suitable arrangements to ensure that examinations of worksites are conducted in accordance with the procedure referred to in subsection (1). (4) The manager shall consult with the Committee during the preparation of the procedure referred to in subsection (1) concerning the content of the procedure. (5) The manager shall send a copy of the procedure referred to in subsection (1) to the chief inspector and to the Committee.	Engineers and shift bosses complete routine visual inspection of all operational areas.	Mine is in conformance with the regulation. No action is required at this time.

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Inspection Report
Mining

Report Reference:
Inspection #: 2017-JP-00703

OPERATOR
BAFFINLAND IRON MINES CORPORATION
300 - 2275 Upper Middle Road East
Attn: Annu Sira
Oakville, Ontario L6H 0C3

MINE
Mary River Mine Site
MINE MANAGER
Sylvain Proulx

INSPECTOR
Jagadish Patel
jagadish.patel@wscc.nt.ca

Inspection Date: August 19, 2017

Inspection Details:

Introduction

WSCC and their consultant Michael Cullen completed a geotechnical review of Baffinland Iron Ore Mines Corporation Mary River Mine on August 18 and 19, 2017.

The purpose of this inspection was as follows:

1. To assess if the operation is meeting the intent of the Mine Health and Safety Regulation (MHSR) as it applies to geotechnical stability.
2. To assess if the operation is following generally accepted engineering practices for geotechnical design, construction, and operation that may affect health and safety.
3. To provide general comment on geotechnical conditions at the mine that may affect health and safety.
4. To provide direction to BIM on geotechnical issues affecting health and safety.

During the review technical discussions were held with mine personnel including Tony Noseworthy, Adam Gyorffy, and Cody Gagne.

A close out meeting was held with Mine Management at the end of the site visit.

A high-level review was completed of the reports listed below.

1. "Ground Control Management Plan R0" by Baffinland Iron Mines Corporation, December 2015.
2. "Geotechnical Review of the Updated 5 Year Pit , Deposit 1 Open Pit Mary River Baffinland" by Golder Associates, dated March 28, 2017

Inspection Report
Mining

Report Reference:
Inspection #: 2017-JP-00703

stability issues on the final pit walls due to this foliation; as noted above pre-shearing may reduce the instance of instability.

WSCC noted very little rockfall accumulation on the benches. The Mine has a program to remove rockfall material (material from a small rockfall that occurred on August 17th, had been mostly cleared at the time of this inspection).

Mine Operations and Technical Services staff complete regular pit inspections and maintain a hazard map to inform workers and to plan mitigation. Potential unstable areas are scaled and/or bermed off where failure is considered possible. A standard operating procedure is in place to manage access below highwalls.

WSCC and their consultant reviewed the Ground Control Management Plan prepared in 2015. This document is now out of date and includes information that is not consistent with current practices.

<u>Observations and Comments Waste Rock Dump</u>

The dump is being constructed by loose dumping such that the outside slope is at angle of repose (~36 degrees). The dumps are being constructed in lifts such that the overall slope is expected to be ~2H:1V. The dump is being constructed in conformance with the recommendations provided by Golder Associates. At the time of inspection, WSCC and their consultant did not observe any areas of unmanaged geotechnical concern that could potentially affect worker safety during our review.

It is understood that the dump footprint will be modified to optimize materials handling, and that this change will necessitate an increase in the height of the sediment pond dam. As per Section 1.144 of the MHSR and designs for this dam should be submitted to the Chief Inspector for approval.

Based on this review , WSCC consider that the dump is being constructed and operated in conformance with the geotechnical components of the Mine Health and Safety Regulation as well as accepted engineering practices. Based on our review, WSCC consider that geotechnical hazards potentially affecting health and safety are being managed appropriately.

During the 2016 inspection ,it was noted that the quarries were not being developed in compliance with the MHSR and accepted engineering practice. In response, the Mine submitted revised plans for the Quarries in September 2016. The table below summarizes the proposed quarry configurations. The designs state that no detailed geotechnical investigation has been undertaken and refer to investigations completed in the past by Knight Piesold. The designs appear to be conservative and adaptable if unexpected conditions are encountered. WSCC consider that the level of design detail is consistent with what is typically accepted for small quarries in NWT and Nunavut.

Inspection Report

Mining

Report Reference:
Inspection #: 2017-JP-00703

Observations and Comments Quarries (Table 1)

Quarry	Ult. Height	Bench face angle	Overall angle	Design width
QMR1	50m	65 deg	28 deg	10m
QMR2	50m	65 deg	34 deg	10m
D1Q2	70m	65 deg	38 deg	10m

Pushbacks have commenced at QMR1 and QMR2 to bring these quarries into compliance with the MHSR and the designs.

The quarry design document states that the quarries will be managed under the Mines GCMP which includes the following provisions (as noted above the current GCMP is out of date):

- Weekly audits by technical services staff.
- Pit wall geotechnical mapping
- Drill and blast designs that consider geotechnical parameters
- annual review by geotechnical consultant

It is understood that Technical Services are providing direction and completing regular inspections. WSCC and their consultant did not observe any areas of unmanaged geotechnical concern that could potentially affect worker safety during our review. Based on this review ,WSCC consider that the quarries are being constructed and operated in conformance with the geotechnical components of the Mine Health and Safety Regulation as well as accepted engineering practices.
Based on our review WSCC consider that geotechnical hazards potentially affecting health and safety are being managed appropriately.

3. Procedure for working Near Highwalls, R1 July 2017 prepared by Baffinland Iron Mines Corporation.
4. Procedure for working Near Ore Stockpiles, R0 Sept 2016 prepared by Baffinland Iron Mines Corporation.
5. Rockfall reports submitted to WSCC through to August 2017.

The review focused on assessing if the intent of geotechnical requirements of the MHSR are being met, and if the investigations, analysis, results, and recommendations are consistent with accepted engineering practices for mines in the NWT and Nunavut.

WSCC recommends that any written recommendations made by a professional engineer relating to health and safety, or geotechnical stability, be followed by the Mine unless an alternative course of action is provided in writing by a qualified professional engineer.

Observations and Comments Open Pits

The 5-year starter pit is underway with development of the 640 and 660 benches. Due to uncertainty with geologic structure, a conservative and adaptable design approach has been adopted for the starter pit.

As per the "Geotechnical Review of the Updated 5 Year Pit , Deposit 1 Open Pit Mary River Baffinland" presents the current design. A ramp will run down the pit wall such that the overall angle will be 42 degrees. The experience and knowledge gained in the starter pit will be used to design the second stage (and subsequent) pits.

The design for the starter pit did not include a detailed assessment of bench crest break-back, assessment of the ability of bench to contain bench scale failures, or assessment of rockfall. This information will be required for the next pit stage.

It was noted that the final walls are trim blasted with a stub hole to remove potential unstable wedges. This procedure has resulted in reasonable success although occasional wedges remain.

The method of trim blasts with stub holes has the potential to also cause damage to the rock behind the face; any foliation planes that are opened may be exposed to freeze thaw activity and eventual failure.

It is understood that the Mine is considering trials with angled pre-shear holes; this approach may result in less damage to the rock and better long term performance of the pit walls.
There have been several rockfalls off the 660 bench face that are attributed to slabs or wedges created on the 70 to 80 degree foliation plane, and freeze thaw activity. WSCC suspect that there will be ongoing

Inspection Report
Mining

Report Reference:
Inspection #: 2017-JP-00703

Order Number: 2017-JP-00703-001 **Status:** Open

Required Compliance Date: December 19, 2017

Observations: The Ground Control Management Plan, which contain much of the information for the MHSR is out of date and inconsistent with present practices

Order: **The Ground Control Management Plan shall be updated.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 1.04: The mine design shall consist of drawings, plans, calculations, specifications and written descriptions and shall

(a) describe the geology of the mine;
(b) outline the geometry of existing excavations, if any, and proposed excavations;
(c) provide the rock mass characteristics that are representative of the ore, footwall and hanging wall rock that will be encountered most frequently and identify the orientation of the most common joint sets;
(d) describe the hydrological features that may affect the working of the mine;
(e) describe previous occurrences of ground instability and include recommendations from reports of investigations;
(f) describe, for surface mines, expected climate conditions, the presence of permafrost, if any, and average monthly precipitation;
(g) describe the mining method including bench or stope sequencing and blasting methods;
(h) specify ground support systems, including pillars, backfill, timber support, tendon support and any other type of support, the criteria used concerning their selection, dimension, spacing and extent;
(i) describe measures used and planned to assess potential ground instability;
(j) include specific precautions to be taken concerning parts of the mine where bodies of water, overburden, tailings, gas, low oxygen or water soaked material may inrush or flood the workings; and
(k) include such other information as the chief inspector may require.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-JP-00703

Order Number: 2017-JP-00703-002 **Status:** Open

Required Compliance Date: September 19, 2017

Observations: During the inspection, it was noted that the Log book is not signed off by technical services every day.

