Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-20-2 **Dates Surveyed:** 30 June & 23 August, 2018 **UTM Coordinates:** 17 W 517267 7962029

Photographs

A

B

Figure 2. Aerial views of CV-20-2 during fall (A) and (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-21-1 **Dates Surveyed:** 30 June & 23 August, 2018 **UTM Coordinates:** 17 W 517365 7961888

General Physical Characteristics

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

Fisheries Data

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

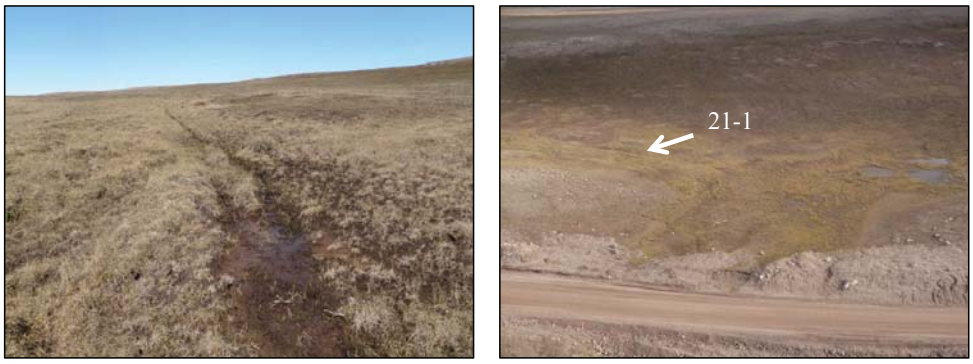
Fish Habitat Potential

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

Comments & Summary

This site was nearly dry in 2018. In addition, there was no defined channel and multiple soft barriers to fish movement (subsurface flow) and no connection to overwintering habitat. There is no fish habitat at this crossing.

Photographs



A **B**

Figure 1. Views of CV-21-1 at the rail crossing during summer (A) and aerially 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-21-2 **Dates Surveyed:** 30 June & 23 August, 2018 **UTM Coordinates:** 17 W 517607 7961640

General Physical Characteristics

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

Fisheries Data

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

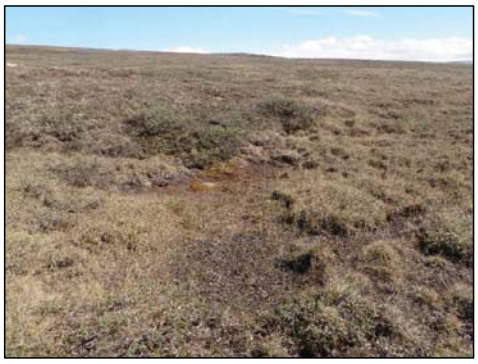
Fish Habitat Potential

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

Comments & Summary

This site was nearly dry in 2018. In addition, there was no defined channel and multiple soft barriers to fish movement (subsurface flow) and no connection to overwintering habitat. There is no fish habitat at this crossing.

Photographs



A

B

Figure 1. Views of CV-21-2 at the rail crossing during summer (A) and aerially 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-21-3 **Dates Surveyed:** 4 July & 23 August, 2018 **UTM Coordinates:** 17 W 517928 7961308

General Physical Characteristics

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

Fisheries Data

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

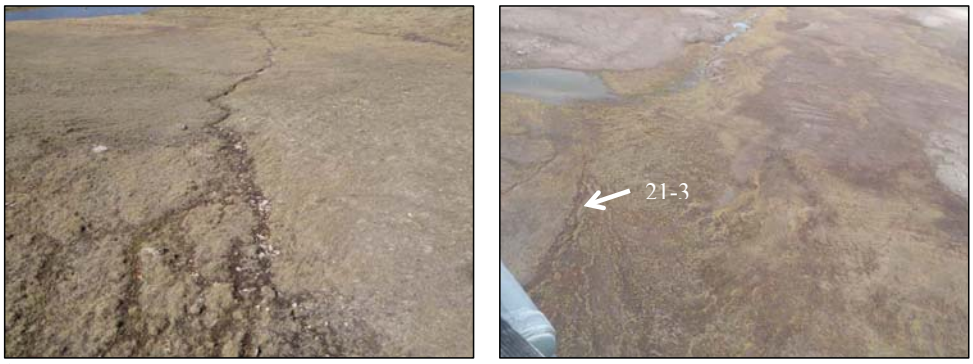
Fish Habitat Potential

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

Comments & Summary

This site was nearly dry in 2018. In addition, there were multiple soft barriers to fish movement (subsurface flow) and no connection to overwintering habitat. There is no fish habitat at this crossing.

