Spill Report Number:

21-247

Baffinland

July 15, 2021

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Re: Follow-up to Spill #2021-247
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

Between May 26 and June 9, warming temperatures resulted in snowmelt runoff containing sediment-laden water to watercourses along the Tote Road at six (6) downstream culvert crossings monitored under the Tote Road Monitoring Program (TRMP). External laboratory results for surface water samples collected at these six (6) downstream culvert crossings indicated potential Project related change to water quality, which is defined as a greater than 50 mg/L increase in Total Suspended Solid (TSS) concentrations in the downstream sample when upstream TSS concentrations are less than 250 mg/L. Photos of the culvert crossings, and a map showing the locations are provided in Attachment 1 and Attachment 2, respectively. The sediment-laden water at CV-154-A, CV-115, CV-112 and CV-001 on May 26 and June 1 was reported to the NT-NU Spill Reporting Line on June 15, 2021 following receipt of the external laboratory results. The NT-NU Spill Report (#2021-247) is attached as Attachment 3. Details of the culvert crossing locations where potential Project related change was identified and the associated TSS concentrations are summarized in the following table:

Date	Sample Location (Culvert ID)	Location (UTM; NAD83 Zone 17W)		Upstream (US) TSS Concentration (mg/L)	Downstream (DS) TSS Concentration (mg/L)	Difference Between the DS and US TSS Concentration (mg/L)
		Easting	Northing			
May 26, 2021	CV-001	553544	7914897	29.1	169	139.9
June 1, 2021	CV-154-A	507629	7970074	74.7	455	380.3
June 1 , 2021	CV-112	521033	7954935	230	807	577
June 1, 2021	CV-115	519222	7958135	5.5	114	108.5
June 8, 2021	BG-24	548766	7918878	9.4	60.2	50.8

June 9, 2021	CV-093	523101	7944904	48.9	133	84.1

The source of the sedimentation was snowmelt from snow pack along the Tote Road adjacent to the culvert crossings. The event resulted in sediment-laden water flowing into watercourses along the Tote Road within the Mary River, Phillips Creek and Ravn River watersheds. Attachment 4 outlines the water quality results from monitoring conducted at the six (6) watercourse crossings between May 26 and July 5.

The sampling events that had downstream TSS concentrations above the screening criteria occurred during the May 26 to June 9 period when freshet conditions resulted in elevated sediment loading into the affected watercourses over a short period of time. Following this period, results for subsequent sampling events demonstrated that there were no Project related changes to water quality as a result of the operation of the Tote Road.

Immediate and Follow-Up Action:

Upon discovery of the elevated instream TSS conditions at these downstream culvert crossing locations, field investigations of the affected culvert crossings were completed. Erosion and sediment control measures were subsequently implemented where possible. Culverts CV-115 and CV-093 have had riprap placed at the inlet and outlet culvert embankments in accordance with the Surface Water Aquatic Effects Management Plan to slow runoff water flow and settle sediments prior to the water entering the streams. Road maintenance will complete the armoring with riprap of the remaining culvert embankments as soon as resources become available.

In preparation for freshet 2021, permanent erosion and sediment control measures were implemented during 2020 including a culvert replacement at KM 58 to improve water flow, and the construction of turbidity check dams at KM 33 to reduce runoff water flow and sediment transport.

Prior to the start of freshet 2021, excess snow along the Tote Road was removed and relocated to approved snow stockpile locations, to reduce the amount of surface water runoff from snowmelt. Additional excess snow around the inlets and outlets of select culvert locations was removed to further reduce the volume of snowmelt and subsequent amount of overland flow present to mobilize sediment. Steam was applied to culverts as necessary to remove ice and snow blockages to ensure the effective movement of water during freshet conditions.