Order: **Ensure that the logbook is reviewed and signed off by technical services.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 1.27: The ground control logbook shall be read and signed each day by the shift boss and by the mine engineer designated by the manager. R-016-2003,s.6.

Inspection Report

Mining

Report Reference:
Inspection #: 2017-JP-00703

Order Number: 2017-JP-00703-003 **Status:** Open

Required Compliance Date: October 19, 2017

Observations: It was observed that unconsolidated material is present across the crest of the 660 bench.

Order: **The remaining material perched across the crest of the 660 bench shall be pulled back.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 1.135: All trees and other vegetation, clay, earth, sand, gravel, loose rock or other unconsolidated material lying within 2 m of the rim of a working face or wall in a surface mine shall be removed and beyond this distance all unconsolidated material shall be sloped to an angle less than the natural angle of repose.

Inspection Report

Mining

Report Reference:
Inspection #: 2017-JP-00703

Order Number:	2017-JP-00703-004	**Status:**	Open

Required Compliance Date: November 19, 2017

Observations: It was informed to us that the dam around the WRD will be raised.

Order: **Mine shall submit plans for the dam to WSCC for approval.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 1.144: The manager shall make an application to the chief inspector, complete with the supporting documents required by the chief inspector, for the written approval of the design of a proposed waste dump, dam or impoundment, and copies of the complete application shall be sent to regulatory agencies specified by the chief inspector.

Section 1.146: The manager shall ensure that no work is commenced on a waste dump, dam or impoundment until the manager has received the written approval of the design by the chief inspector and possesses the applicable permits and licences.

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Inspection Report

Mining

Report Reference:
Inspection #: 2017-JP-00703

Regulatory Requirements

This report has been issued pursuant to Section 26 of the *Mine Health and Safety Act* which states that a closeout meeting will be held with the manager after completing the inspection and that a written report will follow within 72 hours after the last day of the inspection.

Pursuant to section 28 the manager shall post all inspection reports and orders issued by an inspector in a conspicuous place at the mine for at least 30 days after the manager receives the inspection report or order. Furthermore; pursuant to section 29. (1) the manager shall, within 30 days after receiving an inspection report, submit a written report to the Chief Inspector outlining the remedial measures taken and the remedial measures still to be taken in respect of the inspection report.

Pursuant to section 32. (1) A person who is adversely affected by a decision or order issued by an inspector may appeal the decision or order, in writing, to the Chief Inspector within 30 days after its issue.

Please return a signed copy of this page as confirmation of receipt.

Received By: ______________________ ______________________

Employer Representative (Print) *Signature*

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Inspector Signature

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Inspection Report
Mining

Report Reference:
Inspection #: 2017-JP-00705

OPERATOR
BAFFINLAND IRON MINES CORPORATION
300 - 2275 Upper Middle Road East
Attn: Annu Sira
Oakville, Ontario L6H 0C3

MINE
Mary River Mine Site
MINE MANAGER
Sylvain Proulx

INSPECTOR
Jagadish Patel
jagadish.patel@wscc.nt.ca

Inspection Date: August 23, 2017

Inspection Details:

23 August 2017

BIM Mary River

A meeting between WSCC and BIM took place to discuss the Claim cost and safe advantage.
Following people participated in the meeting.
Tony Noseworthy - Superintendent - Health and Safety
Brenda Roberts - Superintendent - Human resources (Training)
Annu Sira (BIM - Corporate office)
Elain Welsh (WSCC- Safe Advantage Specialist)
Jenny Crawford (WSCC- RTW Specialist)
Annie Barbour (WSCC- Iqaluit office)
Tess Warner (Director - Claim Services)

At the end of the meeting, it was suggested and agreed that, to prevent minor injuries and accidents , the campaign shall be initiated to prevent hand injuries.

24 August 2017

Milne Port

A meeting with Captain John Pace and Andrew Button (Assistant) to discuss the ship loading arrangements and their roles and responsibilities during loading period 2 Aug 2017 to 15 October (estimated).
Captain John Pace assured me that all the rules and regulations will be adhered to as per Marine international standards.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-JP-00705

Mr. John Pace informed me that his assistant Mathew Button has adequate experience and expertise to perform the task of Port Captain.
In the same meeting, I inquired if Marine regulation allows working more than 42 days consecutively? I did not receive any feedback on that specific query.
As per Mr. Pace, no physical work is involved in his role and it is only knowledge based. In short, after the visit to the ship (Golden Strength), a variance was issued in the best interest of safety of the ship crew and BIM.

<u>25 August 2017</u>

<u>Location: Milne Port</u>

<u>Maintenance Shop</u>

While interacting with employees about the challenges at the mine site, I was informed that frequent turnover is one of the hurdle.
Welder at the shop had a hot work permit properly displayed at the location and OHT 022 truck was properly locked out.

<u>Toromont shop</u>

At the time of inspection ,no person was working at the shop. 992 loader was standing idle .
Welding shop
At the welding shop, ventilation found to be adequate at the time of inspection. And house keeping was satisfactory.

<u>Warehouse (Milne Port)</u>

No concern at the time of inspection.

<u>26 Aug 2017</u>

<u>Ship Loader office (Milne Port)</u>

Lockout/Tag Out office

Lock out and tag Out procedure appears to be adequate and sufficient.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-JP-00705

Ore Pad - East side (Milne Port)

At the Ore Pad, it was noticed that truck loading operation is in progress.
Loader # 24 - 988 Toromont operator filled up the pre-use check list correctly. As per pre use check list , dry control (Seat Spring) is not working at the driver seat. This can be a hazardous if operated for longer period of time.(Ergonomic hazard).

Orientation Meeting (Board Room -Milne Port) HR Training department

The content in the orientation slides appears to be adequate. I was informed that additional training is provided to the employee by respective department.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-JP-00705

Order Number: 2017-JP-00705-001 **Status:** Open

Required Compliance Date: October 23, 2017

Sub-Location: Tretran Contractor - Milne Port

Observations: During the inspection, a person was found to working without Hard hat (PPE) twice within 10 minute duration.

Order: **Ensure that the employees are adequately trained in the use of PPE.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 6.03: The training programs required by section 6.02 shall include
(a) an orientation to the area to which the trainee will be assigned;
(b) instruction in the Act and these regulations and the applicable responsibilities thereunder;
(c) the hazards associated with the work and basic instructions in safe work practices;
(d) instruction in the safety rules of that mine;
(e) survival mine rescue training for underground employees;
(f) ventilation techniques for underground employees;
(g) ground support and control techniques for underground and open pit employees;
(h) core Workplace Hazardous Materials Information System training;
(i) use of fire fighting equipment;
(j) the necessary skills to perform his or her job safely;
(k) evacuation procedures; R-016-2003,s.55.
(l) instruction on the use of personal protective equipment; and R-016-2003,s.55.
(m) such other matters as the trainer considers necessary or the chief inspector may require. R-016-2003,s.55.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-JP-00705

Order Number:	2017-JP-00705-002	**Status:**	Open

Required Compliance Date: September 30, 2017

Sub-Location: Water Treatment Plant - Milne Port

Observations: AT the time of inspection, it was noticed that the ground is sinking irregularly at number of places . I was informed of the action being taken to address the issue.

