11 July 2019

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RE: Response to Teleconference Comments
Mary River Project - Modification Request No. 12
Type 'A' Water Licence - 2AM-MRY1325 - Amend. No. 1

Baffinland Iron Mines Corporation (Baffinland) provides the responses below to comments received from Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) and the Nunavut Water Board (NWB), regarding Water Licence Modification Request No. 12. These comments were received during the July 3, 2019 teleconference held regarding this Modification Request.

1. **Further Justification for the Stage 2 Portion of the Stockpile Expansion**

Stockpile #1 originally occupied an area of 25.32 ha, denoted by the dashed line on Figure 1-1 in Attachment 1. Water Licence Modification Request #9 subsequently allowed an increase in the area of Stockpile #1 to 27.22 ha, denoted in green on Figure 1-1.

Stage 1 of the Stockpile #1 expansion will occupy an area of 23.11 ha, denoted by the red line on Figure 1-1. Stage 2 will occupy an area of 9.23 ha, denoted by the purple line on Figure 1-1, for a total available stockpile area following completion of 32.34 ha. Also denoted on the map is an area of the original stockpile footprint which will no longer be usable for ore stockpiling as a consequence of realigning the stockpile and conveyor, which is 9.26 ha and denoted in blue on Figure 1-1.

Additional stockpile space is required to allow Baffinland to (i) create multiple customer-owned piles, and (ii) provide for sufficient separation between the piles to ensure no co-mingling of different buyer's products. As the volume of ore shipments has increased, customer demand for maintaining separate stockpiles has also increased. Maintaining separate stockpiles reduces stockpiling efficiency as it reduces the height of potential stockpiles, thus requiring greater surface area to store a comparable amount of

ore. As well, to access each stockpile, pathways of sufficient size to accommodate heavy equipment must be maintained, further reducing available stockpile area.

It is further noted that the Stage 1 area is smaller than original stockpile footprint that was available prior to the expansion in Modification Request #9. Construction of both the Stage 1 and Stage 2 areas is essential to allow for efficient bulk material handling.

Table 1: Stockpile Areas

Stockpile Area	Area (ha)
Original Stockpile #1	25.32
Stockpile #1 Including Previously Approved Stockpile #1 Expansion (Mod. Request No. 9)	27.22
Stockpile #1 Expansion Stage 1	23.11
Stockpile #1 Expansion Stage 2	9.23
Final Stockpile #1 Area Following Stage 1 and 2 Expansions	32.34
Original Stockpile #1 Area Removed with Modification Request No. 12	9.26

2. Fish Habitat Assessments for Water Bodies within the Footprint of the Stage 2 Portion of the Stockpile Expansion

The water bodies within the footprint of the Stage 2 portion of the stockpile expansion are stream M5-1, and pond ML-1, with pond ML-2 located just outside the expansion footprint. A technical memorandum entitled Preliminary Results of Spring 2019 Fish Habitat Survey in Drainages in the Milne Port Area is presented in Attachment 2. The results of this fish habitat survey show that there was no fish use of ponds ML-1 or ML-2, and that at peak flows the depths in stream M5-1 are very shallow and likely never sufficient to support use by anadromous juvenile fish.

3. Discussion on how the Stage 2 work may impact Phillips Creek

Stage 2 of the stockpile expansion work will involve infilling of pond ML-1, and a portion of stream M5-1. As shown in Attachment 2, these water bodies do not provide fish habitat. Stream M5-1 drains local snow melt only, with an outfall near the confluence of Phillips Creek and Milne Inlet. At this location, water is likely brackish due to the interaction of freshwater from Phillips Creek and saltwater from Milne Inlet.

Water flows in Stream M5-1 will be maintained by constructing a permanent diversion channel around the south side of the stockpile expansion, returning the flow to the existing channel of Stream M5-1 upstream from its confluence with Phillips Creek.

We trust that these responses provide additional clarification on the proposed work and infrastructure changes at the Project. Please do not hesitate to contact the undersigned should you have any remaining questions or comments.