Current Status:

Conditions at Tote Road culvert crossings CV-001, CV-154-A, CV-112, CV-115, BG-24 and CV-093, as well as other Tote Road culvert crossing locations, are currently being sampled and assessed as per the TRMP. TRMP monitoring is ongoing, beginning with the annual start of flow and continuing until the freeze-up of flows in September. In accordance with the TRMP, water quality monitoring at TRMP culvert crossings is conducted weekly for the duration of the freshet season and is reduced to a monthly frequency effective July 16 until the freeze-up of flows. Where appropriate, permanent corrective actions to stabilize roadway embankments and disturbed ground in the vicinity of CV-115 and CV-093 affected culvert crossings have been identified and completed. Road maintenance will complete permanent corrective actions at the remaining identified culverts and embankments as soon as resources become available. The permanent corrective actions implemented to address the sediment releases at the affected watercourse crossings will be summarized in the 2021 QIA and

NWB Annual Report for Operations. Routine maintenance of ESC measures will be performed as necessary to ensure their effective operation.

Should you require further information or clarification on the incident described above, please feel free to contact Connor Devereaux or Kendra Button (647) 253-0596 (ext. 6016).

Prepared by:

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Reviewed by:

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Attachments

Attachment 1: Photos
Attachment 2: TRMP Culvert Crossing Monitoring Locations
Attachment 3: Baffinland NT-NU Spill Report #2021-247
Attachment 4: Surface Water Quality Results

Attachment 1

Photos

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CV-001 Culvert Crossing

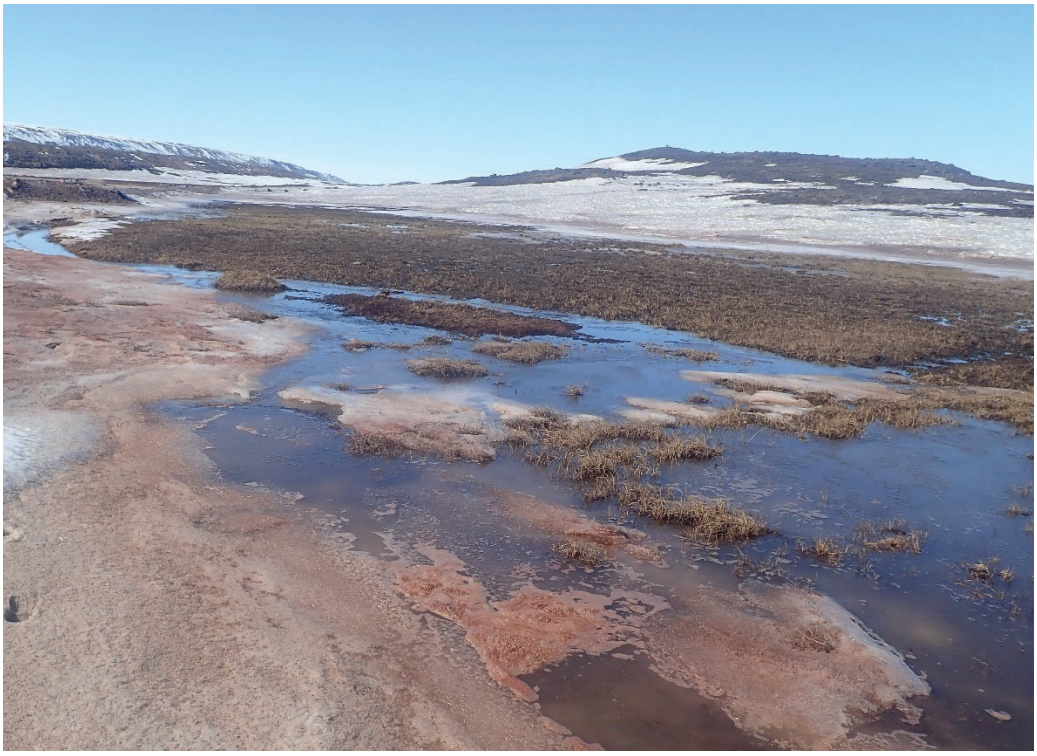

Photo 1. CV-001 Culvert Crossing Upstream on May 26, 2021

Photo 2. CV-001 Culvert Crossing Downstream on May 26, 2021

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Photo 3. CV-001 Culvert Crossing Downstream on May 31, 2021

