

Attachment 5

Summary of Corrective Actions and Correspondence with DFO

Summary of Corrective Actions for BG-50, BG-29 and CV-11

The 2018 NIRB Annual Report indicates that at two crossings CV-111 and BG-29 some form of physical obstruction was identified, but that this obstruction was promptly addressed (Section 4.6.6, Page 135). This approach is consistent with the annual culvert maintenance activities along the tote road. As potential issues are identified, follow-up activities are implemented as needed.

(1) CV-111 (HADD compensation site)

(i) Table 4 (page 41 of PDF):

- Under column "Potential Fish Passage or Habitat Issues" the following information is provided: *Rocks at the downstream end of the culvert have shifted to create a high (0.99 m/s) entrance velocity, which likely contributed to the very large difference between upstream (0.34 fish/min) and downstream (8.91 fish/min) CPUE.*

- Under column " Follow-up/Corrective Actions", the following information is provided:

Rocks were rearranged on DS side of culvert to reduce water velocity and provide easier fish passage.

(ii) Table 5 (page 44 of PDF) summarizes culvert maintenance activities for HADD or compensation sites as "Routine only " under column "Additional Corrective Actions and Monitoring Required"

(2) BG-29 (non-HADD/compensation site)

(i) Table 4 (page 41 of PDF):

- Under column "Potential Fish Passage or Habitat Issues" the following information is provided: *Partial blockage of upstream end of culvert by cobble at the time of monitoring.*

- Under column " Follow-up/Corrective Actions", the following information is provided:

Blockage was removed by NSC biologist in September, 2018.

With regards to BG-50, the 2018 Annual Report also clearly indicated the following: "At water crossing BG-50, fish were not captured or observed in the right channel in 2018. Water crossing BG-50 consists of two separate crossings; a free-span bridge over the left channel and a set of culverts in the right channel. The culverts were observed to be perched, impacting upstream fish passage in the right channel. However, upstream habitat at BG-50 remains accessible to fish as a result of no fish passage obstructions being present in the water crossing's left channel." BG-50 allows for fish to move upstream through at least one of the channels non-obstructively through the larger channel with the bridge structure. Regardless, Baffinland remains committed to addressing the perched culverts and has clearly indicated this in the Baffinland (2018) support document. Specific information provided in this report is as follows:

(1) BG-50 (braided stream with bridge (no barrier to fish passage on main channel) and culverts (perched culverts with fish passage concerns on second channel))

(i) Table 4 (page 41 of PDF):

- Under column "Potential Fish Passage or Habitat Issues" the following information is provided:

Left channel with bridge is in excellent condition. Right channel culverts remain perched and fish passage is fully impeded. No fish observed downstream of the right channel culverts, suggesting limited or no use of the right channel.

- Under column " Follow-up/Corrective Actions", the following information is provided:

Culverts in the right-hand channel will need to be re-installed as part of the 2019 culvert work.

(ii) Table 5 (page 44 of PDF) summarizes culvert maintenance activities for HADD or compensation sites as "Reinstallation of currently perched culverts and monitoring" maintenance under column "Additional Corrective Actions and Monitoring Required"

It should be noted that due to the nature of the corrective actions to be implement, consent from the QIA is required to modify this section of the Tote Road, for which no consent of the Tote Road Adjustment Notice has been granted to date. Nevertheless, Baffinland remains committed to executing all available corrective actions in the absence of approval to modify the Tote Road as requested of QIA. Note that fish passage is possible through the bridge structure, which is associated with the larger channel along the multi-braided stream section, thereby ensuring fish have access to upstream habitats when migrating through this channel. Notwithstanding, Baffinland made additional modifications to these channel culverts in 2019 (see below for relevant activities, follow-up actions and associated correspondence between DFO and Baffinland to address issues).

Summary of Correspondence with DFO and Post-2018 Report Submission Corrective Actions

Post-2018 report submission, key relevant activities undertaken by Baffinland as well as key relevant correspondence between Baffinland and DFO with regards to tote road crossings and associated modifications are summarized below:

- 24-27 June 2018 (in-person) - Site visit undertaken by two DFO personnel, Laura Watkinson and D'Arcy Campbell. A number of sites were visited to show DFO existing culvert conditions to allow for input from DFO on potential modifications for improvement.
- 27 June 2018 (in-person) – Site visit follow-up meeting (onsite prior to departure of DFO from Mary River): Key considerations for culvert design were discussed by DFO including culvert embedment, sizing, velocities, gradient, and perch. DFO indicated that they appreciated all of the many improvements made along the tote road. Baffinland asked DFO whether any specific areas should be addressed based on their site visit. DFO responded that nothing formal would be provided, but agreed that some culverts could be improved with some minor work, particularly with regards to improving stabilization and erosion issues.
- 2 July 2019 (via bi-weekly phone call): DFO acknowledges Baffinland's commitment in fixing problem issues and indicated that communication lines between the two parties should be further opened allowing for more back and forth feedback. DFO suggests to Baffinland that it may be beneficial to seek advice from an erosion and sedimentation subject matter expert for managing erosion and sediment at crossings over the long-term.

- End of August/Early September (in-person field visit) – Baffinland undertakes its annual monitoring program to assess existing water crossings along the Tote Road. The field-based assessments were undertaken by experienced fish biologists from North/South Consultants Inc.
- 2 September 2019 (via email) – Proposed plan for corrective actions associated with 8 crossing locations, including the three mentioned by NIRB (i.e., CV-111, BG-29 and BG-50) was sent to DFO (via Laura Watkinson). No additional advice was provided by DFO in response to Baffinland’s submission.
- 3 September 2019 (in-person) - the following assessments and/or corrective actions were undertaken at eight sites on September 3 and 4, 2019, based on identified needs and proposed changes sent to DFO. A brief summary of completed modifications is included below. Further details will be provided in the 2019 Annual Report to the NIRB.
 - (1) CV-129: remedial action taken to address slight perch
 - (2) CV-114: remedial action taken to address slight perch
 - (3) CV-111: remedial action taken to address high perch; reinstallation of culvert may be needing following subsequent assessment.
 - (4) CV-106; remedial action taken to address slight perch; assessment recommended in 2020 to assess functionality of modifications.
 - (5) CV-225; no remedial action at perched culvert taken due to complex needs; additional follow-up is required
 - (6) BG-29; remedial action was taken to remove berm creating barrier to fish movement.
 - (7) CV-216; remedial action taken to address slight perch
 - (8) BG50; remedial actions were taken to address non-functional ramps leading up to two culverts located on two separate channels (and separate to third channel with bridge structure). Additional follow-up is required in spring 2020 because of low flows encountered during construction works. It is noted that although there may be connectivity issues remaining at one of the culvert locations, that fish are not prevented from accessing upstream habitats since the main channel crossing structure is a bridge. It is only at the second channel location, which may encounter lower flows and present barriers under existing culvert designs. Therefore, fish passage is maintained as a whole along this stream.

Baffinland will continue to seek advice from DFO as part of their regular maintenance activities at crossing locations to prevent and remove any fish passage barriers in fish-bearing streams.