Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-33-6 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521947 7950568

Photographs

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

A **B** **C**

Figure 7. Summer (top) and fall (bottom) views of CV-33-6 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-33-6 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521947 7950568

Photographs

A **B** **C**

Figure 8. Summer (top) and fall (bottom) views of CV-33-6 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-33-6 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521947 7950568

Photographs

A **B** **C**

Figure 9. Summer (top) and fall (bottom) views of CV-33-6 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-33-6 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521947 7950568

Photographs

A **B** **C**

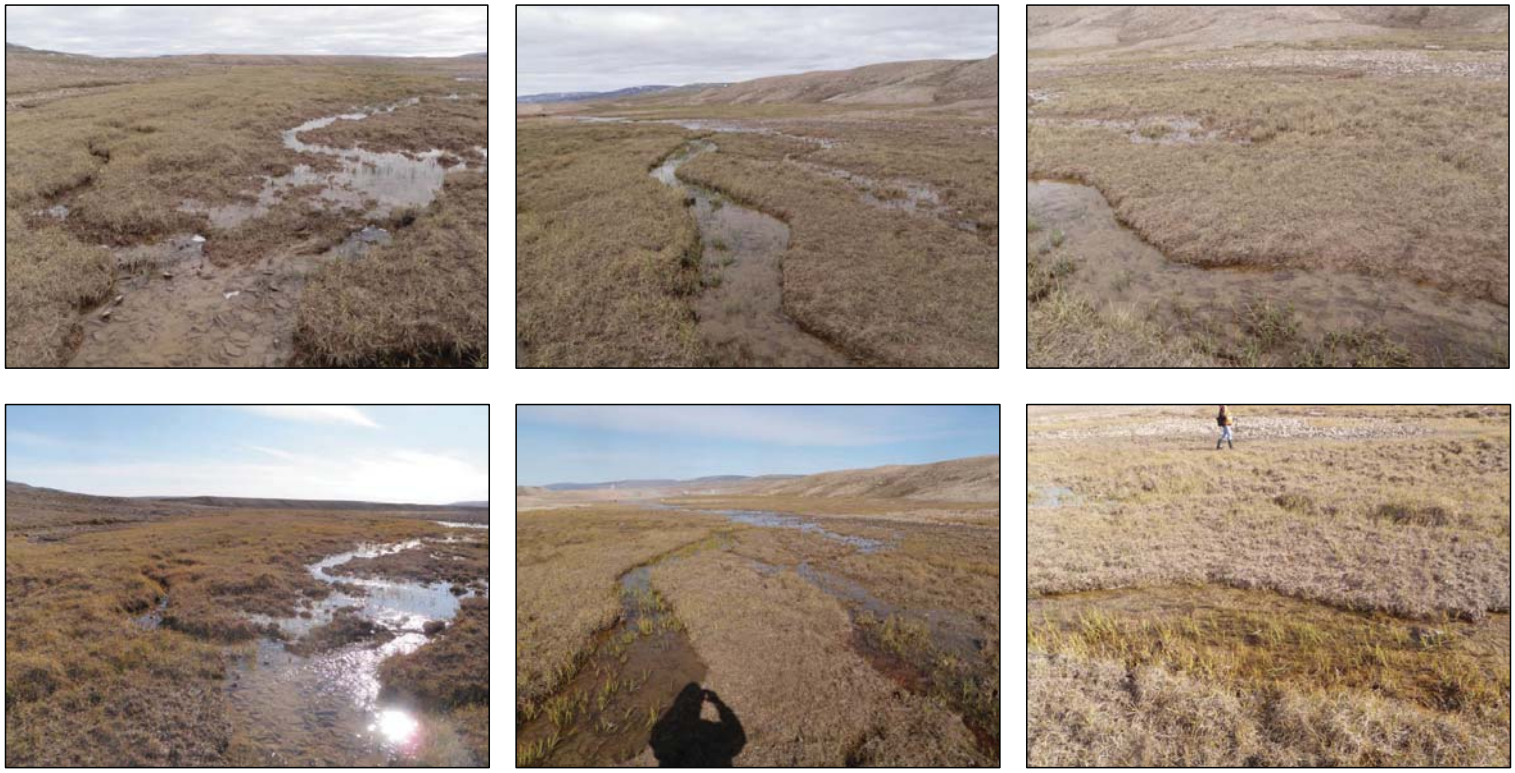
Figure 10. Summer (top) and fall (bottom) views of CV-33-6 at the 80 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-33-6 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521947 7950568

Photographs



A **B** **C**

Figure 11. Summer (top) and fall (bottom) views of CV-33-6 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-33-7 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521885 7950215

General Physical Characteristics

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

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

This was a small, shallow, isolated pond at the edge of the Tote Road. It was fishless and would remain unconnected to other waterbodies under all flow regimes. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-33-7 (pond in the foreground) at the rail 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-34-1 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521789 7949673

General Physical Characteristics

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

Fisheries Data

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

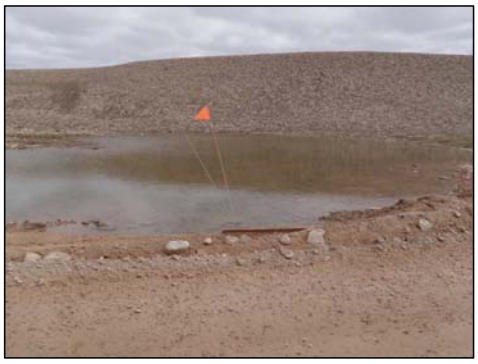
Fish Habitat Potential

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

Comments & Summary

This was a small, shallow, isolated pond that has formed alongside the Tote Road. It was fishless and not connected to other waterbodies . There is never fish habitat at this crossing.

Photographs



A

B

Figure 1. Views of CV-34-1 (pond and adjacent inflow) at the rail 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-34-2 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521801 7949153

General Physical Characteristics

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

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

This was a dry depression in 2018. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-34-2 at the rail 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-35-2 **Date Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521947 7948828

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** 4-5° **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	-	-	-	-	-	-	-	-	-	-
80D	TOTE ROAD CROSSING									
60D	TOTE ROAD CROSSING									
40D	23.2	- / 6.2	- / 0.12	- / 0.14	- / 0.12	- / 0.15	- / 0.66	- / 0.56	- / 0.72	- / 0.75
20D	23.0	- / 10.8	- / 0.16	- / 0.20	- / 0.22	- / 0.25	- / 0.17	- / 0.22	- / 0.25	- / 0.30
0	16.9	11.7 / 13.5	0.30 / 0.20	0.10 / 0.20	0.27 / 0.44	0.30 / 0.50	0.09 / 0.37	0.54 / 0.15	0.36 / 0.13	0.60 / 0.45
20U	-	- / 7.9	- / 0.22	- / 0.16	- / 0.12	- / 0.25	- / 0.26	- / 0.46	- / 0.63	- / 0.65
40U	28.9	16.8 / 11.8	0.12 / 0.04	0.24 / 0.24	0.08 / 0.12	0.30 / 0.30	0.36 / 0.19	0.33 / 0.39	0.77 / 0.28	0.77 / 0.50
60U	29.8	10.5 / 10.7	0.30 / 0.08	0.19 / 0.26	0.16 / 0.24	0.30 / 0.30	0.39 / 0.39	0.32 / 0.53	0.78 / 0.60	0.78 / 0.65
80U	27.2	10.8 / 9.6	0.14 / 0.24	0.06 / 0.06	0.30 / 0.22	0.30 / 0.30	0.49 / 0.53	0.36 / 0.57	0.96 / 1.02	0.96 / 1.05
100U	27.7	6.2 / 15.1	0.15 / 0.08	0.26 / 0.18	0.12 / 0.20	0.30 / 0.30	0.22 / 0.31	0.61 / 0.69	0.48 / 0.41	0.61 / 0.70

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	-	-	-	-	-	-	-	-	-	-	-
80D	TOTE ROAD CROSSING										
60D	TOTE ROAD CROSSING										
40D	40	60	-	-	-	-	-	-	100	-	-
20D	40	50	10	-	-	-	-	-	100	-	-
0	50	35	15	-	-	-	5	-	85	10	-
20U	70	25	5	-	-	-	-	-	90	10	-
40U	75	15	10	-	-	-	5	-	80	15	-
60U	80	15	5	-	-	-	5	-	80	15	-
80U	80	15	5	-	-	-	5	-	75	20	-
100U	80	10	5	-	5	-	5	-	75	20	-

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-35-2 **Date Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521947 7948828

Fisheries Data

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

Species	Season	Effort (min)	Total Caught/Observed	CPUE	Length Range (mm)
ARCH	Summer	5.77	16	2.77	74 - 150
	Fall	3.37	11	3.27	95 - 166
NNST	Summer	5.77	0	-	N/A
	Fall	3.37	0	-	N/A

Fish Habitat Potential

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

Comments & Summary

This rail crossing is immediately upstream of CV-099 on the Tote Road. Provides important rearing habitat for several size classes of juvenile char throughout the open water season.