Order: **BIM to prepare the Risk Hazard Matrix and action plan to minimize the risk including periodical monitoring and control at the WTP.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 1.159. (1): The manager shall prepare a procedure for the examination of work sites that provides for examination

(a) of the condition of access routes, haulage roads and travelways;
(b) of the suitability and safety of work practices;
(c) of the general condition of equipment, tools and protective equipment and devices;
(d) of the use of protective equipment and devices;
(e) of the condition of refuge stations;
(f) of the adequacy of ventilation;
(g) for the presence of hazardous gases and toxic fumes;
(h) of the security of ground conditions and effectiveness of the support;
(i) of the emergency arrangements including safe means of egress;
(j) of the provisions to ensure that work procedures are being properly followed; and
(k) of any other matter that affects health and safety.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-JP-00705

Order Number: 2017-JP-00705-003 **Status:** Open

Required Compliance Date: September 30, 2017

Sub-Location: Batch Plant - Milne Port

Observations: At the time of inspection, I was informed that mobile equipment (Feeder) was damaged on 24 August 2017 where the employee was operating an equipment without proper and adequate training.

Order: **Please submit the report on the incident and ensure that adequate training be provided to all employees.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 6.05: Training shall be provided to
(a) all new employees;
(b) employees being transferred to a new work area; and
(c) employees operating equipment for the first time.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-JP-00705

Order Number: 2017-JP-00705-004 **Status:** Open

Required Compliance Date: September 30, 2017

Sub-Location: Incline Conveyor - Milne Port

Observations: At the time of inspection, it was noticed that temporary scaffolding is installed.

Order: **Ensure that the temporary scaffolding is dismantled or install proper permanent structure.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 10.133. (1): The manager shall ensure that a procedure is established for the safe operation, maintenance, inspection and testing of all portable or mobile platforms, scaffolding, bosun's chairs and other types of temporary work or access platforms.

Inspection Report

Mining

Report Reference:
Inspection #: 2017-JP-00705

Regulatory Requirements

This report has been issued pursuant to Section 26 of the *Mine Health and Safety Act* which states that a closeout meeting will be held with the manager after completing the inspection and that a written report will follow within 72 hours after the last day of the inspection.

Pursuant to section 28 the manager shall post all inspection reports and orders issued by an inspector in a conspicuous place at the mine for at least 30 days after the manager receives the inspection report or order. Furthermore; pursuant to section 29. (1) the manager shall, within 30 days after receiving an inspection report, submit a written report to the Chief Inspector outlining the remedial measures taken and the remedial measures still to be taken in respect of the inspection report.

Pursuant to section 32. (1) A person who is adversely affected by a decision or order issued by an inspector may appeal the decision or order, in writing, to the Chief Inspector within 30 days after its issue.

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Received By: ______________________ ______________________

Employer Representative (Print) | *Signature*

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Inspector Signature

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Inspection Report
Mining

Report Reference:
Inspection #: 2017-JP-00707

OPERATOR
BAFFINLAND IRON MINES CORPORATION
300 - 2275 Upper Middle Road East
Attn: Annu Sira
Oakville, Ontario L6H 0C3

MINE
Mary River Mine Site
MINE MANAGER
Sylvain Proulx

INSPECTOR
Jagadish Patel
jagadish.patel@wscc.nt.ca

Inspection Date: August 27, 2017

Inspection Details:

27 August 2017

Mary River Mine site

Crusher Office

I attended the tool box meeting at the Crusher side . No concern or issue with respect to the meeting.

Contractor - Toromont Office

No concern at the time of inspection.

Safety Meeting by Management (Mary River - Main Board Room)

No issues or concern with regards to content and structure of the meeting.

Truck Shop (Mary River)

- Lock out and tag out done properly at 2043 Pub Trailer.
- During discussion with one of the mechanic ,I was informed that dust prevent the mechanic to do job properly and dust is hazardous for inhalation and for the eyes.

Wash Bay (Mary River)

During the inspection , I noticed that equipment is washed manually and washing hose can be hazardous if pointed towards the face of the operator.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-JP-00707

I was informed by Tony Noseworthy that it is low pressure washing facility. I recommend that safety department conduct JHA of this wash bay.

<u>28 August 2017</u>

<u>Pit visit</u>

At 630 bench, drill operator was operating CAT 6290
- Pre use check list was completed and filled up .
- Drill operator answer all the question related to hazard identification .

It was observed that a slab weighing about 100 tonnes is hanging on 650-667 wall.
This hanging rock need to be monitored and adequate steps shall be taken to protect the traffic and other equipments.

<u>Emulsion Plant</u>

A good house keeping at the Emulsion plant was noticed .No concern or issue at the time of inspection.

<u>29 August</u>

Occupational Health and Safety Committee meeting

OHSC meeting was arranged to discuss the safety issues and to learn if the members have any concerns.

I informed the members about the WSCC website where anyone can report Unsafe work practice.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-JP-00707

Order Number: 2017-JP-00707-001 **Status:** Open

Required Compliance Date: October 23, 2017

Sub-Location: Crusher "C" area - Mary River

Observations: During the inspection at Crusher "C", I observed that illumination in the surrounding area is poor and this can pose hazard in the winter months and during the night time.

Order: **Ensure that sufficient and adequate illumination is available at Crusher "C " area as per the standards set out in the ANSI/IES Standard RP-7-1979, American National Standard Practice for Industrial Lighting.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 9.43: Subject to section 9.44 and unless otherwise specified in these regulations, the manager shall ensure that at all working places on the surface of a mine, suitable and adequate illumination is provided that meets the standards set out in the ANSI/IES Standard RP-7-1979, American National Standard Practice for Industrial Lighting.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-JP-00707

Order Number: 2017-JP-00707-002 **Status:** Open

Required Compliance Date: October 09, 2017

Sub-Location: Welding Shop - Mary River

Observations: At the time of inspection, poor house keeping observed at the welding shop.

Order: **Ensure that all work site at the mine are maintained with good house keeping.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 9.04: The manager shall develop and implement an effective housekeeping program to ensure that
(a) all work sites and travelways are maintained in a safe condition;
(b) materials and equipment are stored in a manner so as not to endanger persons; and
(c) appropriate action is taken whenever necessary to maintain a hazard-free environment.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-JP-00707

Order Number: 2017-JP-00707-003 **Status:** Open

Required Compliance Date: March 27, 2018

Sub-Location: Truck shop - Mary River

Observations: At the Truck shop, it was observed that a mechanic /fitter was rolling under the Pub Trailer to do a repair job. The current practice of using the creeper is ergonomically hazardous if the worker is exposed for a longer period of time.

Order: **Ensure that effective arrangements are available for the employees that is ergonomically suitable for the mechanic/fitter.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 9.70: The manager shall provide effective protection for any worker who may be at risk of injury from work that
(a) takes place in a manner that imposes limitations on motion or action;
(b) is of a repetitive manner;
(c) requires constant and uninterrupted mental concentration; or
(d) requires excessive or awkward physical effort.

Section 9.71: The protection required by section 9.70 may include
(a) the provision of equipment or tools designed, constructed, positioned and maintained to reduce the harmful effects of the work;
(b) appropriate operating procedures to reduce the harmful effects of the work;
(c) limited work schedules with rest and recovery periods, changes in workloads or other arrangements for alternating work to reduce the harmful effects of the work; and
(d) any other appropriate measures.

Inspection Report

Mining

Report Reference:
Inspection #: 2017-JP-00707

Order Number: 2017-JP-00707-004 **Status:** Open

Required Compliance Date: October 27, 2017

Sub-Location: Wash Bay - Mary River

Observations: It was noted that the eye wash station at the wash bay is not suitably located and maintained as per manufacturer recommendations.