Regards,

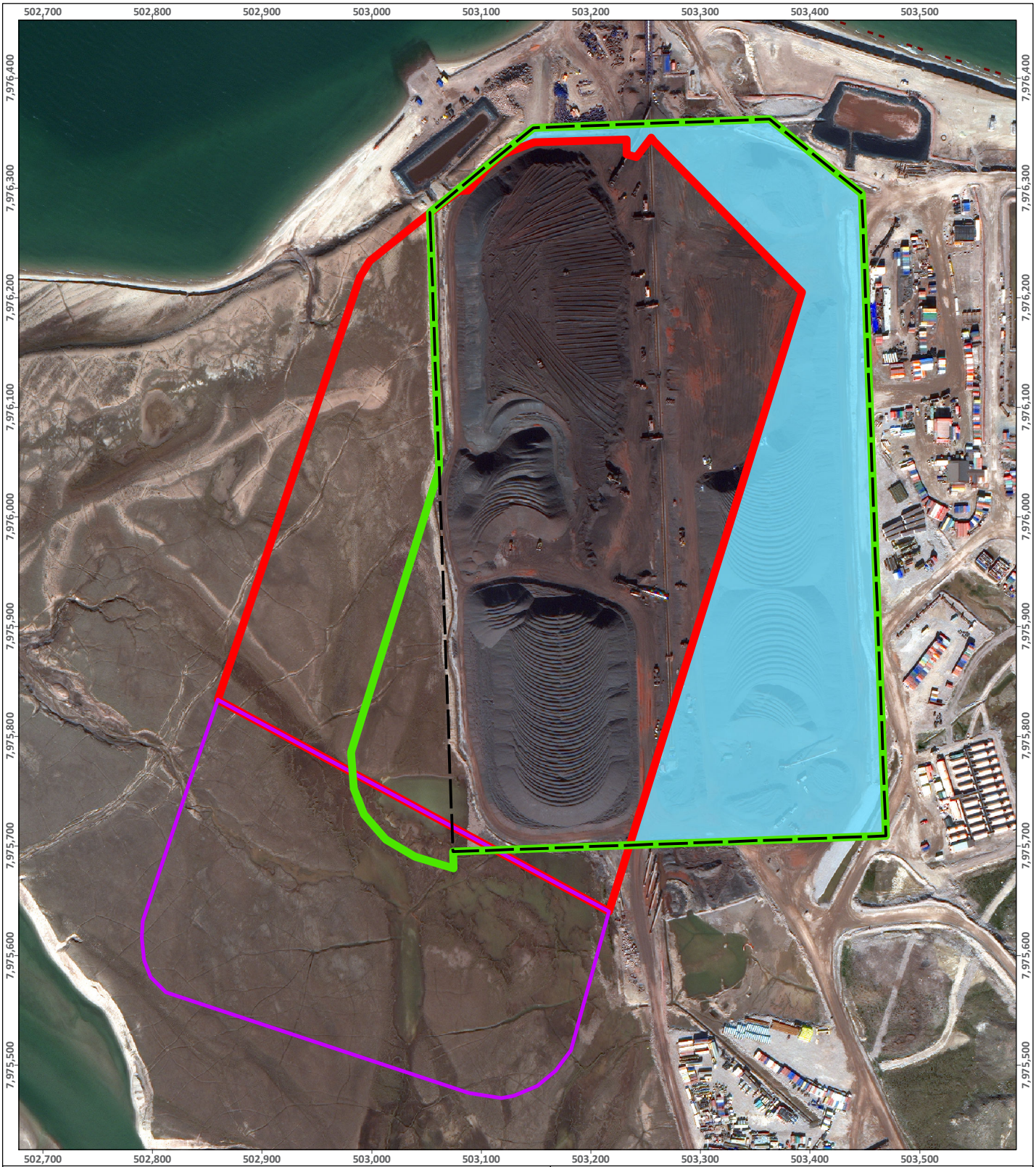
Lou Kamermans
Director, Sustainable Development

Attachments:
Attachment 1: Figure 1-1: Milne Port Stockpile Areas
Attachment 2: North/South Consultants Inc. Memorandum, Spring 2019 Fish Habitat Survey at Drainages in the Milne Port Area

Cc: Chris Spencer (Qikiqtani Inuit Association)
Bridget Campbell, David Zhong, Godwin Okonkwo (CIRNAC)
Richard Dwyer (NWB)
Christopher Murray, Steve Borcsok, Megan Lord-Hoyle (Baffinland)

Attachment No. 1

Figure 1-1: Milne Port Stockpile Areas



LEGEND

- Original Stockpile #1
- Previously Approved Stockpile #1 Expansion (Mod. Request #9)
- Stockpile #1 Expansion Stage 1
- Stockpile #1 Expansion Stage 2
- Original Stockpile #1 Area Removed With Mod. Request #12

MARY RIVER PROJECT

Milne Port Stockpile Areas

Projection: NAD 1983 UTM ZONE 17N.