Photo 4. CV-001 Culvert Crossing Downstream on June 8, 2021

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CV-154-A Culvert Crossing

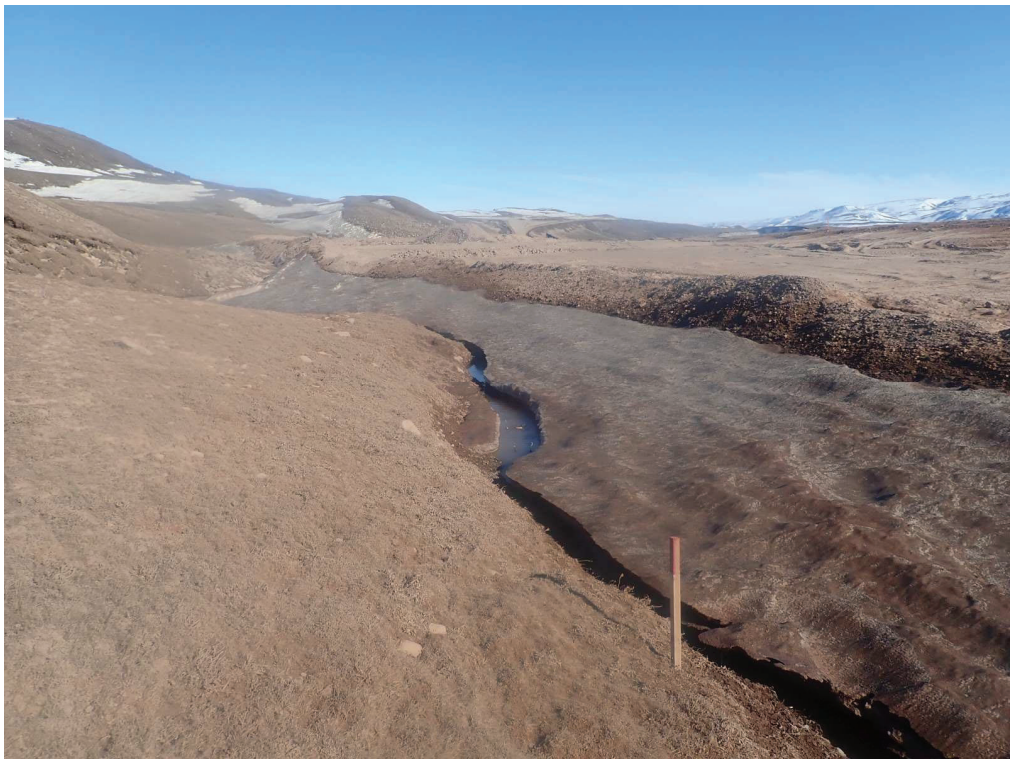

Photo 1. CV-154-A Culvert Crossing Upstream on June 1, 2021

Photo 2. CV-154-A Culvert Crossing Downstream on June 1, 2021

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Photo 3. CV-154-A Culvert Crossing Downstream on June 10, 2021