Order: **Ensure that the eye wash stations are located at suitable spot and maintained as per manufacturer recommendations.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 9.27. (1)(b): Where there is potential for injury by eye contact, a manager shall provide, at or near the exposure site, the appropriate hygiene facilities including portable eye wash stations or eye wash fountains and maintained in a hygienic and working condition.

Inspection Report

Mining

Report Reference:
Inspection #: 2017-JP-00707

Order Number: 2017-JP-00707-005 **Status:** Open

Required Compliance Date: November 18, 2017

Observations: During the meeting with Occupational health and safety committee members, it was noted that committee members are not provided adequate training.

Order: **Ensure that committee members are provided training at least 3 times a year and a record of the training provided shall be submitted to the Chief Inspector.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 3.28. (1): The manager shall, at least three times in a year, provide training that is relevant to the work of the Committee to its members.

Section 3.28. (2): The manager shall submit to the chief inspector an annual record of the training provided to the members of the Committee. R-026-99,s.11.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-JP-00707

Regulatory Requirements

This report has been issued pursuant to Section 26 of the *Mine Health and Safety Act* which states that a closeout meeting will be held with the manager after completing the inspection and that a written report will follow within 72 hours after the last day of the inspection.

Pursuant to section 28 the manager shall post all inspection reports and orders issued by an inspector in a conspicuous place at the mine for at least 30 days after the manager receives the inspection report or order. Furthermore; pursuant to section 29. (1) the manager shall, within 30 days after receiving an inspection report, submit a written report to the Chief Inspector outlining the remedial measures taken and the remedial measures still to be taken in respect of the inspection report.

Pursuant to section 32. (1) A person who is adversely affected by a decision or order issued by an inspector may appeal the decision or order, in writing, to the Chief Inspector within 30 days after its issue.

Please return a signed copy of this page as confirmation of receipt.

Received By: ______________________ ______________________

Employer Representative (Print) *Signature*

____

Inspector Signature

WSCC Workers' Safety & Compensation Commission | ᐃᖅᑲᓇᐃᔭᖅᑎᓂᒃ ᐊᑕᐅᖅᑐᑎᓪᓗᒍ ᐊᓪᓚᒃ ᓇᓕᓕᒫᓂᒃ ᖃᐅᔨᓴᖅᑎᑐᓂᒃ

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

OPERATOR
BAFFINLAND IRON MINES CORPORATION
300 - 2275 Upper Middle Road East
Oakville, Ontario L6H 0C3

MINE
Mary River Mine Site
MINE MANAGER
Sylvain Proulx

INSPECTOR
Lex Lovatt

Inspection Date: August 18, 2017

Inspection Details:

An electrical inspection of the various facilities at Milne Inlet Port and Mary River Mine was conducted in the company of the following individuals: Milne Inlet - Jeff Fuller, Fred Bailey, Harold Audet, and Dale Wales; Mary River - Jeff Fuller, Mike Seguin.
Several deficiencies were noted in various areas and orders issued.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number:	2017-LL-00648-001	**Status:**	Open

Required Compliance Date: November 18, 2017

Sub-Location: Milne Power Generation E-house 1 & 2

Observations: At Milne Power Generation E-house 1 & 2 the protective relays were last checked in April 2014. Relay testing is due.

Order: **Each protective device for an installation operating at a voltage exceeding 750V shall be tested to confirm that the device prevents the equipment from being operated in excess of its rating before initial use and after every three years of use, and the results shall be documented. Refer to CSA M421-16 Clause 4.5.5.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-002 **Status:** Open

Required Compliance Date: November 18, 2017

Sub-Location: Milne Power Generation E-house 1

Observations: At Milne Power Generation E-house 1 insulating gloves are past due for electrical testing.

Order: **Gloves that have been electrically tested but not issued for service shall not be placed into service unless they have been electrically tested within the previous 12 months. Gloves that have been issued for service shall be electrically re-tested within 6 months of being issued for service. Refer to ASTM F496. Ensure that insulating gloves have been retested in accordance with ASTM F496.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-003 **Status:** Open

Required Compliance Date: October 18, 2017

Sub-Location: Milne Power Generation E-house 1 & 2

Observations: At Milne Power Generation E-house 1 & 2 the doors block egress from the stoop when open.

Order: **Each room containing electrical equipment shall have unobstructed means of egress in compliance with the NBC. Refer to CEC 2-310 (1). Rearrange doors/stoops to allow proper egress.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-004 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Milne Power Generation E-house 1 & 2

Observations: At Milne Power Generation E-house 1 & 2 the stoops and stairs for the maintenance doors have been removed.

Order: **The electrical systems and electrical equipment at a mine shall be constructed in accordance with a design and plans that have been certified by a professional engineer. Re-install the stoops and stairs and ensure that they are bonded to the station ground in accordance with the certified design.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-005 **Status:** Open

Required Compliance Date: October 18, 2017

Sub-Location: Milne Power Generation E-house 1 & 2

Observations: At Milne Power Generation E-house 1 & 2 a trestle supports a partially constructed fuel line and a cable tray. Teck cables have been installed that do not fit in the tray and are left unsupported over the vertical rise on both sides of the trestle. The cable tray also interferes with the operation of a valve on the fuel line.

Order: **The mechanical arrangement and execution of the work in connection with any electrical installation shall be acceptable. Refer to CEC 2-112. Re-work the mechanical/electrical installation such that it meets the requirements of the CEC and provides acceptable access to any control devices.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-006 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Milne E-house #5

Observations: At Milne E-house #5 a fiber optic cable is in the process of being installed. The cable was left open ended.

Order: **Open ended optical fibers can present a hazard due to the fine glass fibers. Tape ends of cables to prevent inadvertent contact with the fibers.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 9.04.(c): The manager shall develop and implement an effective housekeeping program to ensure that appropriate action is taken whenever necessary to maintain a hazard-free environment

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-007 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: LOTO at various locations

Observations: Adapters for locking out molded case breakers have been ordered and are on site but have not been distributed to lockout stations.

Order: **Distribute these to the lockout stations at the various locations where they are required. Provide lock out adapters where they are required to provide a means of placing a personal protection lock.**

Legislation: Mine Health & Safety Act(Nunavut)

Section 2. (3)(c): The owner of a mine shall ensure that machinery, equipment, material and protective devices that are required, by the regulations, to be used at the mine or available for the use of employees at the mine, are available for such use;

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 10.21. (3): Before any work is performed on electrically powered equipment or on an electrically powered system, the main power source feeding the equipment or system shall be disconnected, locked out and tagged and, where necessary, the upstream and downstream equipment shall be disconnected, locked out and tagged.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-008 **Status:** Open

Required Compliance Date: November 18, 2017

Sub-Location: Milne E-house #3

Observations: At Milne E-house #3 two flexible cords have been run from the lighting panel through cable tray out through the wall and are coiled outside the E-house.

Order: **Remove the flexible cords. Flexible cord and cord sets shall not be used as a substitute for fixed wiring. Refer to CEC 4-012 (3) (a).**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

WSCC Workers' Safety & Compensation Commission | ᐃᖅᑲᓇᐃᔭᖅᑎᓄᑦ ᐊᑦᑕᓇᖅᑐᓂᒃ ᐊᒻᒪ ᓇᖏᖅᑐᒃᓴᓕᕆᔨᒃᑯᑦ ᑲᒪᔨᖏᑦ

Inspection Report

Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-009 **Status:** Open

Required Compliance Date: October 18, 2017

Sub-Location: Milne Toromont shop

Observations: At the Milne Toromont shop the spare 600V disconnect switch and the door control panel have open holes in the enclosures.

Order: **Install knock-out plugs. Unused openings in boxes, cabinets, and fittings shall be effectively closed by plugs or plates affording protection substantially equivalent to that of the wall of the box, cabinet, or fitting. Refer to CEC 12-3024.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-010 **Status:** Open

Required Compliance Date: October 18, 2017

Sub-Location: Milne mobile equipment shop

Observations: At the Milne mobile equipment shop a duplex receptacle box is bent and broken loose behind the pressure washer stand.