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-35-2 **Date Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521947 7948828

Photographs

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

A **B** **C**

Figure 1. Summer (top) and fall (bottom) views of CV-35-2 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-35-2 **Date Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521947 7948828

Photographs

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

A **B** **C**

Figure 2. Summer (top) and fall (bottom) views of CV-35-2 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-35-2 **Date Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521947 7948828

Photographs

A **B** **C**

Figure 3. Summer (top) and fall (bottom) views of CV-35-2 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-35-2 **Date Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521947 7948828

Photographs

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

A

B

C

Figure 4. Summer (top) and fall (bottom) views of CV-35-2 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-35-2 **Date Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521947 7948828

Photographs

A B C

Figure 5. Summer (top) and fall (bottom) views of CV-35-2 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-35-2 **Date Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521947 7948828

Photographs

A **B** **C**

Figure 6. Summer (top) and fall (bottom) views of CV-35-2 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-35-2 **Date Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521947 7948828

Photographs

A **B** **C**

Figure 7. Summer (top) and fall (bottom) views of CV-35-2 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-35-2 **Date Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521947 7948828

Photographs

A **B** **C**

Figure 8. Summer (top) and fall (bottom) views of CV-35-2 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-35-4 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 522249 7948287

General Physical Characteristics

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

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

This was a small, shallow marshy spot in 2018. There were no fish and no connections to other waterbodies. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-35-4 at the rail 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-35-5 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 522298 7948170

General Physical Characteristics

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

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

This was a dry low point in 2018. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-35-5 at the rail 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-37-1 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 522533 7946398

General Physical Characteristics

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

Fisheries Data

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

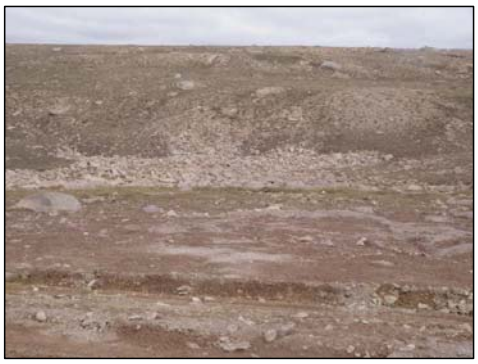
Fish Habitat Potential

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

Comments & Summary

This were a few puddles among rocks in 2018. There is never fish habitat at this crossing.

Photographs



A

B

Figure 1. Views of CV-37-1 at the rail 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-38-1 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 522570 7946000

General Physical Characteristics

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

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

This was a small trickle of water flowing over terrestrial habitat in 2018. Surface flows were not maintained downstream and there was no connectivity with other waterbodies. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-38-1 at the rail 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-38-2 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 522646 7945802

General Physical Characteristics

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

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

This was a dry, rocky, hillside depression in 2018. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-38-2 at the rail 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-38-3 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 522846 7945387

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 5-10 **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

This stream maintains sufficient flows and depths for fish use throughout the open-water period. However, a large, impassable, vertical barrier (waterfall) was previously identified approximately 30 m downstream of the Tote Road. Fish are present downstream of this waterfall, but they cannot access habitat near the rail crossing.

Photographs

A

B

C

Figure 1. Views of CV-38-3 at the rail 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-38-3 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 522846 7945387

Photographs

A B C

Figure 2. Views of CV-38-3 at the rail 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-39-1 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 523125 7944922

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

This was moist terrestrial habitat with some ponding at the Tote Road. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-39-1 at the rail 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-40-1 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 523148 7944309

General Physical Characteristics

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

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

This was a ditch pond alongside the Tote Road. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-40-1 at the rail 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-40-2 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 523147 7944150

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

This was a small amount of water flowing among and under a field of rocks. There was no connection to other waterbodies. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-40-2 at the rail 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-40-3 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 523231 7943898

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

This was a dry depression full of rocks. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-40-3 at the rail 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-40-4 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 523301 7943665

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

This was a dry low point in 2018. There is never fish habitat at this crossing.

Photographs

A **B**

Figure 1. Views of CV-40-4 at the rail 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-41-1 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 523332 7943397

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

This was a dry, grassy depression on a hillside in 2018. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-41-1 at the rail 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-41-2 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 523342 7943311

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

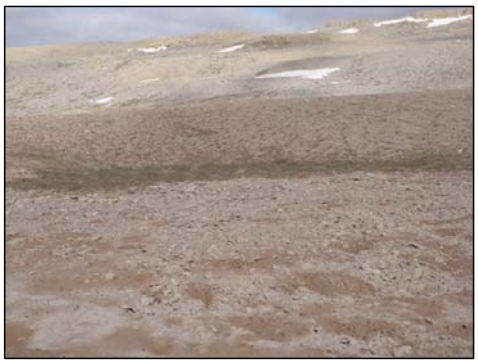
Fish Habitat Potential

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

Comments & Summary

This was a dry, grassy depression on a hillside in 2018. There is never fish habitat at this crossing.

Photographs



A

B

Figure 1. Views of CV-41-2 at the rail 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-41-3 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 523359 794315

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

This was a dry, rocky hillside in 2018. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-41-3 at the rail 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-41-4 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 523351 7942963

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

This was a dry, rocky low point in 2018. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-41-4 at the rail 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-42-1 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 523423 7942323

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 2-5° **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

This was a thin trickle of water in 2018. Lack of surface flow in some areas and no connectivity to Phillips Creek prevent all fish access. There is never fish habitat at this crossing.

Photographs

A **B**

Figure 1. Views of CV-42-1 at the rail 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-42-2 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 523475 7941603

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

This was a dry depression in 2018. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-42-2 at the rail 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-43-1 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 523647 7941268

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

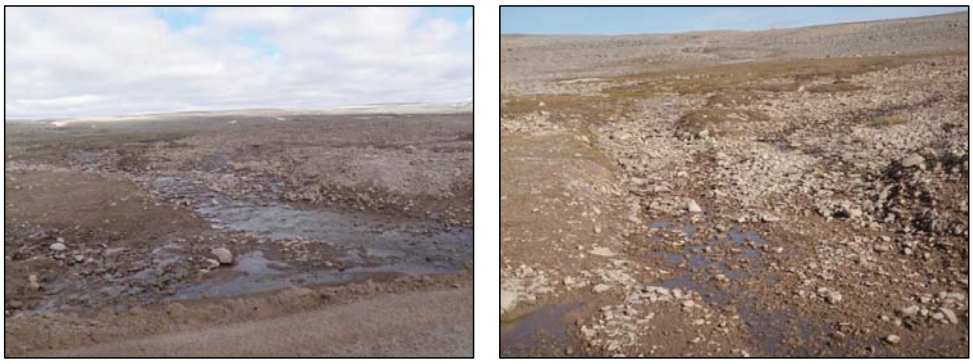
Fish Habitat Potential

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

Comments & Summary

This site had very low flows in both seasons surveyed in 2018. In addition, there are multiple soft barriers (subsurface flow and steep gradient) downstream of the crossing preventing access from Phillips Creek. There is never fish habitat at this crossing.