Photo 4. CV-154-A Culvert Crossing Downstream on July 11, 2021

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CV-112 Culvert Crossing

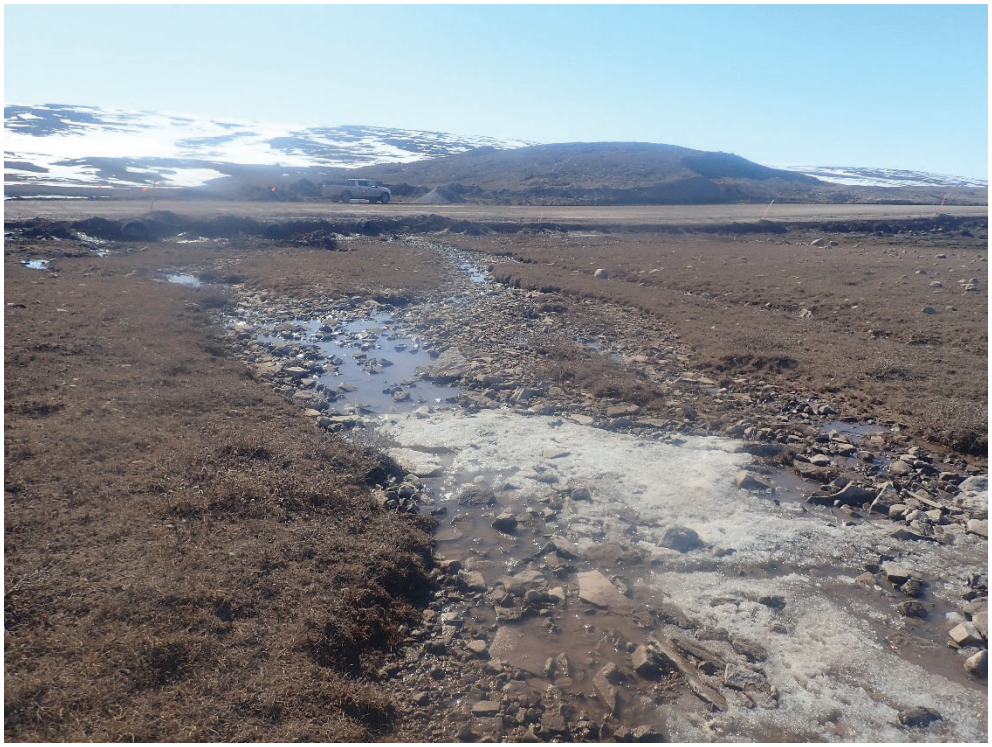

Photo 1. CV-112 Culvert Crossing Upstream on June 1, 2021

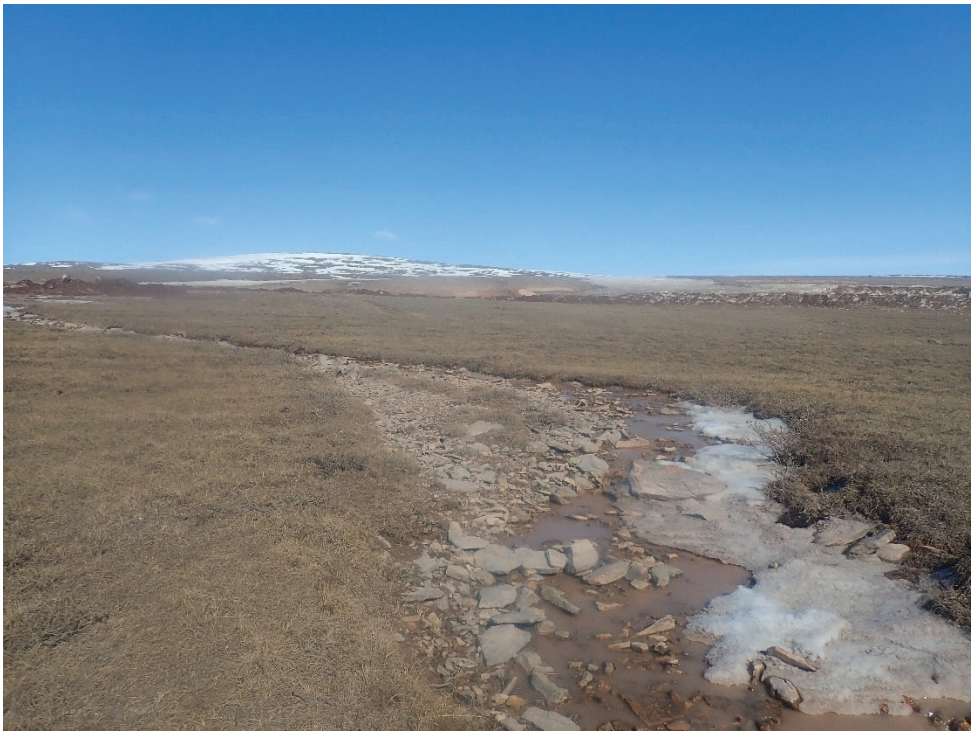

Photo 2. CV-112 Culvert Crossing Downstream on June 1, 2021