Order: **Repair the duplex receptacle box. Defective equipment shall either be put in good order or permanently disconnected. Refer to CEC 2-300 (4).**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-011 **Status:** Open

Required Compliance Date: October 18, 2017

Sub-Location: Milne fixed plant shop

Observations: At the Milne fixed plant shop some 600V disconnect switches are not identified.

Order: **Each piece of electrical equipment shall bear markings necessary to ensure safe and proper operation. 2-100 (1) (m). Install identification labelling on the disconnect switches.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-012 **Status:** Open

Required Compliance Date: October 18, 2017

Sub-Location: Milne fixed plant shop

Observations: At the Milne fixed plant shop some 600V disconnect switches have open holes in the enclosures.

Order: **Unused openings in boxes, cabinets, and fittings shall be effectively closed by plugs or plates affording protection substantially equivalent to that of the wall of the box, cabinet, or fitting. Refer to CEC 12-3024. Install knock-out plugs.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-013 **Status:** Open

Required Compliance Date: October 18, 2017

Sub-Location: Milne fixed plant shop

Observations: At the Milne fixed plant shop out of service cables have been left in place.

Order: **Damaged or out of service wiring shall be disconnected from its source of power. Wiring left in place shall be identified and shall have its bare conductors guarded. Refer to CSA M421-16 Clause 4.2.4.1.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-014 **Status:** Open

Required Compliance Date: October 18, 2017

Sub-Location: Milne fixed plant shop generator

Observations: At the Milne fixed plant shop generator the distribution panels have open holes left where breakers have been removed.

Order: **Unused openings in boxes, cabinets, and fittings shall be effectively closed by plugs or plates affording protection substantially equivalent to that of the wall of the box, cabinet, or fitting. Refer to CEC 12-3024. Install filler plates.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-015 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Milne fixed plant shop generator

Observations: At the Milne fixed plant shop generator the cover on the 600A, 120/208V power panel is not properly secured.

Order: **Secure the cover. All operating electrical equipment shall be kept in safe and proper working condition. Refer to CEC 2-300 (1).**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-016 **Status:** Open

Required Compliance Date: November 18, 2017

Sub-Location: Mary River fixed plant shop

Observations: At the Mary River fixed plant shop the 208V distribution panel requires identification.

Order: **Each piece of electrical equipment shall bear markings necessary to ensure safe and proper operation. 2-100 (1) (m). Install identification labelling on the panel.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-017 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River fixed plant shop

Observations: At the Mary River fixed plant shop the 208V distribution panel has an open hole in the enclosure.

Order: **Unused openings in boxes, cabinets, and fittings shall be effectively closed by plugs or plates affording protection substantially equivalent to that of the wall of the box, cabinet, or fitting. Refer to CEC 12-3024. Install knock-out plug.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-018 **Status:** Open

Required Compliance Date: October 18, 2017

Sub-Location: Mary River fixed plant shop

Observations: At the Mary River fixed plant shop the 208V distribution panel schedule is out of date.

Order: **At each distribution point circuit breakers shall be marked to indicate clearly which installation or portion of installation they protect or control. Refer to CEC 2-100 (3) (a).**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report

Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-019 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River fixed plant shop

Observations: At the Mary River fixed plant shop the 208V black start panel has single pole breakers interlocked with copper wire.

Order: **Interlocking devices must be provided by the manufacturer of the circuit breakers. Replace the copper wire with an interlocking device provided by the manufacturer in compliance with CEC 14-302 (b).**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-020 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River power generation E-house #1

Observations: At the Mary River power generation E-house #1 there is no signage to identify the E-house.

Order: **Each piece of electrical equipment shall bear markings necessary to ensure safe and proper operation. 2-100 (1) (m). Install identification labelling on the E-house.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report

Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-021 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River power generation E-house #1

Observations: At the Mary River power generation E-house #1 a storage rack in the back corner interferes with the required egress from the rear of the switchgear.

Order: **Where a space contains transformers, overcurrent devices, switchgear or disconnecting means with nameplate ratings over 1200A or 750V it shall be possible to leave the area without passing the failure point. Refer to CEC 2-310 (2). Remove the storage rack.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-022 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River power generation E-house #1

Observations: At the Mary River power generation E-house #1 a cover is missing from an outlet box on the ceiling above breaker H407.

Order: **Outlet boxes must be provided with covers. Refer to CEC 12-3000 (5). Install cover.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-023 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River power generation E-house #1

Observations: At the Mary River power generation E-house #1 materials were stored on top of the battery charger.

Order: **Flammable material shall not be stored or placed in dangerous proximity to electrical equipment. Refer to CEC 2-318. The materials were removed.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-024 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River power generation E-house #2

Observations: At the Mary River power generation E-house #2 materials were stored on top of the battery charger.

Order: **Flammable material shall not be stored or placed in dangerous proximity to electrical equipment. Refer to CEC 2-318. Remove clutter and provide a suitable storage area for spare parts.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report

Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-025 **Status:** Open

Required Compliance Date: November 18, 2017

Sub-Location: Mary River Power Generation E-House 2

Observations: As noted on last year's inspection the protection relay on breaker H-411 at the Mary River Power Generation E-House 2 does not have a test sticker.

Order: **Ensure that the relay was tested, apply a sticker indicating when the relay was tested, and submit the documentation giving evidence of testing.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-026 **Status:** Open

Required Compliance Date: November 18, 2017

Sub-Location: Mary River E-Houses

Observations: Mary River E-Houses general note – the last test date for protective relaying is April 2014.

Order: **Each protective device for an installation operating at a voltage exceeding 750V shall be tested to confirm that the device prevents the equipment from being operated in excess of its rating before initial use and after every three years of use, and the results shall be documented. Refer to CSA M421-16 Clause 4.5.5. Relay testing is due.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-027 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River power generation E-house #2

Observations: At the Mary River power generation E-house #2 there is no signage to identify the E-house.

Order: **Each piece of electrical equipment shall bear markings necessary to ensure safe and proper operation. 2-100 (1) (m). Install identification labelling on the E-house.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-028 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River Jetty Pump house

Observations: The Mary River Jetty Pump house has no identification on the door or signage prohibiting access to unauthorized personnel and warning of danger and indicating the highest voltage in use.

Order: **Install identification on the door and signage prohibiting access to unauthorized personnel and warning of danger and indicating the highest voltage in use. Refer to M421-16 Clause 4.2.7 (a) & (b).**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number:	2017-LL-00648-029	**Status:**	Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River Jetty Pump house

Observations: The Mary River Jetty Pump house 208V distribution panel has openings in the enclosure.

Order: **Unused openings in boxes, cabinets, and fittings shall be effectively closed by plugs or plates affording protection substantially equivalent to that of the wall of the box, cabinet, or fitting. Refer to CEC 12-3024. Install filler plates.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report

Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number:	2017-LL-00648-030	**Status:**	Open

Required Compliance Date: October 18, 2017

Sub-Location: Mary River Jetty Pump house

Observations: On the outside wall of the Mary River Jetty Pump house an outdoor 600V JB has no warning signage.

Order: **Where a hazard exists from inadvertent access to or interference with electrical apparatus, durable notice signs of sufficient size shall be effectively posted and warn of danger and indicate the highest voltage in use. Refer to CSA M421-16 Clause 4.2.7 (b). Post signage "Danger 600V".**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number:	2017-LL-00648-031	**Status:**	Open

Required Compliance Date: October 18, 2017

Sub-Location: Mary River Jetty Pump house

Observations: At the Mary River Jetty Pump house, the receptacle and thermostat on the floor beside the well is unidentified as to its purpose.

Order: **At the Mary River Jetty Pump house identify the receptacle and thermostat on the floor beside the well as to its purpose to facilitate following the locking and tagging procedure required under the Mine Health and Safety Regulations.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 10.21. (1): The manager shall develop a lock-out procedure for each mechanical or electrical equipment system, and the procedure shall
(a) include the requirements of subsections (2) to (6) and sections 10.22 and 10.23;
(b) address the sources of all hazards that may be presented when a person is working on the equipment or system; and
(c) specify, before the work starts, how the equipment or system is to be checked to verify that all hazards have been neutralized and that the equipment or system is safe to work on.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-032 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River Jetty Pump house

Observations: At the Mary River Jetty Pump house there is clutter throughout the pump house. Materials are stored on and about electrical equipment.