Photographs



A **B**

Figure 1. Views of CV-43-1 at the rail 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-43-2 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 523721 7941127

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

This was a dry, rocky low point in 2018. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-43-2 at the rail 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-43-3 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 523738 7941095

General Physical Characteristics

Channel Confinement: UC **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

This stream maintained sufficient flows and depths throughout the open-water period in 2018. However, there is a large, impassable vertical drop downstream of the Tote Road preventing fish access from Phillips Creek under all flow conditions. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-43-3 at the rail crossing (A) and downstream of the Tote Road, showing the vertical drop (B). Note that 43-4 joins with 43-3 upstream of the Tote Road.

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**

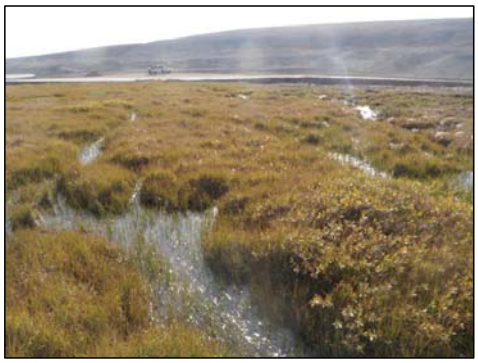
Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-43-3 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 523738 7941095

Photographs

A



B

C

Figure 2. Views of CV-43-3 at the rail 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-43-4 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 523749 7941075

General Physical Characteristics

Channel Confinement: UC **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

This stream maintained sufficient flows and depths throughout the open-water period in 2018. However, there is a large, impassable vertical drop downstream of the Tote Road preventing fish access from Phillips Creek under all flow conditions. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-43-4 at the rail crossing (A) and downstream of the Tote Road, showing the vertical drop (B). Note that 43-3 joins with 43-4 upstream of the Tote Road.

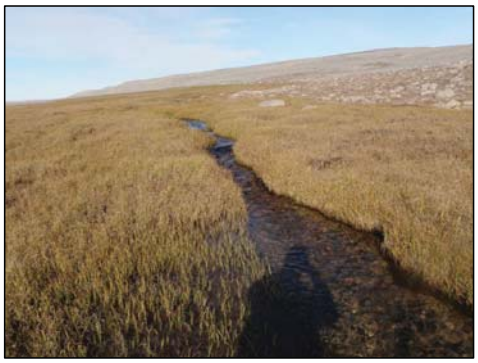
Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-43-4 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 523749 7941075

Photographs



A

B

C

Figure 2. Views of CV-43-4 at the rail 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-43-5 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 523846 7940904

General Physical Characteristics

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

Fisheries Data

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

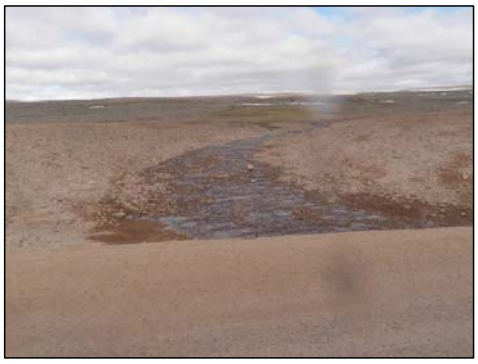
Fish Habitat Potential

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

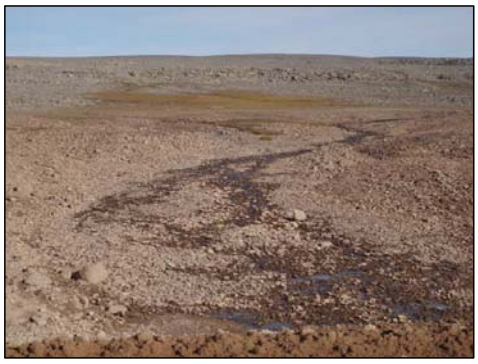
Comments & Summary

This stream maintained a small volume of flow throughout the open-water period in 2018. However, insufficient depths and steep vertical gradient downstream of the Tote Road prevent fish access from Phillips Creek. There is never fish habitat at this crossing.

Photographs



A



B

Figure 1. Views of CV-43-5 at the rail 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-44-1 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 524074 7940563

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 5 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

This was a boulder field with small, unconnected puddles in 2018. There is never fish habitat at this crossing.

Photographs

A **B**

Figure 1. Views of CV-44-1 at the rail 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-44-2 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 524174 7940415

General Physical Characteristics

Channel Confinement: UC **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

This maintained minimal flows during the open-water period in 2018. Downstream of the Tote Road is an impassable vertical barrier that prevents fish access to the rail site under all flow conditions. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-44-2 at the rail 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-44-3 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 524536 7939827

General Physical Characteristics

Channel Confinement: UC **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

This stream had a small amount of water flowing during summer, but was dry during fall, 2018. Downstream of the Tote Road is an impassable vertical barrier that prevents fish access to the rail site under all flow conditions. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-44-3 at the rail 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-45-1 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525004 7938965

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

This was a dry, low point in 2018. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-45-1 at the rail 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-46-1 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525118 7938743

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

This was a nearly dry, boulder field in 2018. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-46-1 at the rail 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-46-1a | **Dates Surveyed:** 6 July & 25 August, 2018 | **UTM Coordinates:** 17 W 525226 7938529

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

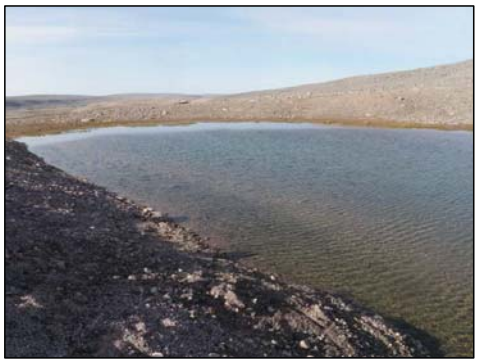
Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

This was a small, shallow (< 1 m) pond with no connection to Phillips Creek. Depth is insufficient for overwintering. Fish were not observed. There is never fish habitat at this crossing.

Photographs

A



B

Figure 1. Views of CV-46-1a at the rail 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-46-2 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525278 7938537

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

This was a dry depression adjacent to the CV-46-1a pond. There is never fish habitat at this crossing.

Photographs

A **B**

Figure 1. Views of CV-46-2 at the rail crossing during summer (A) and fall, with 46-1a in the foreground (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-46-3 **Dates Surveyed:** 4 July & 25 August, 2018 **UTM Coordinates:** 17 W 525380 7938336

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

This was dry or nearly dry during the open-water period in 2018. There is no access from other waterbodies. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-46-3 at the rail 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-46-4 **Dates Surveyed:** 4 July & 25 August, 2018 **UTM Coordinates:** 17 W 525394 7938239

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

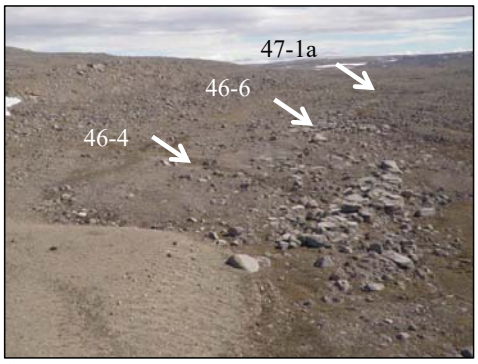
Fish Habitat Potential

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

Comments & Summary

This stream maintained a small amount of flow throughout the open-water period in 2018. However, there is a steep barrier downstream of the Tote Road preventing fish access from Phillips Creek under all flow conditions. There is never fish habitat at this crossing.

Photographs



A

Figure 1. Aerial view of CV-46-4 at the rail crossing with nearby 46-6 and 47-1a.

