Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-89-1 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 545492 7921173

Photographs

A B C

Figure 5. Summer (top) and fall (bottom) views of CV-89-1 at the 20 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-89-1 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 545492 7921173

Photographs

A B C

Figure 6. Summer (top) and fall (bottom) views of CV-89-1 at the rail crossing; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-89-1 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 545492 7921173

Photographs

NO PHOTO **NO PHOTO** **NO PHOTO**

A

B

C

Figure 7. Summer (top) and fall (bottom) views of CV-89-1 at the 20 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-89-1 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 545492 7921173

Photographs

A **B** **C**

Figure 8. Summer (top) and fall (bottom) views of CV-89-1 at the 40 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-89-1 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 545492 7921173

Photographs

A **B** **C**

Figure 9. Summer (top) and fall (bottom) views of CV-89-1 at the 60 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-89-1 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 545492 7921173

Photographs

A **B** **C**

Figure 10. Summer (top) and fall (bottom) views of CV-89-1 at the 80 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-89-1 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 545492 7921173

Photographs

A B C

Figure 11. Summer (top) and fall (bottom) views of CV-89-1 at the 100 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-89-2 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 545729 7921121

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** N/A **Flow Regime:** Open Water

Fisheries Data

Gear Used: Backpack Electrofisher **Effort (min):** 3.17 **Transect Length (m):** 100

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing is an isolated pond with a maximum depth of 1.0 m. Fish were not captured or observed during surveys. There is no fish use of habitat at this crossing.

Photographs

A **B** **C**

Figure 1. Views of CV-89-2 at the crossing during summer (A) and (B), and during fall (C).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-90-1 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 545902 7921048

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** N/A **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing is a nearly dry low point adjacent to a very shallow, isolated pond. There is no fish use of habitat at this crossing.

Photographs

A **B**

Figure 1. Views of CV-90-1 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-90-2 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 546181 7920409

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 1-5 **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing is nearly dry with a few isolated pools and no connections to other waterbodies. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-90-2 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-90-3 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 546240 7920244

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 1-5 **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing area is mostly dry or nearly so with a few short reaches of shallow surface flow and no connections to other waterbodies. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-90-3 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-90-4 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 546459 7920041

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** > 10 **Flow Regime:** Open Water

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing stream is small and flows into a fish-bearing lake downstream of the Tote Road. However, only about the lowermost 20 m downstream of the road culverts is usable by fish. Avery steep gradient upstream of the road prevents fish use as noted during Tote Road surveys. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-90-4 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-91-0 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 546858 7919853

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** > 10 **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing is shallow, steep and there is intermittent surface water downstream with no connections to other waterbodies. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-91-0 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-91-1 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 546928 7919820

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** > 10 **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was nearly dry, was very steep and there is no access under all flow conditions. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-91-1 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-91-2 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 547012 7919781

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** > 10 **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing is a tributary of CV-91-0 and shares the same downstream barriers and lack of connection to overwintering habitat. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-91-2 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-1 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 547173 7919694

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** N/A **Flow Regime:** Open Water

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

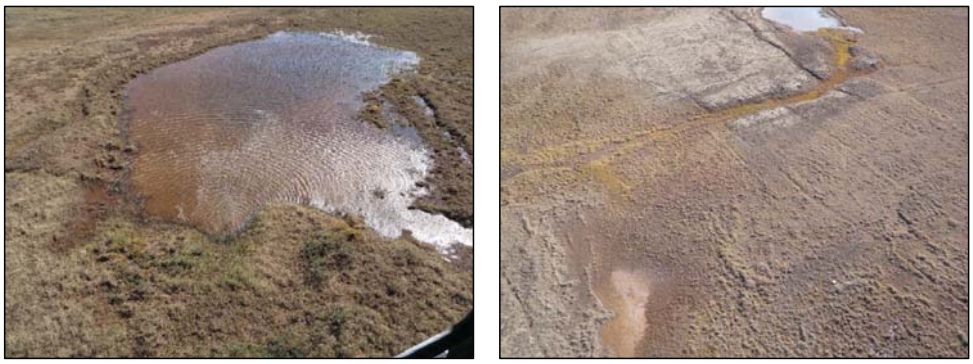
Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing is a very shallow (< 0.5 m), isolated pond and adjacent dry stream. There is no fish use of habitat at this crossing.

Photographs



A **B**

Figure 1. Views of CV-92-1 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-1b | **Dates Surveyed:** 4 July & 2 September, 2018 | **UTM Coordinates:** 17 W 547125 7919725

General Physical Characteristics

Channel Confinement: UC | **Channel Gradient (range):** N/A | **Flow Regime:** None

Fisheries Data

Gear Used: Not Fished | **Effort (min):** N/A | **Transect Length (m):** N/A

Fish Habitat Potential

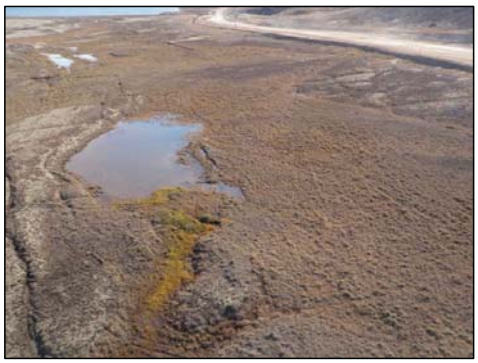
Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing is a dry spot with no connections to overwintering habitat. There is no fish use of habitat at this crossing.

Photographs

A



B

Figure 1. Views of CV-92-1b at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-2 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 547416 7919506

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** 5-10 **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

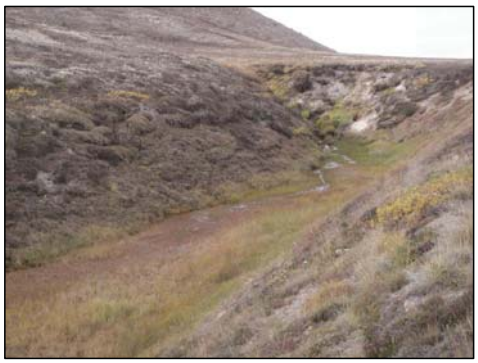
Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing is nearly dry with frequent loss of surface flow and no connections to overwintering habitat. There is no fish use of habitat at this crossing.

Photographs

A



B

Figure 1. Views of CV-92-2 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-3 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 547521 7919456

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** > 10 **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was low in summer and nearly dry in fall and connected only to a shallow downstream pond. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-92-3 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-4 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 547721 7919363

General Physical Characteristics

Channel Confinement: PC **Channel Gradient (range):** > 10 **Flow Regime:** None

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a dry hillside. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-92-4 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-5 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 547879 7919262

General Physical Characteristics

Channel Confinement: PC **Channel Gradient (range):** 5-12° **Flow Regime:** Open Water

Hydrology & Habitat Characteristics

Site	Channel Width (m)		Water Depth (m) (Summer/Fall)				Water Velocity (m/s) (Summer/Fall)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	5.0	- / 1.9	- / 0.03	- / 0.06	- / 0.04	- / 0.10	- / 0.05	- / 0.37	- / 0.15	- / 0.40
80D	TOTE ROAD CROSSING									
60D	3.0	- / 2.7	- / 0.07	- / 0.05	- / 0.05	- / 0.10	- / 0.18	- / 0.20	- / 0.20	- / 0.25
50D	4.4	2.2 / -	0.18 / -	- / -	0.10 / -	0.20 / -	0.89 / -	- / -	0.48 / -	0.95 / -
40D	-	- / 1.8	- / 0.10	- / 0.08	- / -	- / 0.10	- / 0.31	- / 0.09	- / -	- / 0.40
20D	-	- / 1.8	- / 0.16	- / -	- / 0.05	- / 0.20	- / 0.20	- / -	- / 0.30	- / 0.40
0	7.6	3.0 / 2.1	0.12 / 0.07	- / -	0.04 / 0.05	0.15 / 0.10	0.63 / 0.26	- / -	0.19 / 0.04	0.65 / 0.35
20U	-	- / 1.5	- / -	- / 0.10	- / -	- / 0.10	- / -	- / 0.26	- / -	- / 0.30
40U	-	- / 1.2	- / -	- / 0.11	- / -	- / 0.15	- / -	- / 0.30	- / -	- / 0.40
50U	5.8	3.8 / -	0.18 / -	- / -	0.10 / -	0.20 / -	0.18 / -	- / -	0.10 / -	0.20 / -
60U	-	- / 3.2	- / 0.05	- / -	- / 0.05	- / 0.10	- / 0.75	- / -	- / 0.19	- / 0.75
80U	-	- / 2.3	- / 0.05	- / -	- / 0.07	- / 0.10	- / 0.17	- / -	- / 0.13	- / 0.25
100U	-	- / 2.2	- / 0.06	- / -	- / 0.04	- / 0.10	- / 0.09	- / -	- / 0.27	- / 0.30