0 15 30 60 90 120 Meters

Scale 1:5,000

N

Baffinland

FIGURE 1-1

SAVED: C:\Users\katie.mcguire\Documents\4 - Maps\Sampling\SNP\BIM_Fig 1 Milne Port Calculations.mxd: Jul 10, 2019 10:39 AM

Attachment No. 2

North/South Consultants Inc. Memorandum

Spring 2019 Fish Habitat Survey at Drainages in the Milne Port Area

North/South Consultants Inc.
Aquatic Environment Specialists

Subject: **Preliminary Results of Spring 2019 Fish Habitat Survey in Drainages in the Milne Port Area**

To: Lou Kamermans, Steve Borcsok
Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
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From: North/South Consultants Inc.
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Date: July 10, 2019

1.0 INTRODUCTION

This Technical Memorandum (TM) presents the results of a fish habitat survey conducted by North/South Consultants Inc. (NSC) at the request of Baffinland Iron Mines Corporation (Baffinland) in three drainages in the Milne Port area in spring 2019 (Figure 1). The objectives of the stream and pond surveys in the Milne Port area were:

- Surveying the areas to determine the presence/absence of fish;
- Documenting barriers to fish movements; and
- Characterizing aquatic habitat for established or potential fish habitat.

Figure 1. Location of the drainages surveyed in the Milne Port area.

2.0 METHODS

Areas were initially assessed aerially via helicopter to determine general connectivity. Aerial photographs and video of the proposed Project footprint areas were taken and a brief description of potential aquatic habitat was noted, including depth estimates for any ponds. Stream and pond survey sites in the three Milne Inlet drainages were then assessed in greater detail at ground level.

Fish presence/absence in surveyed waterbodies was first determined with backpack electrofishing. In streams at Milne Inlet, a minimum of 100 m of wetted habitat was fished when the quantity and depth of habitat was sufficient. Ponds were fished for a minimum of 500 seconds, excepting for small ponds that could be fished in their entirety in less time. Duration, electrofisher settings, and UTMs were recorded for each site. If fish were not captured or observed during surveys, connectivity of the stream/pond with the nearest potential overwintering site (lakes with maximum depth > 3.0 m) or large river (e.g., Phillips Creek) was assessed and any potential natural barriers to fish movement identified. Barriers were described, photographed, UTMs recorded, and where feasible, physical measurements of barriers (e.g., vertical height) were collected.

Additional habitat information collected included the following:

- For streams, photographs, bankfull and wetted width, velocity, water depth, substrate type, channel confinement, stream gradient, and water temperature were measured over the entire surveyed areas; and
- Habitat within ponds was described for both nearshore and offshore areas, noting the presence of riparian and instream vegetation, type of substrate, and estimated depth.

3.0 RESULTS

The following provides a brief description of the results of the spring 2019 fish habitat surveys conducted in the Milne Port area. Fish and fish habitat surveys were conducted in portions of three drainages (M5-1, M3-2, and M3-3) in the Milne Inlet area on 18 and 25 June 2019 (Figure 1).

3.1.1 M5-1 Drainage

The M5-1 drainage includes two ponds (ML-1 and ML-2). Pond ML-2 was fished for 450 s on 18 June covering approximately half of the shoreline and no fish were captured or observed. Pond ML-1 was fished for 303 s and similarly no fish were captured or observed.

Substrate in both ponds was primarily fines with occasional cobble and maximum depths did not exceed 0.3 m (Figure 2). Water temperature was 8.5°C. There was no connectivity between the two ponds; the area between the two ponds was diffuse slightly wetted tundra (never exceeding 0.02 m depth) with frequent grassy hillocks blocking potential access (Figure 3). There was no fish use of either pond.

Stream M5-1 drains Pond ML-1 towards the confluence of Phillips Creek and Milne Inlet (Figure 3). The stream was very shallow (< 0.02 m) and wide (Figure 4) with a gradient of 5 degrees. It could not be electrofished due to insufficient water depths. However, visibility was high and no fish were observed in the entire length of the stream, which was surveyed on foot from Pond ML-1 to the confluence. The watershed drains local snow melt and, given the lack of channelization downstream towards Phillips Creek, depths in M5-1 are likely never sufficient to support use by anadromous juveniles. Anadromous char do not spawn in Phillips Creek drainage due to the presence of an upstream waterfall and the absence of accessible freshwater waterbodies of sufficient depth to provide spawning and/or egg incubation habitat downstream of the waterfall. Therefore, anadromous char potentially using freshwater habitat in the survey area for summer feeding originate from other river systems that drain into Milne Inlet.

Anadromous Arctic Char smolts (i.e., life stage at which they start making annual migrations to the ocean for feeding) are typically a minimum of approximately 100-120 mm in length before they first leave their natal watershed for the ocean (Jensen et al. 2012) and fish of such size would require much greater depths to use M5-1.

3.1.2 M3-2 Drainage

The M3-2 drainage includes an upstream pond (Pond 1) and a stream (Stream M3-2) that drains to Philips Creek. The watershed does not provide fish habitat.

Stream M3-2 was assessed on 25 June 2019. There is no fish habitat in Stream M3-2; the stream was completely dry from Pond 1 upstream down to its confluence with Phillips Creek except for a small, shallow isolated pond (Figures 5 and 6). The entire pond was electrofished for 144 s and no fish were captured or observed.