Order: **Flammable material shall not be stored or placed in dangerous proximity to electrical equipment. Refer to CEC 2-318. Remove unnecessary clutter and provide a proper small storage location for log books, etc. that are required to be in the pump house.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number:	2017-LL-00648-033	**Status:**	Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River fresh water pump house

Observations: At the Mary River fresh water pump house water is seeping into the 600V Distribution Panel A from the incoming Teck cable.

Order: **All operating electrical equipment shall be kept in safe and proper working condition. Refer to CEC 2-300 (1). Replace the incoming Teck cable and associated JB located on the ground with a continuous run of Teck from the source to the distribution panel. Where the cable is buried in areas accessible to vehicles ensure compliance with CEC 12-012 and the Hatch standards that were reviewed by the WSCC.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-034 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River fresh water pump house

Observations: At the Mary River fresh water pump house an unidentified 600V JB is lying on the ground.

Order: **Where a hazard exists from inadvertent access to or interference with electrical apparatus, durable notice signs of sufficient size shall be effectively posted and warn of danger and indicate the highest voltage in use. Refer to CSA M421-16 Clause 4.2.7 (b). Post signage "Danger 600V".**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-035 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River fresh water pump house

Observations: At the Mary River fresh water pump house signage on the 600V Panel indicates that it is fed from the Toromont generator. We were unable to confirm this.

Order: **Please confirm the power source and ensure that the signage is correct in order to facilitate following the locking and tagging procedure required under the Mine Health and Safety Regulations section 10.21.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 10.21. (1): The manager shall develop a lock-out procedure for each mechanical or electrical equipment system, and the procedure shall
(a) include the requirements of subsections (2) to (6) and sections 10.22 and 10.23;
(b) address the sources of all hazards that may be presented when a person is working on the equipment or system; and
(c) specify, before the work starts, how the equipment or system is to be checked to verify that all hazards have been neutralized and that the equipment or system is safe to work on.

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Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-036 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River fresh water pump house

Observations: At the Mary River fresh water pump house flexible cord has been used as a substitute for permanent wiring to the receptacle for the construction heater.

Order: **Flexible cord and cord sets shall not be used as a substitute for fixed wiring. Refer to CEC 4-012 (3) (a). Replace the flexible cord with Teck cable.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-037 **Status:** Open

Required Compliance Date: November 18, 2017

Sub-Location: Mary River fresh water pump house

Observations: At the Mary River fresh water pump house a heat tracing JB has an unused connector leaving an open hole in the box.

Order: **Unused openings in boxes, cabinets, and fittings shall be effectively closed by plugs or plates affording protection substantially equivalent to that of the wall of the box, cabinet, or fitting. Refer to CEC 12-3024. Remove the connector and install a knock out plug.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-038 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River fresh water pump house

Observations: At the Mary River fresh water pump house the smoke detector has been removed leaving the outlet box uncovered.

Order: **No person shall interfere with any electrical installation or component thereof. Refer to CEC 2-032. Re-install the smoke detector.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number:	2017-LL-00648-039	**Status:**	Open

Required Compliance Date: November 18, 2017

Sub-Location: Mary River fresh water pump house

Observations: At the Mary River fresh water pump house submersible pumps are fed with G-GC cable.

Order: **Submersible pumps operating at voltages exceeding 150V to ground shall be supplied by shielded portable power cable. Refer to CSA M421-16 Clause 4.4.1.4. Replace the pumps with pumps that are fed by SHD-GC cable.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

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Inspection Report

Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-040 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River fresh water pump house

Observations: At the Mary River fresh water pump house the voltage supplying the submersible pumps is 600V. The voltage supplying submersible pumps in bodies of water shall not exceed 150V to ground unless the following requirements are met: a deviation has been allowed in accordance with CEC Rule 2-030; the operating voltage does not exceed 5.5KV; the electrical installation is maintained by qualified electrical maintenance stall; and, the area around the submersible pump is protected from access by the public by fencing, cribbing, or isolation and so marked.

Order: **Refer to CEC 26-956. The deviation granted for these pumps expired on Aug. 15, 2014 which was the date stipulated in the response from Erik Madsen in correspondence to Martin Van Rooy dated November 18, 2013. It was agreed that the pumps would either be out of service or replaced with ones having SHD-GC cable by that date. These pumps must now be removed from service or made to comply with all requirements of CSA M421-16.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report

Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-041 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River fresh water pump house

Observations: At the Mary River fresh water pump house no ground check protection is provided for the submersible pumps.

Order: **Submersible pumps operating at voltages exceeding 150V to ground shall have ground-fault and ground-conductor monitoring. Where ground fault protection is required by CSA M421 the supply shall be: grounded through a neutral-grounding device that limits the ground-fault voltage to 100V or less; and de-energized in less than 1s if ground-fault current exceeds 20% of the prospective ground-fault current. Refer to CSA M421-16 Clause 4.4.1.4 and 4.5.6. Demonstrate that the 600V system meets these requirements and provide ground conductor monitoring.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-042 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River power generation E-house #2

Observations: At the Mary River power generation E-house #2 the panic bar on the maintenance doors does not work.

Order: **Functioning panic hardware is a requirement of the NBC for emergency egress. Repair the panic hardware.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-043 **Status:** Open

Required Compliance Date: November 18, 2017

Sub-Location: Mary River fresh water pump house

Observations: At the Mary River fresh water pump house there is no evidence of certified engineering design for the installation.

Order: **The electrical system and electrical equipment at a mine shall be designed in accordance with good engineering practice; and constructed in accordance with a design and plans that have been certified by a professional engineer. Refer to the Mine Health and Safety Regulations section 13.01. Submit the certified engineering design for review. Provide evidence that the installation has been reconstructed in accordance with the certified design.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-044 **Status:** Open

Required Compliance Date: November 18, 2017

Sub-Location: Mary River fresh water pump house

Observations: At the Mary River fresh water pump house the building is not fit for the purpose. The building has not been maintained since the stated intention was to abandon it in 2014. The door is held closed with a steel bar, water is leaking into the 600V panel, covers are missing, fire detection has been removed, heating is inadequate necessitating the installation of a portable construction heater, and submersible pump cabling and protection do not meet CSA M421 requirements.

Order: **The mechanical arrangement and execution of the work in connection with any electrical installation shall be acceptable. Refer to CEC 2-112. Reconstruct or replace the pump house in accordance with a certified engineering design.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (1): The electrical system and electrical equipment at a mine shall be
(a) designed in accordance with good engineering practice; and
(b) constructed in accordance with a design and plans that have been certified by a professional engineer.

Inspection Report

Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-045 **Status:** Open

Required Compliance Date: September 18, 2017

Sub-Location: Mary River incinerator

Observations: At the Mary River incinerator the control room which also houses an open-ventilated transformer and 600V control panel is very dusty and clutter is everywhere.

Order: **Equipment or material of other than an electrical nature shall not be installed or placed so close to electrical equipment as to create a condition that is dangerous. Refer to CEC 2-124. Clean and remove clutter.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report
Mining

Report Reference:
Inspection #: 2017-LL-00648

Order Number: 2017-LL-00648-046 **Status:** Open

Required Compliance Date: October 18, 2017

Sub-Location: Mary River incinerator

Observations: At the Mary River incinerator a networking enclosure has been installed such that it blocks access to the 600V disconnect panel.

Order: **A minimum working space of 1m with secure footing shall be provided and maintained about electrical equipment such as switchboards, panelboards, control panels, and motor control centers. Refer to CEC 2-308. There is no suitable space in this room for the networking equipment. Remove the networking equipment.**

Legislation: Mine Health & Safety Regulations(Nunavut)

Section 13.01. (2): Except where otherwise required by these regulations, the electrical system and electrical equipment shall meet or exceed the requirements of CSA Standard CAN/CSA M421-93, Use of Electricity in Mines.