Site	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	70	20	-	-	10	-	-	10	90	-	-
80D	TOTE ROAD CROSSING										
60D	60	30	-	-	10	-	-	-	90	10	-
50D	80	10			10		-	-	80	20	-
40D	40	20	-	-	40	-	-	-	70	30	-
20D	30	30	-	-	40	-	-	-	60	40	-
0	15	25	-	-	60	-	-	-	70	30	-
20U	50	20	-	-	30	-	-	-	70	30	-
40U	40	20	-	-	40	-	-	-	70	30	-
50U	-	10	-	-	90	-	-	-	70	30	-
60U	30	20	-	-	50	-	-	-	70	30	-
80U	20	40	-	-	40	-	-	-	70	30	-
100U	20	50	-	-	30	-	-	-	70	30	-

Baffinland Iron Mines
Mary River Project

North/South Consultants Inc.
Aquatic Environment Specialists

Fish Habitat Quality

Arctic Char - IMPORTANT

Ninespine Stickleback – NOT FISH-BEARING

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-5 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 547879 7919262

Fisheries Data

Gear Used: Backpack Electrofisher **Transect length (m):** 100

Species	Season	Effort (min)	Total Caught/Observed	CPUE	Length Range (mm)
ARCH		2.82	25	8.88	50 - 125
		-	N/A	N/A	N/A
NNST		2.82	0	-	N/A
		-	N/A	N/A	N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	H	N
NNST	N	N	N	N

Comments & Summary

The rail crossing is upstream of the Tote Road on a known fish-bearing stream. Good quality habitat present throughout the open water season, although periods of low flow can limit its use by juvenile char.

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char - IMPORTANT** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-5 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 547879 7919262

Photographs

NO PHOTO **NO PHOTO** **NO PHOTO**

A

B

C

Figure 1. Summer (top) and fall (bottom) views of CV-92-5 at the 100 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-5 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 547879 7919262

Photographs

NO PHOTO **NO PHOTO** **NO PHOTO**

A **B** **C**

Figure 2. Summer (top) and fall (bottom) views of CV-92-5 at the 60 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-5 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 547879 7919262

Photographs

NO PHOTO

NO PHOTO

NO PHOTO

A **B** **C**

Figure 3. Summer (top) and fall (bottom) views of CV-92-5 at the 50 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-5 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 547879 7919262

Photographs

NO PHOTO **NO PHOTO** **NO PHOTO**

A **B** **C**

Figure 4. Summer (top) and fall (bottom) views of CV-92-5 at the 40 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-5 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 547879 7919262

Photographs

NO PHOTO **NO PHOTO** **NO PHOTO**

A

B

C

Figure 5. Summer (top) and fall (bottom) views of CV-92-5 at the 20 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-5 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 547879 7919262

Photographs

A B C

Figure 6. Summer (top) and fall (bottom) views of CV-92-5 at the rail crossing; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-5 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 547879 7919262

Photographs

NO PHOTO **NO PHOTO** **NO PHOTO**

A **B** **C**

Figure 7. Summer (top) and fall (bottom) views of CV-92-5 at the 20 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-5 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 547879 7919262

Photographs

NO PHOTO **NO PHOTO** **NO PHOTO**

A **B** **C**

Figure 8. Summer (top) and fall (bottom) views of CV-92-5 at the 40 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-5 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 547879 7919262

Photographs

NO PHOTO

NO PHOTO

NO PHOTO

A **B** **C**

Figure 9. Summer (top) and fall (bottom) views of CV-92-5 at the 50 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-5 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 547879 7919262

Photographs

NO PHOTO **NO PHOTO** **NO PHOTO**

A **B** **C**

Figure 10. Summer (top) and fall (bottom) views of CV-92-5 at the 60 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-5 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 547879 7919262

Photographs

NO PHOTO **NO PHOTO** **NO PHOTO**

A

B

C

Figure 11. Summer (top) and fall (bottom) views of CV-92-5 at the 80 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-5 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 547879 7919262

Photographs

NO PHOTO **NO PHOTO** **NO PHOTO**

A

B

C

Figure 12. Summer (top) and fall (bottom) views of CV-92-5 at the 100 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-6 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 547927 7919241

General Physical Characteristics

Channel Confinement: PC **Channel Gradient (range):** N/A **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a nearly dry low point. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-92-6 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-7 & CV-92-8 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 548001 7919220 & 17 W 548033 7919215

General Physical Characteristics

Channel Confinement: PC **Channel Gradient (range):** 5 to > 10 **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

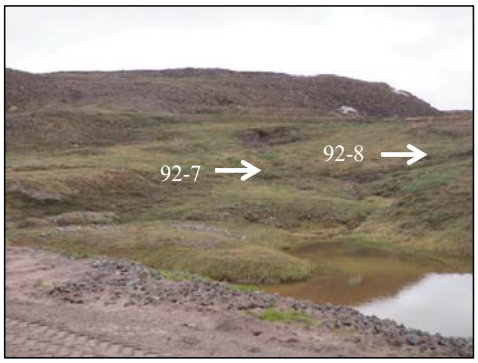
Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossings were nearly dry, very small, steep trickles on a hillside upstream of the Tote Road. There is no access under all flow conditions. There is no fish use of habitat at this crossing.

Photographs



A

B

C

Figure 1. Views of CV-92-7 & 92-8 at the crossing during summer (A) and fall (B) and (C).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-92-9 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 548062 7919211

General Physical Characteristics

Channel Confinement: PC **Channel Gradient (range):** 5 to > 10 **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a nearly dry, very small, steep trickle on a hillside upstream of the Tote Road. There is no access under all flow conditions. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-92-9 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-1 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 548228 7919188

General Physical Characteristics

Channel Confinement: PC **Channel Gradient (range):** 5 to > 10 **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a nearly dry, very small, steep trickle flowing into a fishless pond. There is no access under all flow conditions. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-93-1 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-2 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 548355 7919148

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 5 to > 10 **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a dry hillside. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-93-2 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-3 **Dates Surveyed:** 9 July & 27 August, 2018 **UTM Coordinates:** 17 W 548601 7918857

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 5 to > 10 **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a dry hillside. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-93-3 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-3a | **Dates Surveyed:** 9 July & 27 August, 2018 | **UTM Coordinates:** 17 W 548670 7918765

General Physical Characteristics

Channel Confinement: UC | **Channel Gradient (range):** 5 to > 10 | **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished | **Effort (min):** N/A | **Transect Length (m):** N/A

Fish Habitat Potential

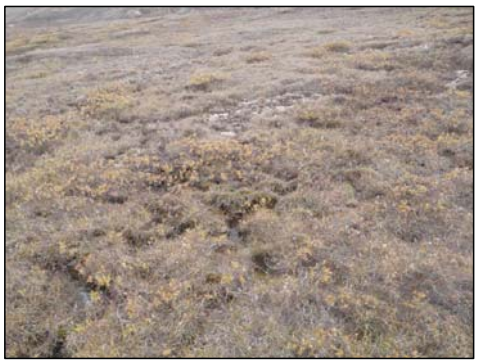
Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a very small trickle on a hillside. There is no fish use of habitat at this crossing.