Pond 1 at the upstream end of the M3-2 drainage was approximately 135 x 35 m with a maximum measured depth of 0.28 m (Figure 7). The pond appears to be isolated as there are no channels or surface water inflows to, or outflows from, the pond (Figure 8). The pond was electrofished for 529 s covering its entire perimeter and no fish were captured or observed.

3.1.3 M3-3 Drainage

Stream M3-3 was assessed on 25 June 2019. The watershed does not provide fish habitat.

The stream is meandering and sandy, and was shallow (<0.03 m) with sections of subsurface flows (Figure 9). At the downstream confluence with Phillips Creek, there was a vertical gradient barrier of 0.35 m height that, in combination with shallow water, prevents all potential fish access to the stream (Figure 10). In addition, habitat in Phillips Creek at the confluence was a small pond isolated from the main channel of the river. Where depths were sufficient, Stream M3-3 was electrofished (fishing was conducted for 178 s over a 100 m reach) and no fish were captured or observed. All inflows to Stream M3-3 from the southeast and southwest were increasingly dry in an upstream direction.

Figure 2. North end of Pond ML-2 in drainage M5-1.

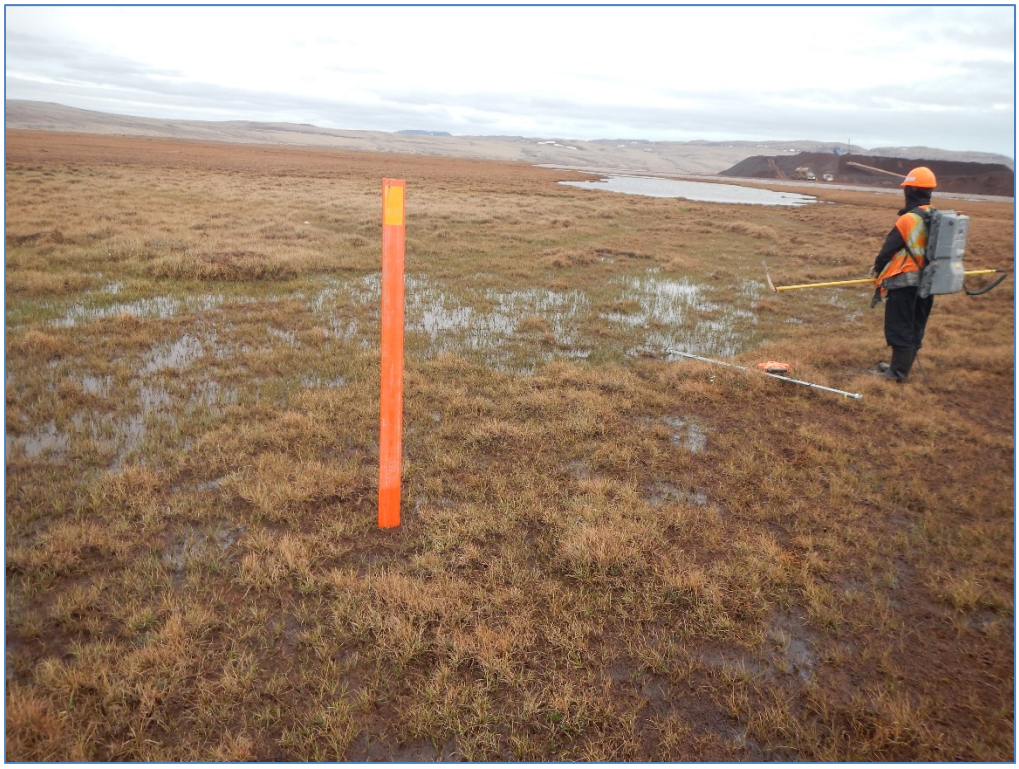

Figure 3. Area between Ponds ML-2 and ML-1 in drainage M5-1 showing lack of connectivity between the two waterbodies.

Figure 4. Stream M5-1 habitat.

Figure 5. View of Stream M3-2 looking downstream towards Phillips Creek.

Figure 6. View of the only wetted area of the entire M3-2 drainage.

Figure 7. Pond 1 at the upstream end of stream M3-2.

Figure 8. Downstream end of Pond 1 showing lack of connectivity to other waterbodies.

Figure 9. Typical habitat in Stream M3-3 near the confluence with Phillips Creek.

Figure 10. Vertical/shallow water barrier at the downstream end of M3-3.

4.0 LITERATURE CITED

Jensen, A.J., Finstad, B., Fiske, P., Hvidsten, N.A., Rikardsen, A.H., and Saksgård, L. 2012. Timing of smolt migration in sympatric populations of Atlantic salmon (*Salmo salar*), brown trout (*Salmo trutta*), and Arctic char (*Salvelinus alpinus*). Can. J. Fish. Aquat. Sci. 69: 711-723.