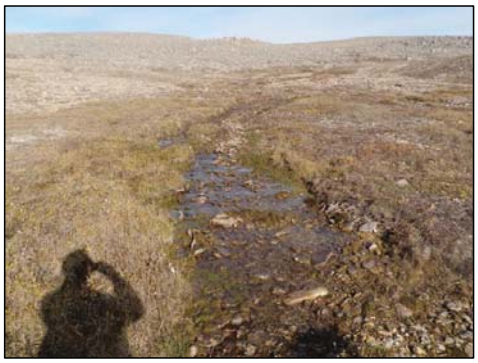
Baffinland Iron Mines Mary River Project	North/South Consultants Inc. Aquatic Environment Specialists	**Fish Habitat Quality**	**Arctic Char – NOT FISH-BEARING** **Ninespine Stickleback – NOT FISH-BEARING**

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-46-4 **Dates Surveyed:** 4 July & 25 August, 2018 **UTM Coordinates:** 17 W 525394 7938239

Photographs



A

B

C

Figure 2. Views of CV-46-4 at the rail 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-46-6 **Dates Surveyed:** 4 July & 25 August, 2018 **UTM Coordinates:** 17 W 525404 7938168

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

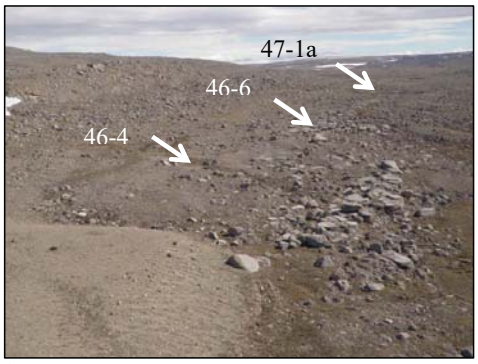
Fish Habitat Potential

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

Comments & Summary

This stream maintained a small amount of flow throughout the open-water period in 2018. However, there is a steep barrier downstream of the Tote Road preventing fish access from Phillips Creek under all flow conditions. There is never fish habitat at this crossing.

Photographs



A

B

Figure 1. Views of CV-46-6 at the rail crossing during summer (A) and fall (B). Note that these three crossings and 47-1b (not pictured) are all branches of the same stream.

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-47-1 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525479 7937475

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 2-5° **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	19.2	12.9 / 11.1	0.08 / 0.02	0.16 / 0.14	0.04 / 0.14	0.20 / 0.20	0.12 / 0.07	0.48 / 0.16	0.29 / 0.30	0.50 / 0.40
80D	14.8	12.3 / 10.7	0.14 / 0.14	0.12 / 0.08	0.03 / 0.16	0.15 / 0.20	0.49 / 0.41	0.53 / 0.58	0.19 / 0.45	0.53 / 0.60
60D	11.2	9.4 / 9.5	0.06 / 0.06	0.14 / 0.12	0.10 / 0.08	0.15 / 0.15	0.21 / 0.51	0.54 / 0.30	0.02 / 0.31	0.55 / 0.55
40D	10.9	10.0 / 10.0	0.03 / 0.14	0.04 / 0.20	0.20 / 0.04	0.20 / 0.20	0.05 / 0.07	0.14 / 1.09	0.85 / 0.21	0.85 / 1.10
20D	8.5	6.8 / 5.4	0.02 / 0.18	0.13 / 0.18	0.20 / 0.02	0.20 / 0.20	0.18 / 0.51	0.35 / 0.41	0.40 / 0.04	0.40 / 0.55
0	12.7	5.4 / 8.8	0.11 / 0.06	0.26 / 0.12	0.06 / 0.44	0.30 / 0.44	0.60 / 0.43	0.57 / 0.58	0.77 / 0.78	0.77 / 0.78
20U	17.5	8.7 / 6.9	0.04 / 0.18	0.14 / 0.12	0.10 / 0.04	0.15 / 0.20	0.12 / 0.75	0.59 / 0.58	0.53 / 0.13	0.59 / 0.75
40U	14.4	7.0 / 11.0	0.10 / 0.10	0.06 / 0.14	0.09 / 0.02	0.10 / 0.15	0.42 / 0.70	0.17 / 0.66	0.62 / 0.13	0.62 / 0.70
60U	27.7	12.2 / 7.1	0.26 / 0.12	0.06 / -	0.02 / 0.20	0.30 / 0.25	0.34 / 0.13	0.27 / -	0.33 / 0.27	0.35 / 0.30
80U	15.7	9.0 / 9.3	0.20 / 0.08	0.20 / 0.14	0.03 / 0.20	0.20 / 0.20	0.67 / 0.41	0.41 / 0.21	0.13 / 0.71	0.67 / 0.71
100U	11.5	7.6 / 7.8	0.08 / 0.22	0.12 / 0.08	0.12 / 0.10	0.15 / 0.25	0.01 / 0.61	0.41 / 0.22	0.95 / 0.31	0.95 / 0.70

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	65	35	-	-	-	-	-	5	75	20	-
80D	65	35	-	-	-	-	-	5	75	20	-
60D	80	20	-	-	-	-	-	10	70	20	-
40D	70	30	-	-	-	-	-	10	70	20	-
20D	80	20	-	-	-	-	-	10	70	20	-
0	80	15	5	-	-	-	-	5	65	25	5
20U	80	20	-	-	-	-	-	-	60	30	10
40U	80	20	-	-	-	-	-	5	60	30	5
60U	70	25	5	-	-	-	-	5	60	30	5
80U	80	20	-	-	-	-	-	5	55	30	10
100U	65	25	-	-	10	-	-	5	55	30	10

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-47-1 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525479 7937475

Fisheries Data

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

Species	Season	Effort (min)	Total Caught/Observed	CPUE	Length Range (mm)
ARCH	Summer	7.47	40	5.36	59 - 143
	Fall	3.15	8	2.54	96 - 138
NNST	Summer	7.47	0	-	N/A
	Fall	3.15	0	-	N/A

Fish Habitat Potential

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

Comments & Summary

This rail crossing is immediately upstream of CV-079 on the Tote Road. Provides important rearing habitat for several size classes of juvenile char throughout the open water season, but particularly during summer. Water temperatures in survey streams during fall sampling averaged approximately 5°C and fish had already begun downstream movements towards overwintering habitat, reducing catches.

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-47-1 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525479 7937475

Photographs

A **B** **C**

Figure 1. Summer (top) and fall (bottom) views of CV-47-1 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-47-1 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525479 7937475

Photographs

A B C

Figure 2. Summer (top) and fall (bottom) views of CV-47-1 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-47-1 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525479 7937475

Photographs

A **B** **C**

Figure 3. Summer (top) and fall (bottom) views of CV-47-1 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-47-1 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525479 7937475

Photographs

A **B** **C**

Figure 4. Summer (top) and fall (bottom) views of CV-47-1 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-47-1 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525479 7937475

Photographs

A **B** **C**

Figure 5. Summer (top) and fall (bottom) views of CV-47-1 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-47-1 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525479 7937475

Photographs

A B C

Figure 6. Summer (top) and fall (bottom) views of CV-47-1 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-47-1 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525479 7937475

Photographs

A B C

Figure 7. Summer (top) and fall (bottom) views of CV-47-1 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-47-1 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525479 7937475

Photographs

A B C

Figure 8. Summer (top) and fall (bottom) views of CV-47-1 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-47-1 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525479 7937475

Photographs

A B C

Figure 9. Summer (top) and fall (bottom) views of CV-47-1 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-47-1 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525479 7937475

Photographs

A B C

Figure 10. Summer (top) and fall (bottom) views of CV-47-1 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-47-1 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525479 7937475

Photographs

A B C

Figure 11. Summer (top) and fall (bottom) views of CV-47-1 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-47-1a | **Dates Surveyed:** 4 July & 25 August, 2018 | **UTM Coordinates:** 17 W 525415 7938089

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

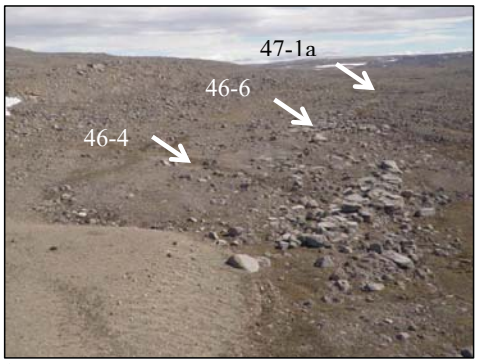
Fish Habitat Potential

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

Comments & Summary

This stream was dry or nearly dry during the open-water period in 2018. In addition, there is a steep barrier downstream of the Tote Road (shared by other streams in this valley) preventing fish access from Phillips Creek under all flow conditions. There is never fish habitat at this crossing.

Photographs



A

B

Figure 1. Views of CV-47-1a at the rail crossing during summer (A) and fall (B). Note that these three crossings and 47-1b (not pictured) are all branches of the same stream.