Photographs

A



B

Figure 1. Views of CV-93-3a at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-4 **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 548770 7918691

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 5-10° **Flow Regime:** Open Water

Hydrology & Habitat Characteristics

Site	Channel Width (m)		Water Depth (m) (Summer/Fall)				Water Velocity (m/s) (Summer/Fall)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	5.7	2.7 / 4.8	0.12 / 0.14	0.36 / -	0.20 / 0.05	0.40 / 0.20	0.54 / 0.50	1.06 / -	0.92 / 0.05	1.20 / 0.60
80D	5.3	4.9 / 4.9	0.18 / 0.10	0.18 / -	0.08 / 0.07	0.25 / 0.15	0.97 / 0.43	0.76 / -	0.10 / 0.33	1.10 / 0.55
60D	6.8	6.3 / 5.1	0.10 / 0.06	0.03 / -	0.06 / 0.16	0.20 / 0.20	0.57 / 0.15	0.20 / -	0.67 / 0.22	0.75 / 0.30
40D	16.9	11.6 / 3.7	0.04 / 0.11	0.24 / -	0.09 / 0.15	0.30 / 0.20	0.19 / 0.35	0.60 / -	0.16 / 0.13	0.70 / 0.40
20D	18.5	6.2 / 4.3	0.09 / 0.12	0.10 / -	0.15 / 0.10	0.20 / 0.15	0.71 / 0.38	0.45 / -	0.21 / 0.00	0.80 / 0.45
0	9.9	4.2 / 3.6	0.06 / -	0.15 / 0.10	0.17 / 0.10	0.20 / 0.15	0.22 / -	0.88 / 0.07	0.46 / 0.07	0.95 / 0.15
20U	12.9	11.3 / 11.3	0.16 / 0.10	0.08 / -	0.16 / 0.12	0.25 / 0.15	0.25 / 0.39	0.29 / -	0.19 / 0.06	0.40 / 0.40
40U	8.4	7.6 / 4.3	0.20 / 0.11	0.17 / -	0.03 / 0.10	0.25 / 0.15	0.45 / 0.83	0.15 / -	0.10 / 0.09	0.50 / 0.85
60U	7.6	7.0 / 4.2	0.13 / 0.10	0.25 / 0.10	0.10 / 0.12	0.30 / 0.15	1.02 / 0.31	0.57 / 0.00	0.40 / 0.10	1.10 / 0.40
80U	7.4	6.0 / 4.2	0.24 / 0.17	0.06 / 0.10	0.22 / 0.13	0.30 / 0.20	0.13 / 0.09	0.08 / 0.19	0.53 / 0.15	0.60 / 0.25
100U	4.8	4.0 / 4.0	0.08 / 0.11	0.06 / -	0.14 / 0.12	0.20 / 0.15	0.27 / 0.13	0.20 / -	0.73 / 0.20	0.80 / 0.25

Site	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	70	25	5	-	-	-	-	-	70	30	-
80D	70	30	-	-	-	-	-	-	70	30	-
60D	60	25	-	-	15	-	-	-	70	30	-
40D	50	20	5	-	25	-	-	-	60	40	-
20D	45	25	-	-	30	-	-	-	60	40	-
0	30	30	-	-	40	-	-	-	60	40	-
20U	30	25	-	-	45	-	-	-	60	40	-
40U	30	25	5	-	40	-	-	-	60	40	-
60U	25	20	5	-	50	-	-	-	60	40	-
80U	25	25	5	-	45	-	-	-	60	40	-
100U	30	20	-	-	50	-	-	-	60	40	-

Baffinland Iron Mines
Mary River Project

North/South Consultants Inc.
Aquatic Environment Specialists

Fish Habitat Quality

Arctic Char - IMPORTANT

Ninespine Stickleback – NOT FISH-BEARING

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-4 **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 548770 7918691

Fisheries Data

Gear Used: Backpack Electrofisher **Transect length (m):** 100

Species	Season	Effort (min)	Total Caught/Observed	CPUE	Length Range (mm)
ARCH	Summer	6.15	59	9.59	42 - 230
	Fall	-	N/A	N/A	N/A
NNST	Summer	6.15	0	-	N/A
	Fall	-	N/A	N/A	N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	H	N
NNST	N	N	N	N

Comments & Summary

The rail crossing is a short distance upstream from Tote Road crossing BG-24, which has consistently provided important fish habitat throughout the open-water period. Several size classes of juvenile char use habitat in this stream. Fishing was not conducted during fall, but fewer numbers of fish were observed as most had already moved downstream to David Lake for overwintering.

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char - IMPORTANT** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-4 **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 548770 7918691

Photographs

A B C

Figure 1. Summer (top) and fall (bottom) views of CV-93-4 at the 100 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-4 **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 548770 7918691

Photographs

A B C

Figure 2. Summer (top) and fall (bottom) views of CV-93-4 at the 80 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-4 **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 548770 7918691

Photographs

A **B** **C**

Figure 3. Summer (top) and fall (bottom) views of CV-93-4 at the 60 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-4 **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 548770 7918691

Photographs

A B C

Figure 4. Summer (top) and fall (bottom) views of CV-93-4 at the 40 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-4 **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 548770 7918691

Photographs

A B C

Figure 5. Summer (top) and fall (bottom) views of CV-93-4 at the 20 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-4 **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 548770 7918691

Photographs

A B C

Figure 6. Summer (top) and fall (bottom) views of CV-93-4 at the rail crossing; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-4 **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 548770 7918691

Photographs

A B C

Figure 7. Summer (top) and fall (bottom) views of CV-93-4 at the 20 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-4 **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 548770 7918691

Photographs

A **B** **C**

Figure 8. Summer (top) and fall (bottom) views of CV-93-4 at the 40 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-4 **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 548770 7918691

Photographs

A **B** **C**

Figure 9. Summer (top) and fall (bottom) views of CV-93-4 at the 60 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-4 **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 548770 7918691

Photographs

A **B** **C**

Figure 10. Summer (top) and fall (bottom) views of CV-93-4 at the 80 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

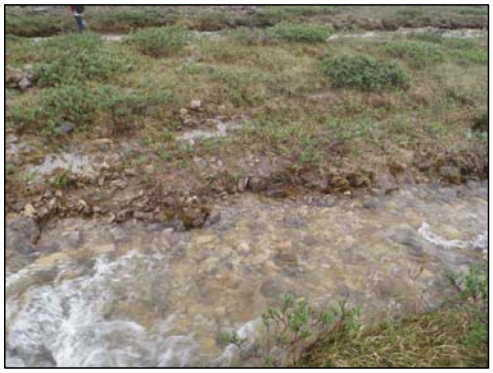
Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-4 **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 548770 7918691

Photographs






NO PHOTO

A **B** **C**

Figure 11. Summer (top) and fall (bottom) views of CV-93-4 at the 100 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-4a **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 548749 7918703

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 5-10° **Flow Regime:** Intermittent

Hydrology & Habitat Characteristics

Site	Channel Width (m)		Water Depth (m) (Summer/Fall)				Water Velocity (m/s) (Summer/Fall)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
0	-	-	-	-	-	~0.05	-	-	-	0.00

Site	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
0	-	100	-	-	-	-	-	10	70	20	-

Baffinland Iron Mines **Mary River Project**	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char - NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-4a **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 548749 7918703

Fisheries Data

Gear Used: Not fished **Transect length (m):** N/A

Species	Season	Effort (min)	Total Caught/Observed	CPUE	Length Range (mm)
ARCH	Summer	-	N/A	N/A	N/A
	Fall	-	N/A	N/A	N/A
NNST	Summer	-	N/A	N/A	N/A
	Fall	-	N/A	N/A	N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	L	N
NNST	N	N	N	N

Comments & Summary

This branch of CV-93-4 (an important juvenile char stream) only provides habitat when flows are very high. At the time of the 2018 surveys, the channel was nearly dry and unconnected to CV-93-4. Habitat use is intermittent.

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char - NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-4a **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 548749 7918703

Photographs

A **B** **C**

Figure 1. Summer (top) and fall (bottom) views of CV-93-4a at the rail crossing.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-4b | **Dates Surveyed:** 10 July & 27 August, 2018 | **UTM Coordinates:** 17 W 548701 7918736

General Physical Characteristics

Channel Confinement: UC | **Channel Gradient (range):** 3-8° | **Flow Regime:** Open Water

Fisheries Data

Gear Used: Not Fished | **Effort (min):** N/A | **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing stream is a tributary of CV-93-4, which is known to be fish-bearing; however there is a vertical drop barrier at the confluence. The barrier prevents access under all flow conditions. There is no fish use of habitat at this crossing.

Photographs

A

B

C

Figure 1. Views of CV-93-4b at the crossing during summer, looking upstream (A) downstream (B) and across (C).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-93-4b **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 548701 7918736

Photographs

A

Figure 2. View of CV-93-4b during fall.