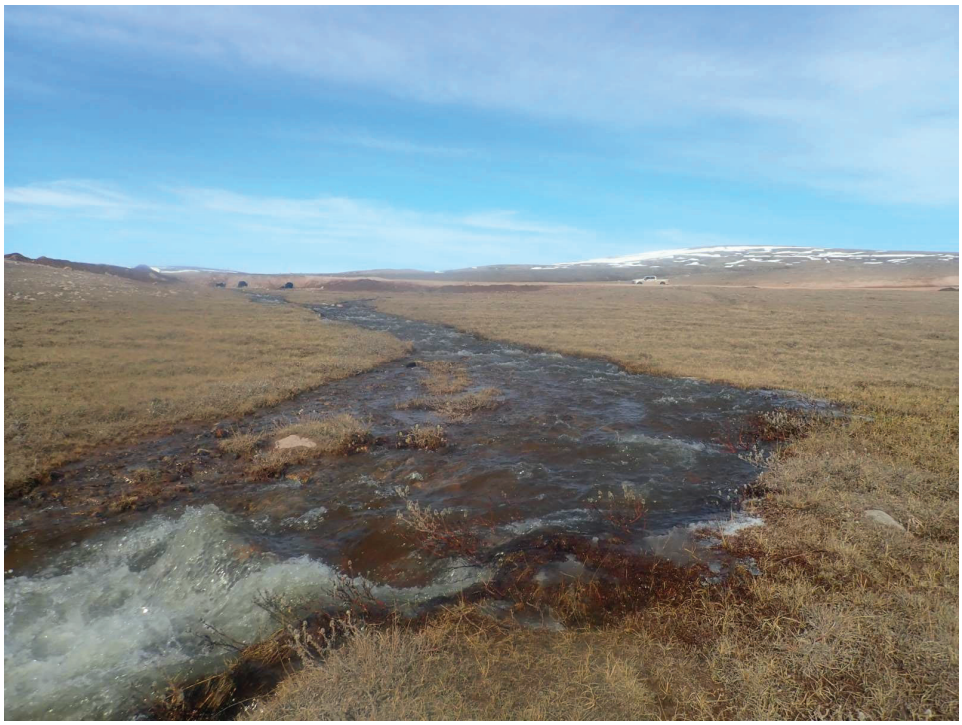

Photo 3. CV-112 Culvert Crossing Downstream on June 9, 2021

Photo 4. CV-112 Culvert Crossing Downstream on July 11, 2021

CV-115 Culvert Crossing

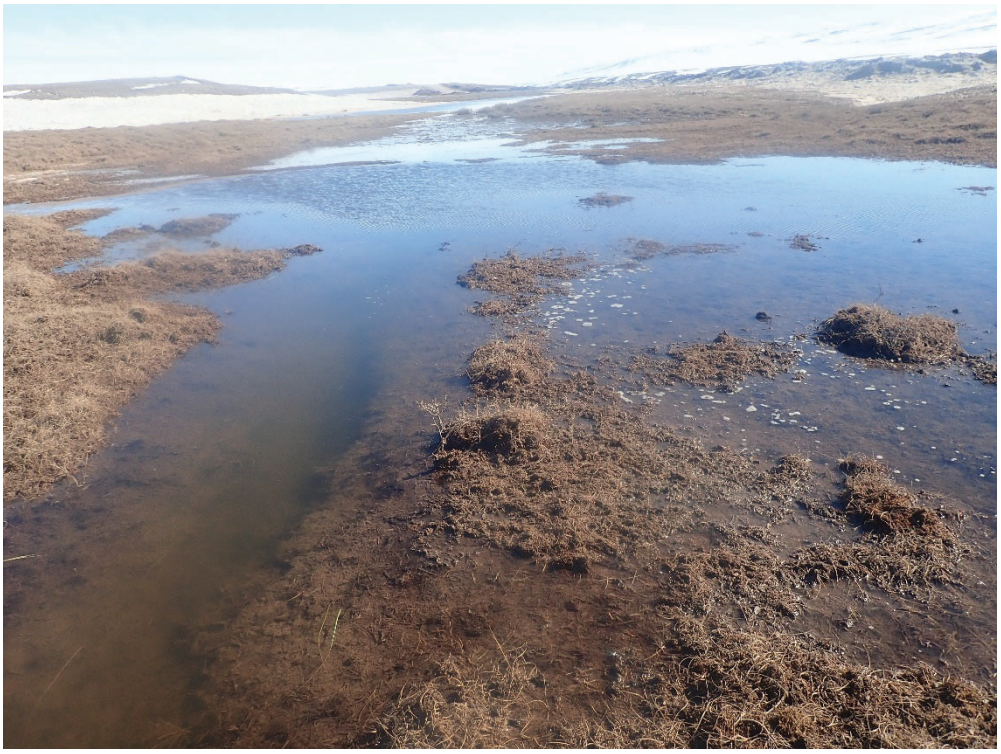

Photo 1. CV-115 Culvert Crossing Upstream on June 1, 2021

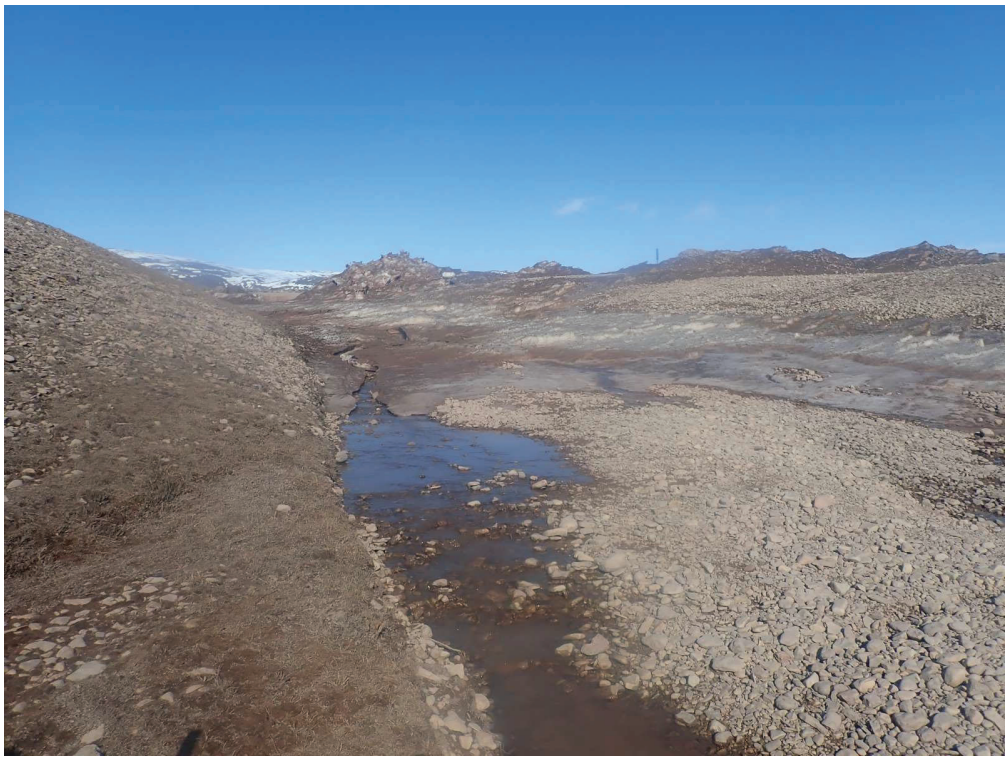

Photo 2. CV-115 Culvert Crossing Downstream on June 1, 2021

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Photo 3. CV-115 Culvert Crossing Downstream on June 9, 2021

Photo 4. CV-115 Culvert Crossing Upstream July 9 2021

Photo 5. CV-115 Culvert Crossing Downstream July 9 2021

Photo 6. CV-115 Culvert Crossing Downstream July 11 2021