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-47-1b | **Dates Surveyed:** 4 July & 25 August, 2018 | **UTM Coordinates:** 17 W 525454 7937939

General Physical Characteristics

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

Fisheries Data

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

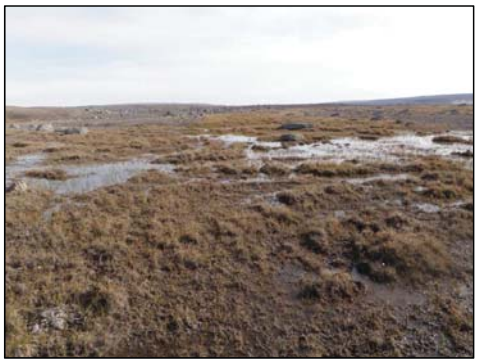
Fish Habitat Potential

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

Comments & Summary

This was marshy with little flow during the open-water period in 2018. In addition, there is a steep barrier downstream of the Tote Road (shared by other streams in this valley) preventing fish access from Phillips Creek under all flow conditions. There is never fish habitat at this crossing.

Photographs



A

Figure 1. Views of CV-47-1b at the rail crossing during fall (A). Note that 47-1b and 46-4, 46-6, and 47-1a are all branches of the same stream.

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-47-2 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525454 7937939

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 2-5° **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	H	N
NNST	N	N	N	N

Comments & Summary

This is part of the braided stream system that includes CV-47-1. This particular branch is smaller and may dry up during periods of low water. When wetted, as it was in 2018, CV-47-2 provides important juvenile char rearing habitat. For additional hydrology, habitat and fisheries information, see CV-47-1.

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-47-2 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525454 7937939

Photographs

A B C

Figure 1. Summer (top) and fall (bottom) views of CV-47-2 at the rail crossing; (A) looking upstream; (B) looking downstream; and (C) looking across.

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-47-3 **Dates Surveyed:** 6 July & 25 August, 2018 **UTM Coordinates:** 17 W 525704 7937307

General Physical Characteristics

Channel Confinement: PC **Channel Gradient (range):** 2-5° **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	L	N
NNST	N	N	N	N

Comments & Summary

This braid was dry during 2018 sampling, but is known to be wetted during period of very high flows (observed during annual Tote Road monitoring). Under such flow conditions, it may provide some rearing habitat.

Photographs

A

Figure 1. View of CV-47-3 at the rail crossing 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-48-1 **Dates Surveyed:** 4 July & 30 August, 2018 **UTM Coordinates:** 17 W 525839 7937127

General Physical Characteristics

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

Fisheries Data

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

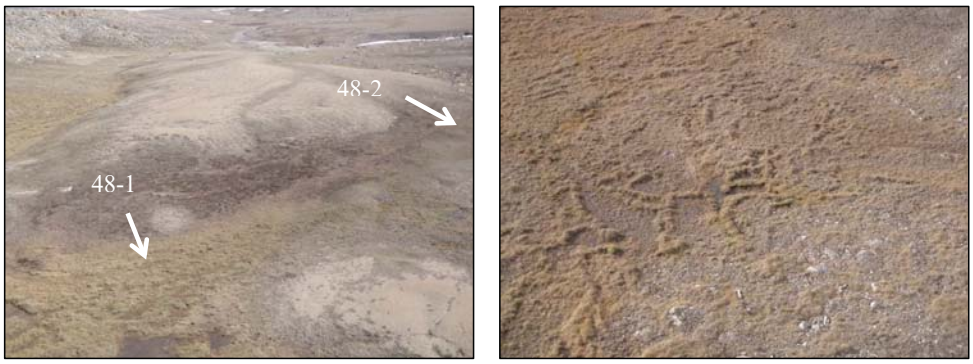
Fish Habitat Potential

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

Comments & Summary

This was nearly dry marshy to dry during the open-water period in 2018. There were no connections to other waterbodies. There is never fish habitat at this crossing.

Photographs



A **B**

Figure 1. Views of CV-48-1 at the rail crossing, with nearby 48-2, 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-48-2 **Dates Surveyed:** 4 July & 30 August, 2018 **UTM Coordinates:** 17 W 525916 7937063

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

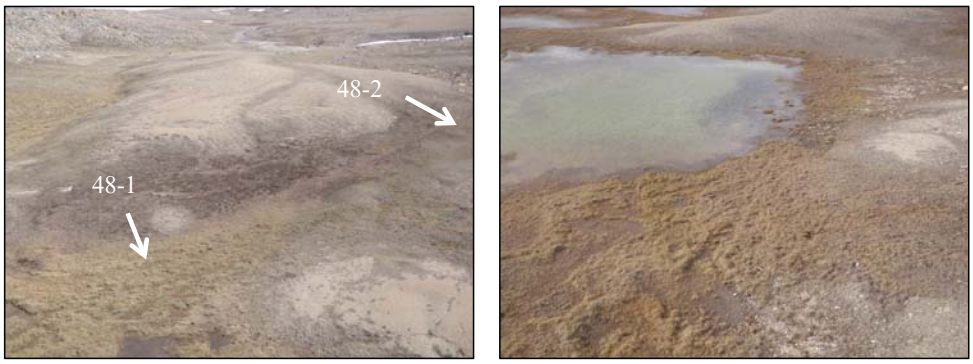
Fish Habitat Potential

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

Comments & Summary

This was a marshy area with adjacent shallow, fishless pond. There were no connections to other waterbodies. There is never fish habitat at this crossing.

Photographs



A **B**

Figure 1. Views of CV-48-2 at the rail crossing, with nearby 48-1, 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-48-3 **Dates Surveyed:** 4 July & 30 August, 2018 **UTM Coordinates:** 17 W 526356 7936875

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** > 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

This was a very steep, dry channel that joins with fish-bearing 48-4 downstream. However, the vertical barrier is impassable under all flow conditions. There is never fish habitat at this crossing.

Photographs

A

Figure 1. View of CV-48-3 at the rail crossing 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-48-4 alternate **Date Surveyed:** 4 July 2018 **UTM Coordinates:** 17 W 526726 7936794

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** 4-6° **Flow Regime:** Open Water

Hydrology & Habitat Characteristics

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	21.2	15.7	0.14	0.20	0.06	0.20	0.45	0.51	0.50	0.55
80D	17.9	10.6	0.10	0.28	0.10	0.30	0.83	0.31	0.28	0.85
60D	22.6	17.0	0.14	0.28	0.03	0.30	0.59	1.17	0.41	1.20
40D	19.5	12.4	0.16	0.12	0.06	0.20	0.37	0.94	0.56	0.95
20D	13.3	11.7	0.20	0.13	0.14	0.20	0.41	0.34	0.12	0.45
0	13.5	9.6	0.14	0.22	0.20	0.25	0.34	0.41	1.21	1.25
20U	9.7	7.8	0.22	0.30	0.16	0.30	0.35	0.60	0.71	0.75
40U	10.5	8.6	0.06	0.18	0.26	0.30	0.23	0.48	1.09	1.10
60U	10.1	7.9	0.44	0.07	0.19	0.45	0.59	0.04	0.37	0.65
80U	13.4	10.7	0.10	0.12	0.12	0.15	0.65	0.62	1.21	1.25
100U	11.0	6.2	0.12	0.19	0.16	0.20	0.32	0.64	0.19	0.65

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	30	-	-	-	-	-	5	70	20	5
80D	70	25	5	-	-	-	-	5	70	20	5
60D	70	25	5	-	-	-	-	5	65	20	10
40D	70	30	-	-	-	-	-	5	65	20	10
20D	70	25	-	-	5	-	-	5	65	20	10
0	70	15	5	-	10	-	-	5	50	25	20
20U	70	15	5	-	10	-	-	5	50	25	20
40U	70	20	5	-	5	-	-	5	50	25	20
60U	60	25	10	-	5	-	-	5	60	20	15
80U	75	25	-	-	-	-	-	5	60	25	10
100U	70	30	-	-	-	-	-	5	65	25	5

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-48-4 alternate **Date Surveyed:** 4 July 2018 **UTM Coordinates:** 17 W 526726 7936794

Fisheries Data

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

Species	Season	Effort (min)	Total Caught/Observed	CPUE	Length Range (mm)
ARCH	Summer	5.78	2	0.35	~100 - 150
	Fall	N/A	-	-	-
NNST	Summer	5.78	0	-	N/A
	Fall	N/A	-	-	-

Fish Habitat Potential

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

Comments & Summary

Note: GPS failed and lost all coordinates immediately prior to sampling here. Rail crossing location was a best estimate from the map and was approximately 240 m upstream of the actual crossing. Treat these data as an upstream extension of the fall assessment. Still abundant, important juvenile char habitat in this reach during the open water season.