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING**
			Ninespine Stickleback – NOT FISH-BEARING

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-94-1 **Dates Surveyed:** 4 July & 27 August, 2018 **UTM Coordinates:** 17 W 548899 7918649

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** N/A **Flow Regime:** None

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

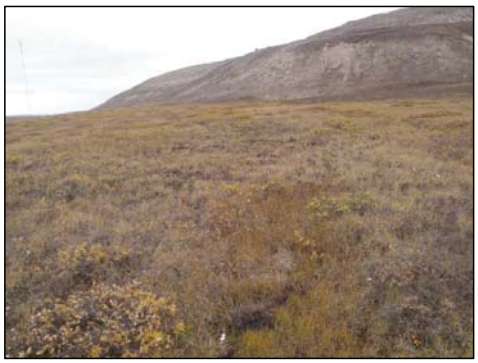
Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a dry hillside. There is no fish use of habitat at this crossing.

Photographs

A



B

Figure 1. Views of CV-94-1 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-94-2 **Dates Surveyed:** 4 July & 27 August, 2018 **UTM Coordinates:** 17 W 549840 7918391

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** > 10° **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

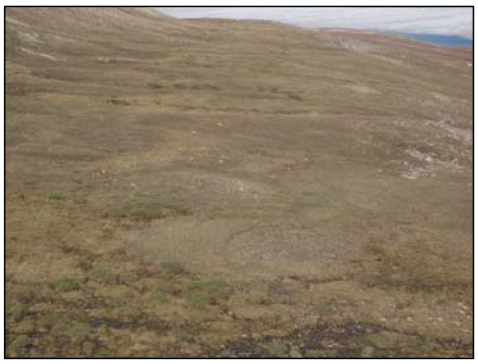
Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was nearly dry in summer and dry in fall 2018. There is never a connection with overwintering habitat. There is no fish use of habitat at this crossing.

Photographs



A

B

Figure 1. Views of CV-94-2 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-95-1 **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 550005 7918257

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** N/A **Flow Regime:** None

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a dry low point. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-95-1 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-95-2 **Dates Surveyed:** 10 July & 27 August, 2018 **UTM Coordinates:** 17 W 550144 7918111

General Physical Characteristics

Channel Confinement: PC **Channel Gradient (range):** > 10° **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was nearly dry in summer and dry in fall 2018. The limited amount of water flowed under rocks at the crossing and dispersed over terrestrial vegetation downstream. There would be no access under any flow conditions. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-95-2 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-95-3 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550483 7917613

General Physical Characteristics

Channel Confinement: PC **Channel Gradient (range):** 5 to > 15° **Flow Regime:** Open Water

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a small trickle flowing from the hills into a small, isolated lake. There is a large, vertical drop at the confluence with the lake that is impassable under all flow conditions. There is no fish use of habitat at this crossing.

Photographs

A

B

C

Figure 1. Views of CV-95-3 at the crossing during summer, looking upstream (A) downstream (B) and across (C).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-95-3 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550483 7917613

Photographs

A

B

C

Figure 2. Views of CV-95-3 at the crossing during fall, looking upstream (A) downstream (B) and across (C).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING**
			Ninespine Stickleback – NOT FISH-BEARING

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-95-4 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550630 7917484

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 1-4° **Flow Regime:** Open Water

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

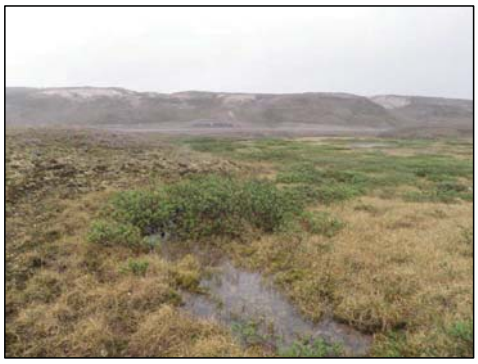
Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a small, shallow trickle flowing across the tundra towards the CV-96-1 fish-bearing stream. However, there is a vertical barrier from 50-70 m downstream of the crossing and another at the confluence with 96-1 that are impassable under all flow conditions. There is no fish use of habitat at this crossing.

Photographs

A



B

C

Figure 1. Views of CV-95-4 at the crossing during summer, looking upstream (A) downstream (B) and across (C).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

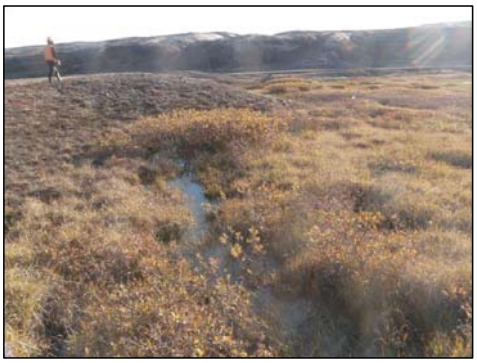
Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-95-4 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550630 7917484

Photographs

A



B

C

Figure 2. Views of CV-95-4 at the crossing during fall, looking upstream (A) downstream (B) and across (C).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING**
			Ninespine Stickleback – NOT FISH-BEARING

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-95-5 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550708 7917426

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 1-4° **Flow Regime:** Open Water

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a shallow marshy spot with little flow and no connections to other waterbodies. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-95-5 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-95-5a | **Dates Surveyed:** 10 July & 30 August, 2018 | **UTM Coordinates:** 17 W 550781 7917371

General Physical Characteristics

Channel Confinement: C | **Channel Gradient (range):** 5 to > 15° | **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished | **Effort (min):** N/A | **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a steep hillside trickle with little surface flow. There may be some fish use of habitat near the downstream confluence with CV-96-1 under high flows, but fish cannot access habitat at the rail crossing due to the steep barrier. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-95-5a at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-95-6 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550832 7917333

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** 5 to > 15° **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a nearly dry to dry steep hillside trickle flowing into CV-96-1. There is no access under any flow conditions. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-95-6 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-95-7 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550885 7917294

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 5 to > 15° **Flow Regime:** None

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a dry hillside. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-95-7 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-96-1 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550924 7917265

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** 1-3° **Flow Regime:** Open Water

Hydrology & Habitat Characteristics

Site	Channel Width (m)		Water Depth (m) (Summer/Fall)				Water Velocity (m/s) (Summer/Fall)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	7.7	7.7 / 5.7	0.18 / 0.18	0.10 / 0.16	0.07 / 0.24	0.30 / 0.30	0.49 / 0.07	0.44 / 0.23	0.17 / 0.51	0.55 / 0.55
80D	10.5	10.0 / 5.8	0.30 / 0.30	0.13 / 0.10	0.14 / 0.12	0.40 / 0.35	0.08 / 0.49	0.13 / 0.33	0.54 / 0.17	0.60 / 0.55
60D	16.0	15.0 / 12.6	0.22 / 0.24	- / -	- / -	0.25 / 0.25	0.06 / 0.05	- / -	- / -	0.15 / 0.15
40D	14.5	13.0 / 11.6	0.14 / 0.22	0.24 / -	0.20 / -	0.30 / 0.25	0.06 / 0.06	0.08 / -	0.09 / -	0.15 / 0.10
20D	9.0	8.0 / 8.1	0.40 / 0.02	- / 0.28	- / -	0.45 / 0.35	0.12 / 0.05	- / 0.26	- / -	0.20 / 0.30
0	11.0	10.0 / 8.2	0.50 / -	- / 0.19	- / -	0.50 / 0.30	0.10 / -	- / 0.08	- / -	0.15 / 0.15
20U	10.0	9.0 / 7.0	0.30 / -	- / 0.43	- / -	0.35 / 0.50	0.36 / -	- / 0.02	- / -	0.40 / 0.15
40U	14.0	12.0 / 10.4	0.20 / 0.10	0.14 / 0.04	0.05 / 0.18	0.25 / 0.25	0.34 / 0.23	0.17 / 0.46	0.31 / 0.53	0.40 / 0.55
60U	8.0	7.5 / 6.5	0.53 / 0.52	- / 0.22	- / -	0.55 / 0.55	0.17 / 0.13	- / 0.21	- / -	0.20 / 0.25
80U	13.0	12.5 / 9.2	0.54 / 0.31	- / -	- / -	0.55 / 0.35	0.05 / 0.06	- / -	- / -	0.10 / 0.10
100U	13.0	5.0 / 4.8	0.54 / 0.61	- / -	- / -	0.55 / 0.65	0.17 / 0.16	- / -	- / -	0.20 / 0.20