Inspection Report

Mining

Report Reference:
Inspection #: 2017-LL-00648

Regulatory Requirements

This report has been issued pursuant to Section 26 of the *Mine Health and Safety Act* which states that a closeout meeting will be held with the manager after completing the inspection and that a written report will follow within 72 hours after the last day of the inspection.

Pursuant to section 28 the manager shall post all inspection reports and orders issued by an inspector in a conspicuous place at the mine for at least 30 days after the manager receives the inspection report or order. Furthermore; pursuant to section 29. (1) the manager shall, within 30 days after receiving an inspection report, submit a written report to the Chief Inspector outlining the remedial measures taken and the remedial measures still to be taken in respect of the inspection report.

Pursuant to section 32. (1) A person who is adversely affected by a decision or order issued by an inspector may appeal the decision or order, in writing, to the Chief Inspector within 30 days after its issue.

Please return a signed copy of this page as confirmation of receipt.

Received By: ______________________ ______________________

Employer Representative (Print) *Signature*

____

Inspector Signature

Baffinland Iron Mines – Mary River and Milne Inlet Electrical Inspection

By: Jeff Fuller – J.A. FULLER ENGINEERING LTD Insp. Date: Aug. 18/19, 2017

Submitted: August 21, 2017

An electrical inspection of the various facilities was conducted in the company of the following individuals: Milne Inlet – Lex Lovatt, Fred Bailey, Harold Audet, and Dale Wales; Mary River – Lex Lovatt, Mike Seguin.

1) At Milne Power Generation E-house 1 & 2 the protective relays were last checked in April 2014. Each protective device for an installation operating at a voltage exceeding 750V shall be tested to confirm that the device prevents the equipment from being operated in excess of its rating before initial use and after every three years of use, and the results shall be documented. Refer to CSA M421-16 Clause 4.5.5. Relay testing is due.
2) At Milne Power Generation E-house 1 insulating gloves are past due for electrical testing. Gloves that have been electrically tested but not issued for service shall not be placed into service unless they have been electrically tested within the previous 12 months. Gloves that have been issued for service shall be electrically re-tested within 6 months of being issued for service. Refer to ASTM F496. Ensure that insulating gloves have been retested in accordance with ASTM F496.
3) At Milne Power Generation E-house 1 & 2 the doors block egress from the stoop when open. Each room containing electrical equipment shall have unobstructed means of egress in compliance with the NBC. Refer to CEC 2-310 (1). Rearrange doors/stoops to allow proper egress.
4) At Milne Power Generation E-house 1 & 2 the stoops and stairs for the maintenance doors have been removed. The electrical systems and electrical equipment at a mine shall be constructed in accordance with a design and plans that have been certified by a professional engineer. Refer to the Mine Health and Safety Regulations Section 13.01. Re-install the stoops and stairs and ensure that they are bonded to the station ground in accordance with the certified design.
5) At Milne Power Generation E-house 1 & 2 a trestle supports a partially constructed fuel line and a cable tray. Teck cables have been installed that do not fit in the tray and are left unsupported over the vertical rise on both sides of the trestle. The cable tray also interferes with the operation of a valve on the fuel line. The mechanical arrangement and execution of the work in connection with any electrical installation shall be acceptable. Refer to CEC 2-112. Re-work the mechanical/electrical installation such that it meets the requirements of the CEC and provides acceptable access to any control devices.
6) At Milne E-house #5 a fiber optic cable is in the process of being installed. The cable was left open ended. Open ended optical fibers can present a hazard due to the fine glass fibers. Tape ends of cables to prevent inadvertent contact with the fibers.
7) Adapters for locking out molded case breakers have been ordered and are on site. Distribute these to the lockout stations at the various locations where they are required. Section 2. (3) (c) of the Mine Health and Safety Act requires that the owner of a mine shall ensure that machinery, equipment, material, and protective devices that are required, by the regulations, to be used at the mine or available for the use of employees at the mine, are available for such use. Provide lock out

adapters where they are required to provide a means of placing a personal protection lock as required by the Mine Health and Safety Regulations section 10.21. (3).

8) At Milne E-house #3 two flexible cords have been run from the lighting panel through cable tray out through the wall and are coiled outside the E-house. Flexible cord and cord sets shall not be used as a substitute for fixed wiring. Refer to CEC 4-012 (3) (a). Remove the flexible cords.
9) At the Milne Toromont shop the spare 600V disconnect switch and the door control panel have open holes in the enclosures. Unused openings in boxes, cabinets, and fittings shall be effectively closed by plugs or plates affording protection substantially equivalent to that of the wall of the box, cabinet, or fitting. Refer to CEC 12-3024. Install knock-out plugs.
10) At the Milne mobile equipment shop a duplex receptacle box is bent and broken loose behind the pressure washer stand. Defective equipment shall either be put in good order or permanently disconnected. Refer to CEC 2-300 (4). Repair the duplex receptacle box.
11) At the Milne fixed plant shop some 600V disconnect switches are not identified. Each piece of electrical equipment shall bear markings necessary to ensure safe and proper operation. 2-100 (1) (m). Install identification labelling on the disconnect switches.
12) At the Milne fixed plant shop some 600V disconnect switches have open holes in the enclosures. Unused openings in boxes, cabinets, and fittings shall be effectively closed by plugs or plates affording protection substantially equivalent to that of the wall of the box, cabinet, or fitting. Refer to CEC 12-3024. Install knock-out plugs.
13) At the Milne fixed plant shop out of service cables have been left in place. Damaged or out of service wiring shall be disconnected from its source of power. Wiring left in place shall be identified and shall have its bare conductors guarded. Refer to CSA M421-16 Clause 4.2.4.1.
14) At the Milne fixed plant shop generator the distribution panels have open holes left where breakers have been removed. Unused openings in boxes, cabinets, and fittings shall be effectively closed by plugs or plates affording protection substantially equivalent to that of the wall of the box, cabinet, or fitting. Refer to CEC 12-3024. Install filler plates.
15) At the Milne fixed plant shop generator the cover on the 600A, 120/208V power panel is not properly secured. All operating electrical equipment shall be kept in safe and proper working condition. Refer to CEC 2-300 (1). Secure the cover.
16) At the Mary River fixed plant shop the 208V distribution panel requires identification. Each piece of electrical equipment shall bear markings necessary to ensure safe and proper operation. 2-100 (1) (m). Install identification labelling on the panel.
17) At the Mary River fixed plant shop the 208V distribution panel has an open hole in the enclosure. Unused openings in boxes, cabinets, and fittings shall be effectively closed by plugs or plates affording protection substantially equivalent to that of the wall of the box, cabinet, or fitting. Refer to CEC 12-3024. Install knock-out plug.
18) At the Mary River fixed plant shop the 208V distribution panel schedule is out of date. At each distribution point circuit breakers shall be marked to indicate clearly which installation or portion of installation they protect or control. Refer to CEC 2-100 (3) (a).
19) At the Mary River fixed plant shop the 208V black start panel has single pole breakers interlocked with copper wire. Interlocking devices must be provided by the manufacturer of the circuit

breakers. Replace the copper wire with an interlocking device provided by the manufacturer in compliance with CEC 14-302 (b).