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-48-4 alternate **Date Surveyed:** 4 July 2018 **UTM Coordinates:** 17 W 526726 7936794

Photographs

A **B** **C**

Figure 1. 100 m (top) and 80 m (bottom) downstream cross-section views of CV-48-4 alternate; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-48-4 alternate **Date Surveyed:** 4 July 2018 **UTM Coordinates:** 17 W 526726 7936794

Photographs

A **B** **C**

Figure 2. 60 m (top) and 40 m (bottom) downstream cross-section views of CV-48-4 alternate; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-48-4 alternate **Date Surveyed:** 4 July 2018 **UTM Coordinates:** 17 W 526726 7936794

Photographs

A **B** **C**

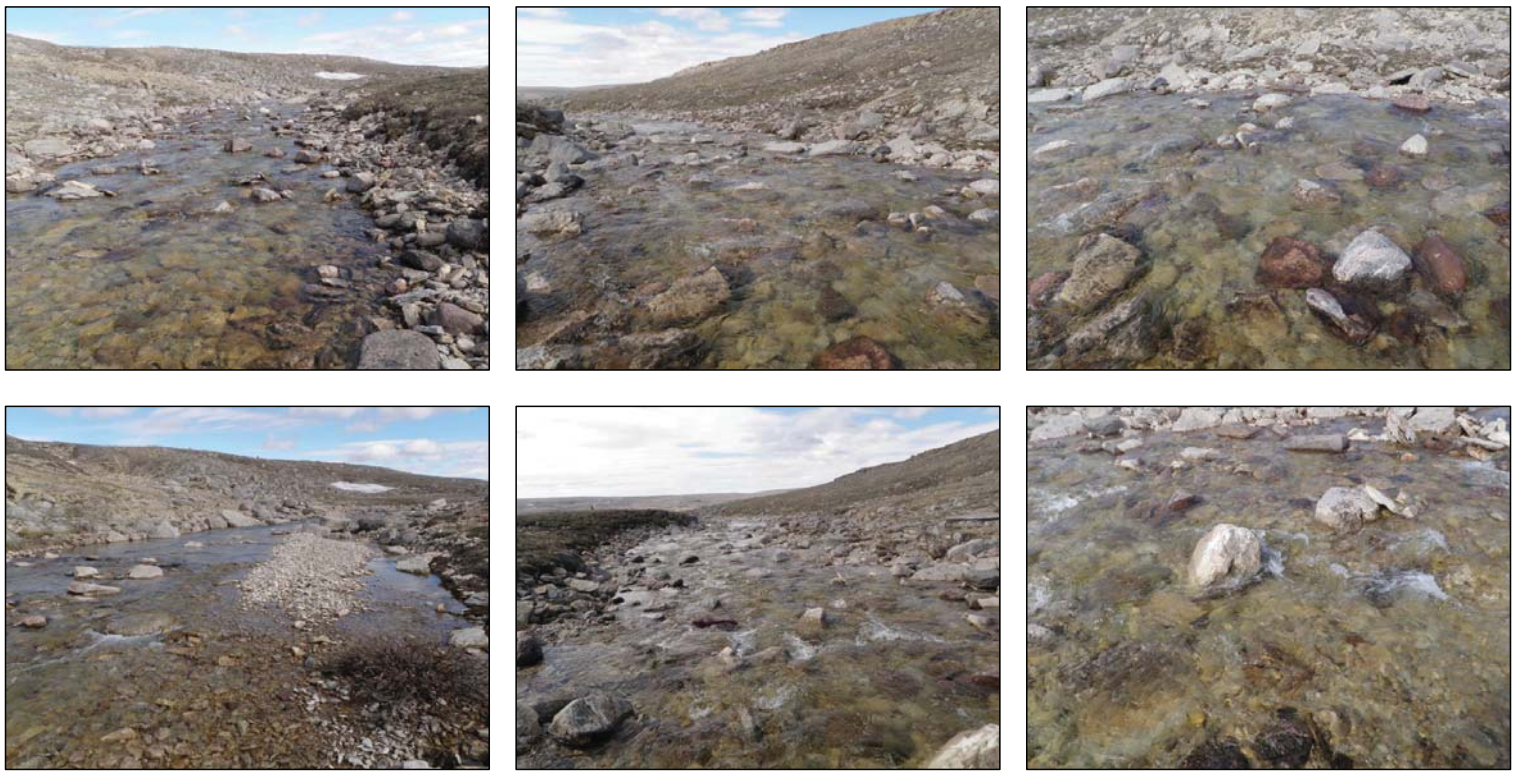
Figure 3. 20 m downstream (top) and rail crossing (bottom) cross-section views of CV-48-4 alternate; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-48-4 alternate **Date Surveyed:** 4 July 2018 **UTM Coordinates:** 17 W 526726 7936794

Photographs



A **B** **C**

Figure 4. 20 m (top) and 40 m (bottom) upstream cross-section views of CV-48-4 alternate; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-48-4 alternate **Date Surveyed:** 4 July 2018 **UTM Coordinates:** 17 W 526726 7936794

Photographs

A **B** **C**

Figure 5. 60 m (top) and 80 m (bottom) upstream cross-section views of CV-48-4 alternate; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-48-4 alternate **Date Surveyed:** 4 July 2018 **UTM Coordinates:** 17 W 526726 7936794

Photographs

A **B** **C**

Figure 6. 100 m upstream cross-section view of CV-48-4 alternate; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-48-4 **Date Surveyed:** 30 August 2018 **UTM Coordinates:** 17 W 526523 7936807

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** 4-6° **Flow Regime:** Open Water

Hydrology & Habitat Characteristics

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	13.8	10.4	0.13	0.12	0.11	0.15	0.37	0.09	0.43	0.50
80D	11.0	9.0	0.11	0.15	0.06	0.15	0.36	0.47	0.42	0.50
60D	10.0	7.5	0.04	0.08	0.03	0.10	0.31	0.52	0.35	0.55
40D	9.9	4.4	0.14	0.14	0.09	0.15	0.30	0.38	0.28	0.40
20D	11.7	10.2	0.11	0.12	0.20	0.20	0.63	0.38	0.26	0.65
0	13.1	7.7	0.12	0.28	0.14	0.30	0.33	0.19	0.73	0.75
20U	10.0	7.0	0.02	0.18	0.13	0.20	0.23	0.33	0.44	0.50
40U	10.0	8.3	0.08	0.17	0.06	0.20	0.55	0.44	0.37	0.60
60U	15.0	13.2	0.08	0.04	0.08	0.10	0.47	0.50	0.56	0.60
80U	21.5	15.6	0.12	0.08	0.04	0.15	0.36	0.23	0.17	0.40
100U	22.0	12.2	0.15	0.16	0.02	0.20	0.41	0.11	0.21	0.50

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	60	40	-	-	-	-	-	-	60	30	10
80D	70	30	-	-	-	-	-	-	60	30	10
60D	70	30	-	-	-	-	-	-	60	30	10
40D	70	30	-	-	-	-	-	-	60	30	10
20D	70	30	-	-	-	-	-	-	60	30	10
0	60	30	5	-	5	-	-	-	50	40	10
20U	60	30	-	-	10	-	-	-	50	40	10
40U	60	30	-	-	10	-	-	-	50	40	10
60U	60	30	-	-	10	-	-	-	60	35	5
80U	60	40	-	-	-	-	-	-	60	40	-
100U	70	30	-	-	-	-	-	-	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-48-4 **Date Surveyed:** 30 August 2018 **UTM Coordinates:** 17 W 526523 7936807

Fisheries Data

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

Species	Season	Effort (min)	Total Caught/Observed	CPUE	Length Range (mm)
ARCH	Summer	N/A	-	-	-
	Fall	3.78	0	-	N/A
NNST	Summer	N/A	-	-	-
	Fall	3.78	0	-	N/A

Fish Habitat Potential

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

Comments & Summary

Provides important rearing habitat for several size classes of juvenile char throughout the open water season, but particularly during summer. Water temperatures in survey streams during fall sampling averaged approximately 5°C and fish had already begun downstream movements towards overwintering habitat, reducing catches. Note that the summary assessment was actually conducted 240 m upstream of this location due to a GPS malfunction (see CV-48-4 alternate sheet).