Site	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	40	30	10	20	-	-	-	10	80	10	-
80D	15	60	20	5	-	-	35	25	35	5	-
60D	-	80	20	-	-	-	55	30	15	-	-
40D	5	75	20	-	-	-	70	25	5	-	-
20D	10	60	30	-	-	-	70	5	20	5	-
0	10	55	35	-	-	-	60	20	20	-	-
20U	30	55	15	-	-	-	50	25	20	5	-
40U	55	30	5	10	-	-	10	35	45	10	-
60U	10	55	35	-	-	-	20	30	40	10	-
80U	-	50	50	-	-	-	85	10	-	5	-
100U	10	55	35	-	-	-	65	30	5	-	-

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-96-1 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550924 7917265

Fisheries Data

Gear Used: Backpack Electrofisher **Transect length (m):** 100

Species	Season	Effort (min)	Total Caught/Observed	CPUE	Length Range (mm)
ARCH	Summer	6.82	9	1.32	29 - 126
	Fall	-	N/A	N/A	N/A
NNST	Summer	6.82	0	-	N/A
	Fall	-	N/A	N/A	N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	H	H
NNST	M	N	H	M

Comments & Summary

The rail crossing is a short distance upstream from Tote Road crossing BG-17, which has consistently provided important fish habitat for both species throughout the open-water period. The stream also connects two large, upstream lakes with David Lake downstream, representing a potentially important migratory route. Several size classes of juvenile char use habitat in this stream. Fishing was not conducted during fall, but fish were observed.

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char - IMPORTANT** **Ninespine Stickleback – IMPORTANT**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-96-1 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550924 7917265

Photographs

NO PHOTO **NO PHOTO** **NO PHOTO**

A **B** **C**

Figure 1. Summer (top) and fall (bottom) views of CV-96-1 at the 100 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-96-1 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550924 7917265

Photographs

A **B** **C**

Figure 2. Summer (top) and fall (bottom) views of CV-96-1 at the 80 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-96-1 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550924 7917265

Photographs

A B C

Figure 3. Summer (top) and fall (bottom) views of CV-96-1 at the 60 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-96-1 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550924 7917265

Photographs

A **B** **C**

Figure 4. Summer (top) and fall (bottom) views of CV-96-1 at the 40 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-96-1 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550924 7917265

Photographs

NO PHOTO **NO PHOTO** **NO PHOTO**

A

B

C

Figure 5. Summer (top) and fall (bottom) views of CV-96-1 at the 20 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-96-1 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550924 7917265

Photographs

A **B** **C**

Figure 6. Summer (top) and fall (bottom) views of CV-96-1 at the rail crossing; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-96-1 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550924 7917265

Photographs

A B C

Figure 7. Summer (top) and fall (bottom) views of CV-96-1 at the 20 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-96-1 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550924 7917265

Photographs

A B C

Figure 8. Summer (top) and fall (bottom) views of CV-96-1 at the 40 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-96-1 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550924 7917265

Photographs

A **B** **C**

Figure 9. Summer (top) and fall (bottom) views of CV-96-1 at the 60 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-96-1 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550924 7917265

Photographs

A **B** **C**

Figure 10. Summer (top) and fall (bottom) views of CV-96-1 at the 80 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-96-1 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550924 7917265

Photographs

A B C

Figure 11. Summer (top) and fall (bottom) views of CV-96-1 at the 100 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-96-2 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 550964 7917235

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 2 to > 10° **Flow Regime:** Open Water

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

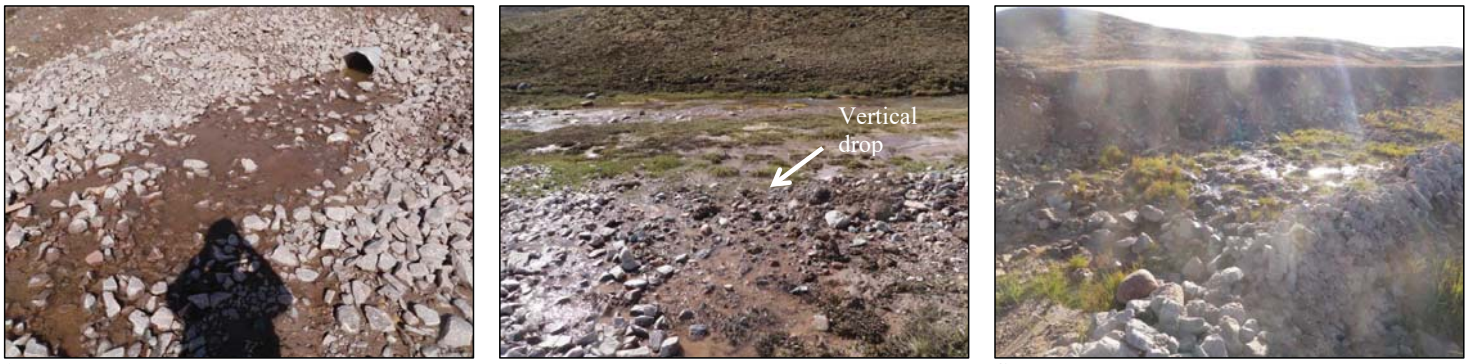
Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was immediately downstream of the Tote Road, flowing into CV-96-1. There is a vertical drop preventing any access to the rail crossing or upstream of the road. There is no fish use of habitat at this crossing.

Photographs



A B C

Figure 1. Views of CV-96-2 at the crossing (A) and downstream towards CV-96-1 (B) during summer, and the crossing during fall (C).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-96-3 **Dates Surveyed:** 10 July & 30 August, 2018 **UTM Coordinates:** 17 W 551117 7917101

General Physical Characteristics

Channel Confinement: PC **Channel Gradient (range):** 5 to > 15° **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was dry in 2018. The steep gradient and consistently low flows have prevented access upstream of the Tote Road as observed during road monitoring. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-96-3 at the crossing during summer (A) and during fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-97-1 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 551191 7917013

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** > 10° **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was dry in 2018. The steep gradient and consistently low flows have prevented access upstream of the Tote Road. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-97-1 at the crossing during summer (A) and during fall, with nearby 97-2 (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-97-2 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 551226 7916972

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** > 10° **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing had low water in summer and dried up by fall 2018. In addition, there is a very steep gradient and never access from downstream habitat. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-97-2 at the crossing during summer (A) and during fall, with nearby 97-1 (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-97-3 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 551254 7916940

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** > 10° **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing had low water in summer and dried up by fall 2018. In addition, there is a very steep gradient and never access from downstream habitat. There is no fish use of habitat at this crossing.

Photographs

A **B**

Figure 1. Views of CV-97-3 at the crossing during summer (A) and during fall, with nearby 97-4 (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-97-4 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 551292 7916898

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** > 10° **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing had low water in summer and dried up by fall 2018. In addition, there is a very steep gradient and never access from downstream habitat. There is no fish use of habitat at this crossing.

Photographs

A **B**

Figure 1. Views of CV-97-4 at the crossing during summer (A) and during fall, with nearby 97-3 (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-97-5 & CV-97-5b

Dates Surveyed: 4 July & 2 September, 2018

UTM Coordinates: 17 W 551351 7916843 & 17 W 551326 7916865

General Physical Characteristics

Channel Confinement: C

Channel Gradient (range): > 10°

Flow Regime: Intermittent

Fisheries Data

Gear Used: Not Fished

Effort (min): N/A

Transect Length (m): N/A

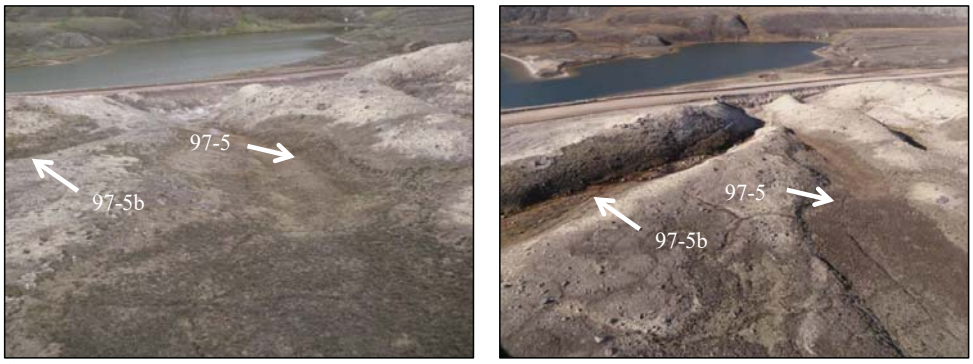
Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The 97-5 crossing was dry all year while 97-5b maintained a very small flow during the open-water period. Both streams had a very steep gradient and there was never access from downstream habitat near the road. There is no fish use of habitat at this crossing.