20) At the Mary River power generation E-house #1 there is no signage to identify the E-house. Each piece of electrical equipment shall bear markings necessary to ensure safe and proper operation. 2-100 (1) (m). Install identification labelling on the E-house.
21) At the Mary River power generation E-house #1 a storage rack in the back corner interferes with the required egress from the rear of the switchgear. Where a space contains transformers, overcurrent devices, switchgear or disconnecting means with nameplate ratings over 1200A or 750V it shall be possible to leave the area without passing the failure point. Refer to CEC 2-310 (2). Remove the storage rack.
22) At the Mary River power generation E-house #1 a cover is missing from an outlet box on the ceiling above breaker H407. Outlet boxes must be provided with covers. Refer to CEC 12-3000 (5). Install cover.
23) At the Mary River power generation E-house #1 materials were stored on top of the battery charger. Flammable material shall not be stored or placed in dangerous proximity to electrical equipment. Refer to CEC 2-318. The materials were removed.
24) At the Mary River power generation E-house #2 materials were stored on top of the battery charger. Flammable material shall not be stored or placed in dangerous proximity to electrical equipment. Refer to CEC 2-318. Remove clutter and provide a suitable storage area for spare parts.
25) As noted on last year's inspection the protection relay on breaker H-411 at the Mary River Power Generation E-House 2 does not have a test sticker. Ensure that the relay was tested, apply a sticker indicating when the relay was tested, and submit the documentation giving evidence of testing.
26) At the Mary River power generation E-house #2 the panic bar on the maintenance doors does not work. Functioning panic hardware is a requirement of the NBC for emergency egress. Repair the panic hardware.
27) Mary River E-Houses general note – the last test date for protective relaying is April 2014. Each protective device for an installation operating at a voltage exceeding 750V shall be tested to confirm that the device prevents the equipment from being operated in excess of its rating before initial use and after every three years of use, and the results shall be documented. Refer to CSA M421-16 Clause 4.5.5. Relay testing is due.
28) At the Mary River power generation E-house #2 there is no signage to identify the E-house. Each piece of electrical equipment shall bear markings necessary to ensure safe and proper operation. 2-100 (1) (m). Install identification labelling on the E-house.
29) The Mary River Jetty Pump house requires identification on the door and signage prohibiting access to unauthorized personnel and warning of danger and indicating the highest voltage in use. Refer to M421-16 Clause 4.2.7 (a) & (b). Install signage.
30) The Mary River Jetty Pump house 208V distribution panel has openings in the enclosure. Unused openings in boxes, cabinets, and fittings shall be effectively closed by plugs or plates affording protection substantially equivalent to that of the wall of the box, cabinet, or fitting. Refer to CEC 12-3024. Install filler plates.

31) On the outside wall of the Mary River Jetty Pump house an outdoor 600V JB has no warning signage. Where a hazard exists from inadvertent access to or interference with electrical apparatus, durable notice signs of sufficient size shall be effectively posted and warn of danger and indicate the highest voltage in use. Refer to CSA M421-16 Clause 4.2.7 (b). Post signage "Danger 600V".
32) At the Mary River Jetty Pump house identify the receptacle and t'stat on the floor beside the well as to its purpose to facilitate following the locking and tagging procedure required under the Mine Health and Safety Regulations section 10.21.
33) At the Mary River Jetty Pump house there is clutter throughout the pump house. Materials are stored on and about electrical equipment. Flammable material shall not be stored or placed in dangerous proximity to electrical equipment. Refer to CEC 2-318. Remove unnecessary clutter and provide a proper small storage location for log books, etc. that are required to be in the pump house.
34) At the Mary River fresh water pump house water is seeping into the 600V Distribution Panel A from the incoming Teck cable. All operating electrical equipment shall be kept in safe and proper working condition. Refer to CEC 2-300 (1). Replace the incoming Teck cable and associated JB located on the ground with a continuous run of Teck from the source to the distribution panel. Where the cable is buried in areas accessible to vehicles ensure compliance with CEC 12-012 and the Hatch standards that were reviewed by the WSCC.
35) At the Mary River fresh water pump house an unidentified 600V JB is lying on the ground. Where a hazard exists from inadvertent access to or interference with electrical apparatus, durable notice signs of sufficient size shall be effectively posted and warn of danger and indicate the highest voltage in use. Refer to CSA M421-16 Clause 4.2.7 (b). Post signage "Danger 600V".
36) At the Mary River fresh water pump house signage on the 600V Panel indicates that it is fed from the Toromont generator. We were unable to confirm this. Please confirm the power source and ensure that the signage is correct in order to facilitate following the locking and tagging procedure required under the Mine Health and Safety Regulations section 10.21.
37) At the Mary River fresh water pump house flexible cord has been used as a substitute for permanent wiring to the receptacle for the construction heater. Flexible cord and cord sets shall not be used as a substitute for fixed wiring. Refer to CEC 4-012 (3) (a). Replace the flexible cord with Teck cable.
38) At the Mary River fresh water pump house a heat tracing JB has an unused connector leaving an open hole in the box. Unused openings in boxes, cabinets, and fittings shall be effectively closed by plugs or plates affording protection substantially equivalent to that of the wall of the box, cabinet, or fitting. Refer to CEC 12-3024. Remove the connector and install a knock out plug.
39) At the Mary River fresh water pump house the smoke detector has been removed leaving the outlet box uncovered. No person shall interfere with any electrical installation or component thereof. Refer to CEC 2-032. Re-install the smoke detector.
40) At the Mary River fresh water pump house submersible pumps are fed with G-GC cable. Submersible pumps operating at voltages exceeding 150V to ground shall be supplied by shielded portable power cable. Refer to CSA M421-16 Clause 4.4.1.4. Replace the pumps with pumps that are fed by SHD-GC cable.

41) At the Mary River fresh water pump house the voltage supplying the submersible pumps is 600V. The voltage supplying submersible pumps in bodies of water shall not exceed 150V to ground unless the following requirements are met: a deviation has been allowed in accordance with CEC Rule 2-030; the operating voltage does not exceed 5.5KV; the electrical installation is maintained by qualified electrical maintenance stall; and, the area around the submersible pump is protected from access by the public by fencing, cribbing, or isolation and so marked. Refer to CEC 26-956. The deviation granted for these pumps expired on Aug. 15, 2014 which was the date stipulated in the response from Erik Madsen in correspondence to Martin Van Rooy dated November 18, 2013. It was agreed that the pumps would either be out of service or replaced with ones having SHD-GC cable by that date. These pumps must now be removed from service or made to comply with all requirements of CSA M421-16.

42) At the Mary River fresh water pump house no ground check protection is provided for the submersible pumps. Submersible pumps operating at voltages exceeding 150V to ground shall have ground-fault and ground-conductor monitoring. Where ground fault protection is required by CSA M421 the supply shall be: grounded through a neutral-grounding device that limits the ground-fault voltage to 100V or less; and de-energized in less than 1s if ground-fault current exceeds 20% of the prospective ground-fault current. Refer to CSA M421-16 Clause 4.4.1.4 and 4.5.6. demonstrate that the 600V system meets these requirements and provide ground conductor monitoring.

43) At the Mary River fresh water pump house there is no evidence of certified engineering design for the installation. The electrical system and electrical equipment at a mine shall be designed in accordance with good engineering practice; and constructed in accordance with a design and plans that have been certified by a professional engineer. Refer to the Mine Health and Safety Regulations section 13.01.. Submit the certified engineering design for review. Provide evidence that the installation has been reconstructed in accordance with the certified design.

44) At the Mary River fresh water pump house the building is not fit for the purpose. The building has not been maintained since the stated intention was to abandon it in 2014. The door is held closed with a steel bar, water is leaking into the 600V panel, covers are missing, fire detection has been removed, heating is inadequate necessitating the installation of a portable construction heater, and submersible pump cabling and protection do not meet CSA M421 requirements. The mechanical arrangement and execution of the work in connection with any electrical installation shall be acceptable. Refer to CEC 2-112. Reconstruct or replace the pump house in accordance with a certified engineering design.

45) At the Mary River incinerator the control room which also houses an open-ventilated transformer and 600V control panel is very dusty and clutter is everywhere. Equipment or material of other than an electrical nature shall not be installed or placed so close to electrical equipment as to create a condition that is dangerous. Refer to CEC 2-124. Clean and remove clutter.

46) At the Mary River incinerator a networking enclosure has been installed such that it blocks access to the 600V disconnect panel. A minimum working space of 1m with secure footing shall be provided and maintained about electrical equipment such as switchboards, panelboards, control panels, and motor control centers. Refer to CEC 2-308. There is no suitable space in this room for the networking equipment. Remove the networking equipment.