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-48-4 **Date Surveyed:** 30 August 2018 **UTM Coordinates:** 17 W 526523 7936807

Photographs

A **B** **C**

Figure 1. 100 m (top) and 80 m (bottom) downstream cross-section views of CV-48-4; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-48-4 **Date Surveyed:** 30 August 2018 **UTM Coordinates:** 17 W 526523 7936807

Photographs

A **B** **C**

Figure 2. 60 m (top) and 40 m (bottom) downstream cross-section views of CV-48-4; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-48-4 **Date Surveyed:** 30 August 2018 **UTM Coordinates:** 17 W 526523 7936807

Photographs

A **B** **C**

Figure 3. 20 m downstream (top) and rail crossing (bottom) cross-section views of CV-48-4; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-48-4 **Date Surveyed:** 30 August 2018 **UTM Coordinates:** 17 W 526523 7936807

Photographs

A B C

Figure 4. 20 m (top) and 40 m (bottom) upstream cross-section views of CV-48-4; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-48-4 **Date Surveyed:** 30 August 2018 **UTM Coordinates:** 17 W 526523 7936807

Photographs

A **B** **C**

Figure 5. 60 m (top) and 80 m (bottom) upstream cross-section views of CV-48-4; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-48-4 **Date Surveyed:** 30 August 2018 **UTM Coordinates:** 17 W 526523 7936807

Photographs

A **B** **C**

Figure 6. 100 m upstream cross-section view of CV-48-4; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-49-1 **Dates Surveyed:** 4 July & 30 August, 2018 **UTM Coordinates:** 17 W 526690 7936443

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

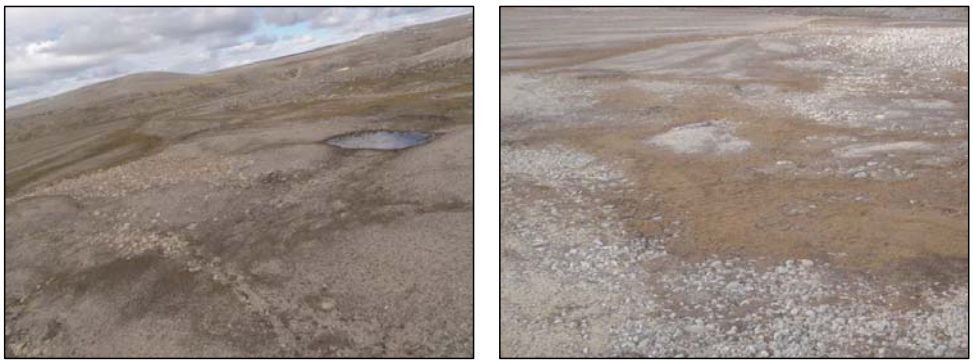
Fish Habitat Potential

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

Comments & Summary

This was a nearly dry marshy area with occasional shallow, isolated ponds. There is never fish habitat at this crossing.

Photographs



A **B**

Figure 1. Aerial views of CV-49-1 at the rail 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-49-2 **Dates Surveyed:** 4 July & 30 August, 2018 **UTM Coordinates:** 17 W 526737 7936101

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

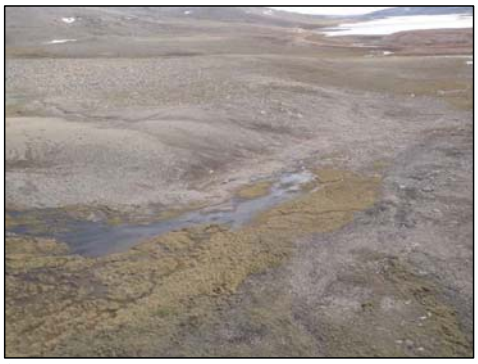
Fish Habitat Potential

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

Comments & Summary

This was slightly wetted during summer and nearly dry during fall, 2018. The Tote Road crossing (> 500 m downstream) is known to provide marginal fish habitat; however, there are multiple soft barriers (subsurface water, lack of channel) between road and rail that prevent movements farther upstream. There is never fish habitat at this crossing.

Photographs



A

B

Figure 1. Aerial views of CV-49-2 at the rail 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-49-3 **Dates Surveyed:** 4 July & 30 August, 2018 **UTM Coordinates:** 17 W 526788 7935730

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

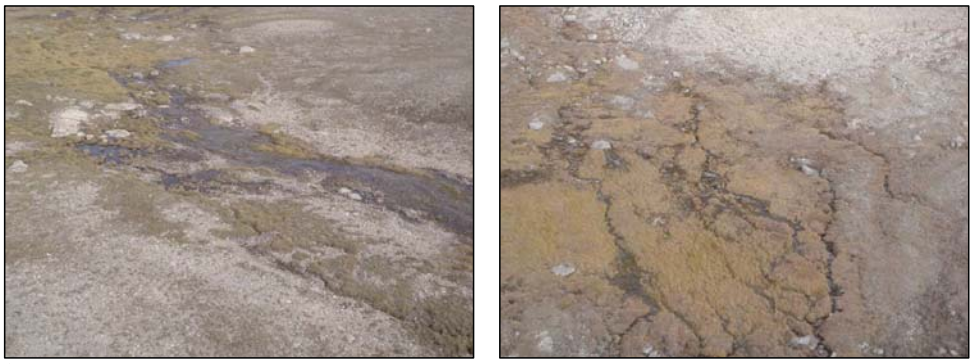
Fish Habitat Potential

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

Comments & Summary

This crossing is in the same watershed as 49-2 and shares many characteristics. The Tote Road crossing (> 500 m downstream) is known to provide marginal fish habitat. Periods of very high water may allow access upstream of the soft barriers (subsurface water) between the road and rail. Fish use of this crossing would be rare, at best.

Photographs



A **B**

Figure 1. Aerial views of CV-49-3 at the rail 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-50-1 **Dates Surveyed:** 8 July & 30 August, 2018 **UTM Coordinates:** 17 W 526835 7935393

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

This was a dry low point. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-50-1 at the rail 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-50-2 **Dates Surveyed:** 8 July & 30 August, 2018 **UTM Coordinates:** 17 W 526863 7935175

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

This site was a few isolated, shallow, fishless puddles during summer and nearly dry during fall. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-50-2 at the rail 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-50-3 **Dates Surveyed:** 8 July & 30 August, 2018 **UTM Coordinates:** 17 W 526868 7935095

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

This was a nearly dry hillside. There is never fish habitat at this crossing.

Photographs

A **B**

Figure 1. Views of CV-50-3 at the rail 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-50-4 **Dates Surveyed:** 8 July & 27 August, 2018 **UTM Coordinates:** 17 W 526874 7934905

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

This was a dry hillside. There is never fish habitat at this crossing.