Photographs



A B

Figure 1. Views of CV-97-5 and 97-5b at the crossing during summer (A) and during fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-97-6 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 551457 7916754

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** > 10° **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing had very little water in summer and dried up by fall 2018. In addition, there is a very steep gradient and never access from downstream habitat. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-97-6 at the crossing during summer (A) and during fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-97-7 & CV-97-7a

Dates Surveyed: 4 July & 2 September, 2018

UTM Coordinates: 17 W 551576 7916658 & 17 W 551560 7916671

General Physical Characteristics

Channel Confinement: C

Channel Gradient (range): > 10°

Flow Regime: Intermittent

Fisheries Data

Gear Used: Not Fished

Effort (min): N/A

Transect Length (m): N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

These crossings had very low water throughout the open-water period in 2018. Both also had very steep gradients, loss of surface flow, and there was never access from downstream habitat near the road. There is no fish use of habitat at this crossing.

Photographs

A **B**

Figure 1. Views of CV-97-7 and 97-7a at the crossing during summer (A) and during fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-97-9 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 551629 7916614

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** > 10° **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing had very little water during the open-water period in 2018. In addition, there is a very steep gradient and never access from downstream habitat. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-97-9 at the crossing during summer (A) and during fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-97-10 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 551781 7916475

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** > 10° **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing had very little water during the open-water period in 2018. In addition, there is a very steep gradient and never access from downstream habitat. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-97-10 at the crossing during summer (A) and during fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-97-11 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 551823 7916434

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** N/A **Flow Regime:** None

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a dry low point on a plateau. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-97-11 at the crossing during summer (A) and during fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-97-12 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 551891 7916370

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** N/A **Flow Regime:** None

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a dry low point on a plateau. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-97-12 at the crossing during summer (A) and during fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-98-0 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 552001 7916266

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** N/A **Flow Regime:** None

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a dry low point on a plateau. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-98-0 at the crossing during summer (A) and during fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-98-1 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 552043 7916226

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** N/A **Flow Regime:** None

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

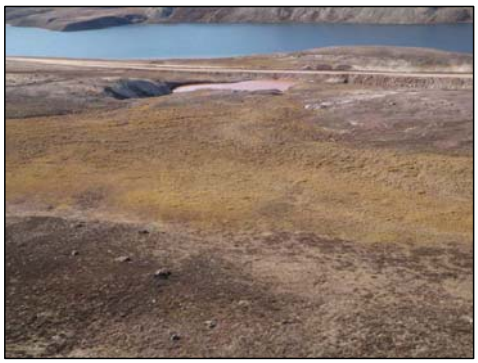
Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a dry low point on a plateau. There is no fish use of habitat at this crossing.

Photographs

A



B

Figure 1. Views of CV-98-1 at the crossing during summer (A) and during fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-99-1 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 552464 7915930

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** N/A **Flow Regime:** Open Water

Fisheries Data

Gear Used: Backpack Electrofisher **Effort (min):** 4.23 **Transect Length (m):** 100

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a small, shallow pond with a maximum depth of approximately 2 m. No fish were captured or observed during an electrofishing survey of approximately half the shoreline and there was no evidence of their presence. There is no fish use of habitat at this crossing.

Photographs

A **B** **C**

Figure 1. Views of CV-99-1 at the crossing during summer (A) and (B), and during fall (C).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-99-2 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 552958 7915502

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 1-5° **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

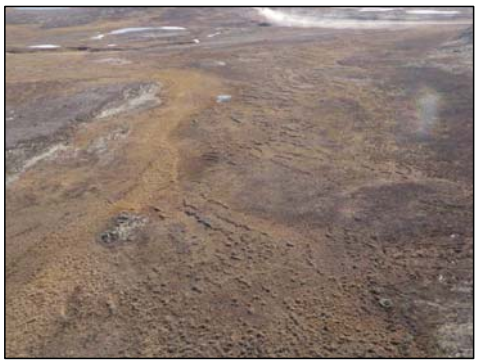
Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was dry in 2018 and there was no channel and no connection possible even during high water events. There is no fish use of habitat at this crossing.

Photographs

A



B

Figure 1. Views of CV-99-2 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-99-3 **Dates Surveyed:** 6 July & 2 September, 2018 **UTM Coordinates:** 17 W 553253 7915414

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 1-3° **Flow Regime:** Open Water

Hydrology & Habitat Characteristics

Site	Channel Width (m)		Water Depth (m) (Summer/Fall)				Water Velocity (m/s) (Summer/Fall)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	9.3	2.3 / 5.1	0.34 / 0.38	0.18 / -	0.06 / -	0.60 / 0.60	0.26 / 0.15	0.22 / -	0.21 / -	0.30 / 0.30
80D	7.0	1.4 / 5.9	0.14 / 0.30	0.18 / -	0.10 / -	0.50 / 0.45	0.57 / 0.53	0.50 / -	0.30 / -	0.60 / 0.55
60D	4.1	1.8 / 1.8	- / -	0.53 / 0.56	- / -	0.75 / 0.70	- / -	0.10 / 0.10	- / -	0.15 / 0.15
40D	4.7	3.8 / 3.8	- / -	0.49 / 0.82	- / -	1.00 / 1.00	- / -	0.03 / 0.02	- / -	0.10 / 0.10
20D	3.8	2.6 / 3.3	0.30 / 0.20	- / -	0.30 / -	0.80 / 0.25	0.12 / 0.30	- / -	0.17 / -	0.20 / 0.30
0	7.5	5.4 / 4.8	0.51 / 0.38	- / -	- / -	0.70 / 0.65	0.01 / 0.03	- / -	- / -	0.05 / 0.05
20U	9.6	6.5 / 8.2	- / -	0.32 / 0.34	- / -	0.40 / 0.40	- / -	0.20 / 0.20	- / -	0.25 / 0.25
40U	13.0	9.0 / 4.9	- / 0.04	0.42 / -	- / 0.08	1.00 / 0.90	- / 0.28	0.00 / -	- / 0.40	0.30 / 0.40
60U	7.6	4.6 / 3.0	0.10 / -	0.18 / 0.16	0.04 / -	0.25 / 0.20	0.05 / -	0.24 / 0.42	0.18 / -	0.30 / 0.45
80U	2.6	2.3 / 1.8	- / -	0.25 / 0.52	- / -	0.40 / 0.55	- / -	0.22 / 0.11	- / -	0.30 / 0.20
100U	8.8	3.5 / 2.7	0.70 / -	- / 0.20	- / -	0.70 / 0.65	0.14 / -	- / 0.27	- / -	0.20 / 0.30

Site	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	-	20	80	-	-	-	45	40	15	-	-
80D	10	20	70	-	-	-	90	5	5	-	-
60D	-	20	80	-	-	-	70	20	10	-	-
40D	5	15	80	-	-	-	100	-	-	-	-
20D	10	20	70	-	-	-	75	20	5	-	-
0	5	20	75	-	-	-	60	5	35	-	-
20U	10	20	70	-	-	-	95	5	-	-	-
40U	35	10	55	-	-	-	15	35	45	5	-
60U	45	45	10	-	-	-	-	5	80	15	-
80U	15	40	45	-	-	-	5	10	80	5	-
100U	30	35	35	-	-	-	5	10	80	5	-

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-99-3 **Dates Surveyed:** 6 July & 2 September, 2018 **UTM Coordinates:** 17 W 553253 7915414

Fisheries Data

Gear Used: Backpack Electrofisher **Transect length (m):** 100

Species	Season	Effort (min)	Total Caught/Observed	CPUE	Length Range (mm)
ARCH	Summer	5.65	57	10.09	49 - 147
	Fall	-	N/A	N/A	N/A
NNST	Summer	5.65	6	1.06	65
	Fall	-	N/A	N/A	N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	H	M
NNST	H	N	H	M

Comments & Summary

This rail crossing is a short distance upstream from Tote Road crossing BG-04, which has consistently provided important fish habitat for both species throughout the open-water period. Abundant, deep pools with plenty of cover are ideal habitat for both species. Fishing was not conducted during fall, but many fish were observed.

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char - IMPORTANT** **Ninespine Stickleback – IMPORTANT**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-99-3 **Dates Surveyed:** 6 July & 2 September, 2018 **UTM Coordinates:** 17 W 553253 7915414

Photographs

A B C

Figure 1. Summer (top) and fall (bottom) views of CV-99-3 at the 100 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-99-3 **Dates Surveyed:** 6 July & 2 September, 2018 **UTM Coordinates:** 17 W 553253 7915414

Photographs

A B C

Figure 2. Summer (top) and fall (bottom) views of CV-99-3 at the 80 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-99-3 **Dates Surveyed:** 6 July & 2 September, 2018 **UTM Coordinates:** 17 W 553253 7915414

Photographs

A **B** **C**

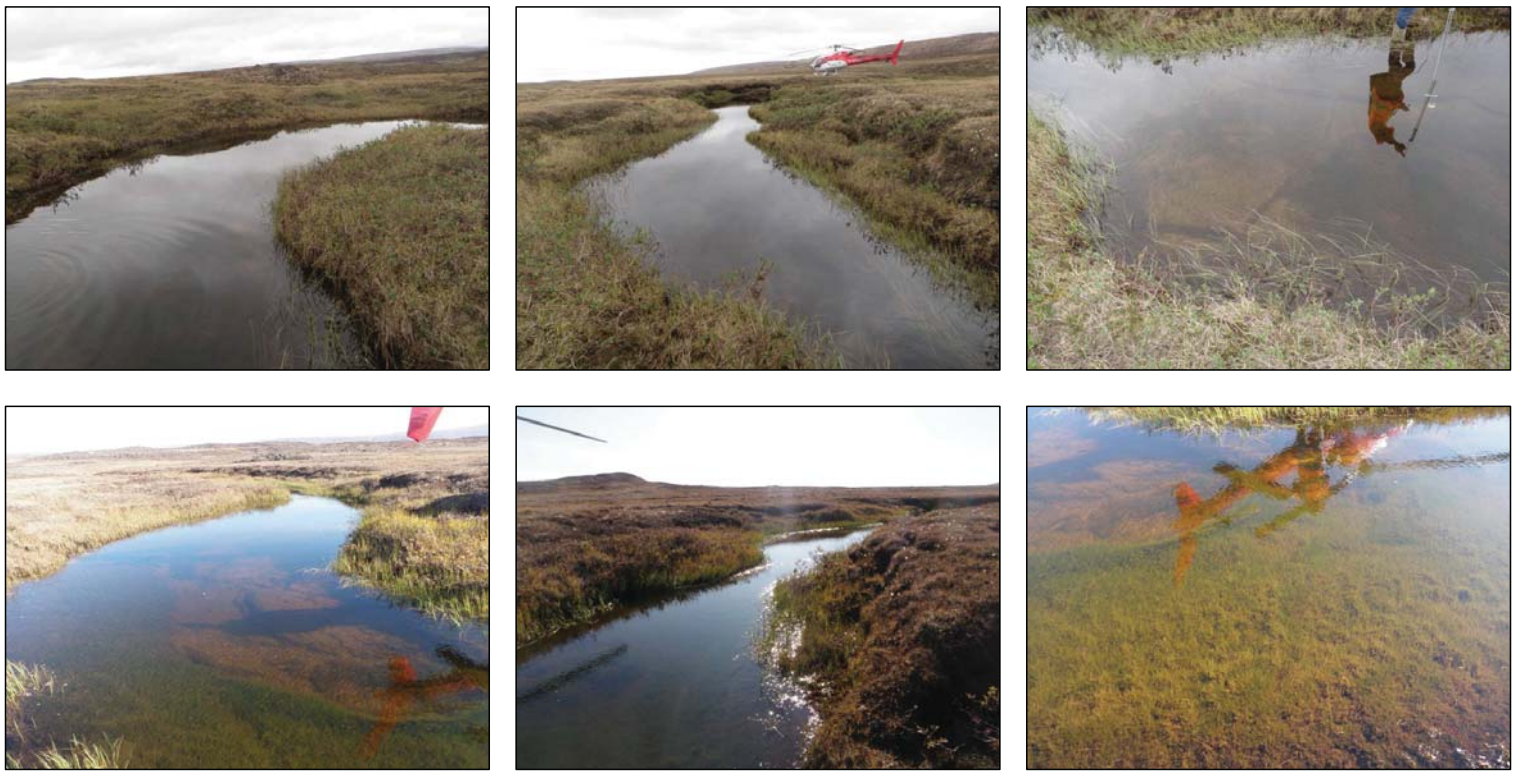
Figure 3. Summer (top) and fall (bottom) views of CV-99-3 at the 60 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-99-3 **Dates Surveyed:** 6 July & 2 September, 2018 **UTM Coordinates:** 17 W 553253 7915414

Photographs



A B C

Figure 4. Summer (top) and fall (bottom) views of CV-99-3 at the 40 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-99-3 **Dates Surveyed:** 6 July & 2 September, 2018 **UTM Coordinates:** 17 W 553253 7915414

Photographs

A B C

Figure 5. Summer (top) and fall (bottom) views of CV-99-3 at the 20 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-99-3 **Dates Surveyed:** 6 July & 2 September, 2018 **UTM Coordinates:** 17 W 553253 7915414

Photographs

A **B** **C**

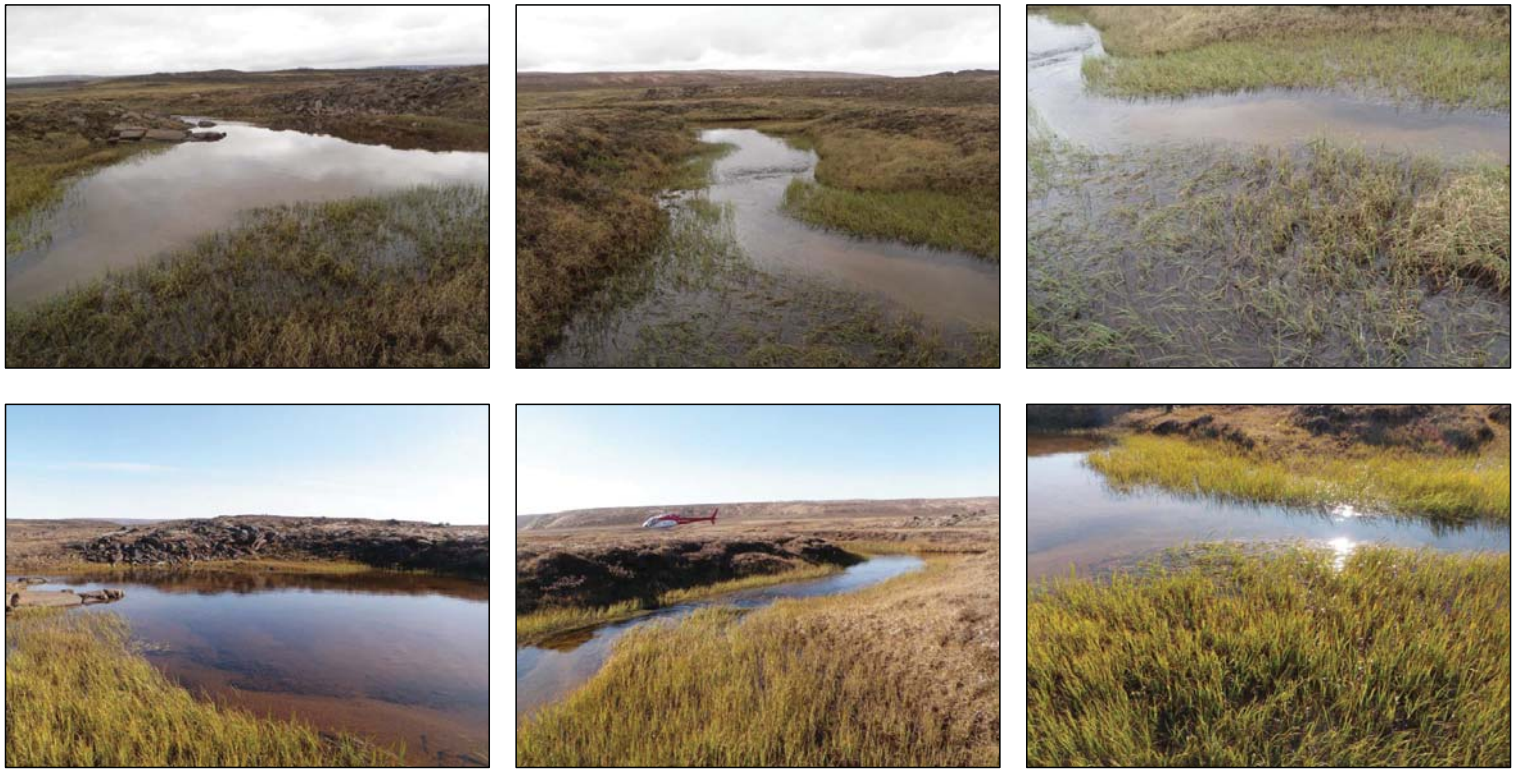
Figure 6. Summer (top) and fall (bottom) views of CV-99-3 at the rail crossing; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-99-3 **Dates Surveyed:** 6 July & 2 September, 2018 **UTM Coordinates:** 17 W 553253 7915414