Photographs

A B

Figure 1. Views of CV-50-4 at the rail crossing during summer, with nearby 50-4a (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-50-4a | **Dates Surveyed:** 8 July & 27 August, 2018 | **UTM Coordinates:** 17 W 526876 7934875

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

This was a dry hillside. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-50-4a at the rail crossing during summer, with nearby 50-4 (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-50-4b | **Dates Surveyed:** 8 July & 27 August, 2018 | **UTM Coordinates:** 17 W 526888 7934776

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

This was a dry hillside. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-50-4b at the rail 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-50-5 & CV-50-6 **Dates Surveyed:** 8 July & 27 August, 2018 **UTM Coordinates:** 17 W 526924 7934630 & 17 W 526926 7934620

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** 7-15° **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	6.0	- / 2.4	- / 0.15	- / 0.17	- / 0.11	- / 0.20	- / 0.35	- / 0.16	- / 0.26	- / 0.40
80D	6.0	- / 3.4	- / 0.07	- / 0.17	- / 0.11	- / 0.20	- / 0.26	- / 0.68	- / 0.50	- / 0.70
60D	TOTE ROAD CROSSING									
40D	8.0	- / 4.0	- / 0.11	- / 0.11	- / 0.09	- / 0.15	- / 0.01	- / 0.81	- / 0.62	- / 0.85
20D	10.0	- / 5.6	- / 0.14	- / 0.11	- / 0.07	- / 0.15	- / 0.15	- / 0.00	- / 0.57	- / 0.60
0	9.2	8.3 / 7.7	0.20 / 0.06	0.10 / 0.14	0.10 / 0.15	0.20 / 0.20	0.24 / 0.05	0.31 / 0.46	0.40 / 0.78	0.45 / 0.80
20U	13.7	10.2 / 10.5	0.08 / 0.13	0.12 / 0.07	0.12 / 0.10	0.15 / 0.15	0.83 / 0.48	1.03 / 0.19	0.28 / 0.63	1.05 / 0.65
40U	16.9	6.9 / 4.4	0.04 / 0.20	0.10 / 0.24	0.08 / 0.20	0.15 / 0.25	0.06 / 0.01	1.05 / 0.84	0.32 / 0.18	1.05 / 0.85
60U	10.7	6.4 / 4.5	0.22 / 0.07	0.08 / 0.10	0.38 / 0.25	0.40 / 0.30	0.69 / 0.21	0.29 / 0.42	0.32 / 0.03	0.70 / 0.45
80U	-	- / 7.4	- / 0.10	- / 0.13	- / 0.15	- / 0.20	- / 0.25	- / 0.21	- / 0.56	- / 0.60
100U	FALLS BARRIER									

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	75	25	-	-	-	-	-	5	85	10	-
80D	75	25	-	-	-	-	-	5	85	10	-
60D	TOTE ROAD CROSSING										
40D	80	15	-	-	5	-	-	5	80	15	-
20D	75	15	-	-	10	-	-	5	80	15	-
0	70	10	-	-	20	-	-	-	70	25	5
20U	50	20	-	-	30	-	-	5	50	40	5
40U	10	30	-	-	60	-	-	-	40	40	20
60U	10	35	-	-	55	-	-	-	30	40	30
80U	30	30	-	-	40	-	-	-	20	30	50
100U	FALLS BARRIER										

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-50-5 & CV-50-6

Dates Surveyed: 8 July & 27 August, 2018

UTM Coordinates: 17 W 526924 7934630 & 17 W 526926 7934620

Fisheries Data

Gear Used: Backpack Electrofisher

Transect Length (m): 100

Species	Season	Effort (min)	Total Caught/Observed	CPUE	Length Range (mm)
ARCH	Summer	5.15	14	2.72	53 - 101
	Fall	N/A	-	-	-
NNST	Summer	5.15	0	-	N/A
	Fall	N/A	-	-	-

Fish Habitat Potential

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

Comments & Summary

These rail crossings are immediately upstream of CV-072 on the Tote Road. CV-50-6 provides important rearing habitat for several size classes of juvenile char throughout the open water season, but particularly during summer. Water temperatures in survey streams during fall sampling averaged approximately 5°C and fish had already begun downstream movements towards overwintering habitat, reducing catches. Note that the main channel is CV-50-6 while CV-50-5 is only intermittently wet (see Figure 10 below), providing marginal habitat for 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-50-5 & CV-50-6

Dates Surveyed: 8 July & 27 August, 2018

UTM Coordinates: 17 W 526924 7934630 & 17 W 526926 7934620

Photographs

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

A

B

C

Figure 1. Summer (top) and fall (bottom) views of CV-50-6 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-50-5 & CV-50-6

Dates Surveyed: 8 July & 27 August, 2018

UTM Coordinates: 17 W 526924 7934630 & 17 W 526926 7934620

Photographs

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

A

B

C

Figure 2. Summer (top) and fall (bottom) views of CV-50-6 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-50-5 & CV-50-6

Dates Surveyed: 8 July & 27 August, 2018

UTM Coordinates: 17 W 526924 7934630 & 17 W 526926 7934620

Photographs

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

A

B

C

Figure 3. Summer (top) and fall (bottom) views of CV-50-6 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-50-5 & CV-50-6

Dates Surveyed: 8 July & 27 August, 2018

UTM Coordinates: 17 W 526924 7934630 & 17 W 526926 7934620

Photographs

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

A

B

C

Figure 4. Summer (top) and fall (bottom) views of CV-50-6 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-50-5 & CV-50-6

Dates Surveyed: 8 July & 27 August, 2018

UTM Coordinates: 17 W 526924 7934630 & 17 W 526926 7934620

Photographs

A B C

Figure 5. Summer (top) and fall (bottom) views of CV-50-6 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-50-5 & CV-50-6

Dates Surveyed: 8 July & 27 August, 2018

UTM Coordinates: 17 W 526924 7934630 & 17 W 526926 7934620

Photographs

A B C

Figure 6. Summer (top) and fall (bottom) views of CV-50-6 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-50-5 & CV-50-6

Dates Surveyed: 8 July & 27 August, 2018

UTM Coordinates: 17 W 526924 7934630 & 17 W 526926 7934620

Photographs

A B C

Figure 7. Summer (top) and fall (bottom) views of CV-50-6 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-50-5 & CV-50-6

Dates Surveyed: 8 July & 27 August, 2018

UTM Coordinates: 17 W 526924 7934630 & 17 W 526926 7934620

Photographs

A B C

Figure 8. Summer (top) and fall (bottom) views of CV-50-6 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-50-5 & CV-50-6

Dates Surveyed: 8 July & 27 August, 2018

UTM Coordinates: 17 W 526924 7934630 & 17 W 526926 7934620

Photographs

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

A

B

C

Figure 9. Summer (top) and fall (bottom) views of CV-50-6 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-50-5 & CV-50-6

Dates Surveyed: 8 July & 27 August, 2018

UTM Coordinates: 17 W 526924 7934630 & 17 W 526926 7934620

Photographs

A B C

Figure 10. Summer (top) and fall (bottom) views of CV-50-5 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-51-1 **Dates Surveyed:** 8 July & 27 August, 2018 **UTM Coordinates:** 17 W 527006 7934331

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

This was a dry hillside. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-51-1 at the rail 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-51-2 **Dates Surveyed:** 8 July & 27 August, 2018 **UTM Coordinates:** 17 W 527054 7933628

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

This was a dry hillside. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-51-2 at the rail 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-52-1 **Dates Surveyed:** 8 July & 27 August, 2018 **UTM Coordinates:** 17 W 527080 7932998

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

This site had very low water during 2018. In addition, there is no surface flow downstream of the Tote Road and no connectivity to overwintering habitat. There is never fish habitat at this crossing.

Photographs

A **B**

Figure 1. Views of CV-52-1 at the rail 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-52-2 **Dates Surveyed:** 8 July & 27 August, 2018 **UTM Coordinates:** 17 W 527132 7932787

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

This was a nearly dry hillside with some ponding at the Tote Road. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-52-2 at the rail 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-52-3 **Dates Surveyed:** 8 July & 27 August, 2018 **UTM Coordinates:** 17 W 527180 7932698

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

This was a dry hillside. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-52-3 at the rail 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-53-1 **Dates Surveyed:** 8 July & 27 August, 2018 **UTM Coordinates:** 17 W 527366 7932476

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

This was a dry hillside. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-53-1 at the rail 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-53-2 **Dates Surveyed:** 8 July & 27 August, 2018 **UTM Coordinates:** 17 W 527274 7932000

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

This was a small, shallow, fishless pond with no connections to other waterbodies. There is never fish habitat at this crossing.

Photographs

A **B**

Figure 1. Views of CV-53-2 at the rail 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-54-1 **Dates Surveyed:** 8 July & 27 August, 2018 **UTM Coordinates:** 17 W 527333 7931375

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 2-5° **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

This was shallow, marshy habitat with multiple soft barriers downstream and no connection to overwintering habitat under any flow condition. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-54-1 at the rail 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**