Photographs



A B C

Figure 7. Summer (top) and fall (bottom) views of CV-99-3 at the 20 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-99-3 **Dates Surveyed:** 6 July & 2 September, 2018 **UTM Coordinates:** 17 W 553253 7915414

Photographs

A B C

Figure 8. Summer (top) and fall (bottom) views of CV-99-3 at the 40 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-99-3 **Dates Surveyed:** 6 July & 2 September, 2018 **UTM Coordinates:** 17 W 553253 7915414

Photographs

A B C

Figure 9. Summer (top) and fall (bottom) views of CV-99-3 at the 60 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-99-3 **Dates Surveyed:** 6 July & 2 September, 2018 **UTM Coordinates:** 17 W 553253 7915414

Photographs

A **B** **C**

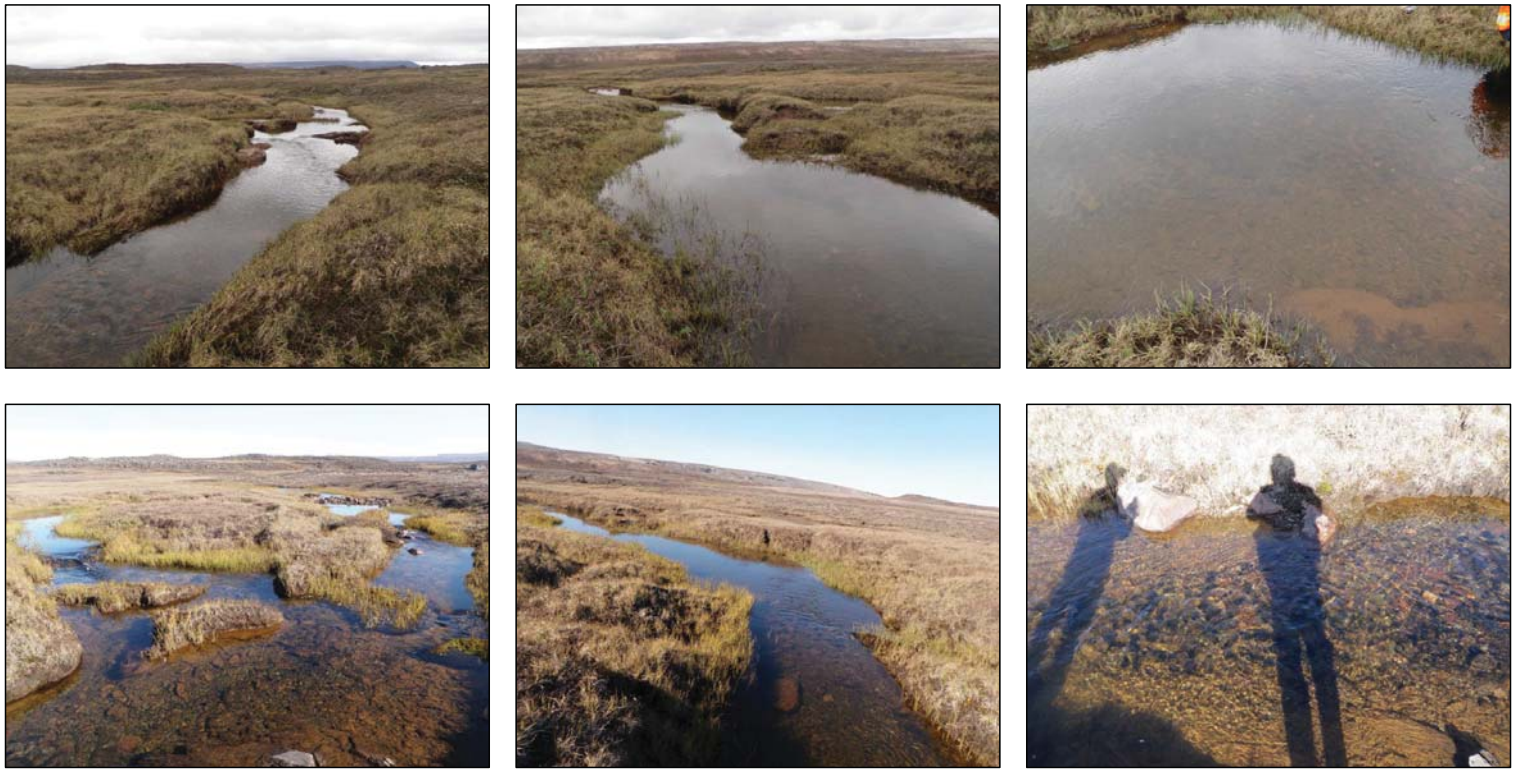
Figure 10. Summer (top) and fall (bottom) views of CV-99-3 at the 80 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-99-3 **Dates Surveyed:** 6 July & 2 September, 2018 **UTM Coordinates:** 17 W 553253 7915414

Photographs



A B C

Figure 11. Summer (top) and fall (bottom) views of CV-99-3 at the 100 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-100-1 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 553579 7915319

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** N/A **Flow Regime:** None

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a dry low point. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-100-1 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-100-2 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 553862 7915292

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** N/A **Flow Regime:** None

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

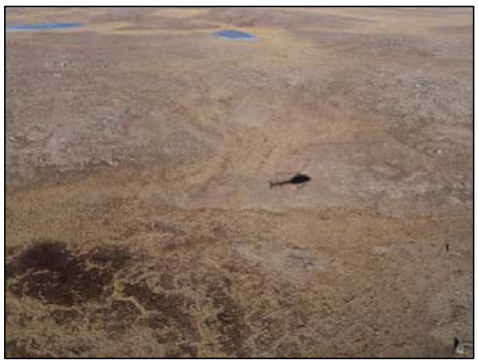
Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a dry low point. There is no fish use of habitat at this crossing.

Photographs

A



B

Figure 1. Views of CV-100-2 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-100-3 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 554050 7915379

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** N/A **Flow Regime:** None

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was a dry low point. There is no fish use of habitat at this crossing.

Photographs

A

Figure 1. Views of CV-100-3 at the crossing during summer (A).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-100-4 **Dates Surveyed:** 4 July & 2 September, 2018 **UTM Coordinates:** 17 W 554185 7915443

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 3-10° **Flow Regime:** Intermittent

Fisheries Data

Gear Used: Not Fished **Effort (min):** N/A **Transect Length (m):** N/A

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

The crossing was shallow, broad, and often lacked a defined channel. In addition, surface flow periodically disappeared. There was no access from overwintering waterbodies, though there may be fish use of the pond downstream of the rail. There is no fish use of habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-100-4 at the crossing during summer (A) and fall (B).

Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**