Photographs



A **B**

Figure 1. Views of CV-21-3 at the rail crossing during summer (A) and aerially 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-21-4 **Dates Surveyed:** 4 July & 23 August, 2018 **UTM Coordinates:** 17 W 518010 7961196

General Physical Characteristics

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

Fisheries Data

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

Fish Habitat Potential

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

Comments & Summary

This site was nearly dry in 2018. In addition, there was no defined channel and multiple soft barriers to fish movement (subsurface flow) and no connection to overwintering habitat. There is no fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-21-4 at the rail crossing during summer (A) and aerially 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-22-1 **Dates Surveyed:** 4 July & 23 August, 2018 **UTM Coordinates:** 17 W 518010 7961196

General Physical Characteristics

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

Fisheries Data

Gear Used: Backpack Electrofisher **Effort (min):** 2.43 **Transect Length (m):** 200

Fish Habitat Potential

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

Comments & Summary

This is a small, shallow (< 1 m maximum depth), isolated pond. Fish were not captured or observed in 2018. Depths are insufficient for overwintering and there is no access from other waterbodies. There is no fish habitat at this crossing.

Photographs

A **B** **C**

Figure 1. Views of CV-22-1 at the rail crossing during summer (A) and (B), and aerially during fall (C).

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

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-22-2 **Dates Surveyed:** 4 July & 23 August, 2018 **UTM Coordinates:** 17 W 518232 7960617

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 is a small, shallow (< 1 m maximum depth), isolated pond, similar to CV-22-1. Depths are insufficient for overwintering and there is no access from other waterbodies. There is no fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-22-2 at the rail crossing during summer (A) and aerially 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-22-3 **Dates Surveyed:** 30 June & 23 August, 2018 **UTM Coordinates:** 17 W 518295 7960427

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

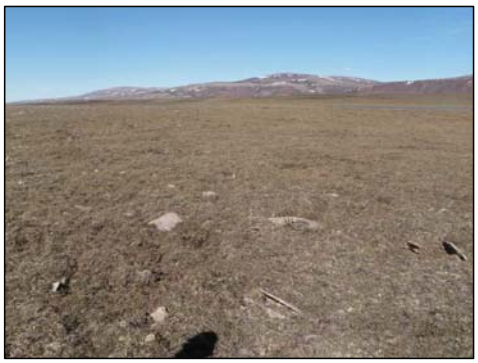
Fish Habitat Potential

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

Comments & Summary

This was a dry low point during summer and nearly dry during fall. There is no access from other waterbodies. There is no fish habitat at this crossing.

Photographs



A

B

Figure 1. Views of CV-22-3 at the rail crossing during summer (A) and aerially 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-22-4 **Dates Surveyed:** 30 June & 23 August, 2018 **UTM Coordinates:** 17 W 518370 7960198

General Physical Characteristics

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

Fisheries Data

Gear Used: Backpack Electrofisher **Effort (min):** 2.37 **Transect Length (m):** 200

Fish Habitat Potential

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

Comments & Summary

This is a small, shallow (< 1 m maximum depth), isolated pond. Overwintering is not possible in this pond and there is no access from other waterbodies. There is no fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-22-4 at the rail crossing during summer (A) and aerially 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-23-1 **Dates Surveyed:** 30 June & 23 August, 2018 **UTM Coordinates:** 17 W 518370 7960198

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 dry low point during summer and nearly dry during fall. There are no connections to overwintering habitat under any flow scenario. There is no fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-23-1 at the rail crossing during summer (A) and aerially 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-23-2 **Dates Surveyed:** 30 June & 23 August, 2018 **UTM Coordinates:** 17 W 518501 7959798

General Physical Characteristics

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

Fisheries Data

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

Fish Habitat Potential

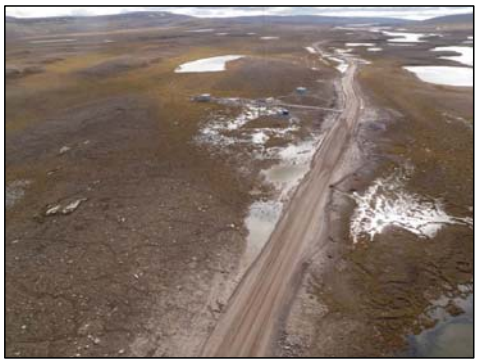
Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

Water in this area is typically dispersed across the tundra in a very shallow film, but it also pools up against the upstream side of the Tote Road. Flows are often subsurface and there is a vertical barrier at the confluence with Phillips Creek. There is no fish habitat at this crossing.

Photographs

A



B

Figure 1. Views of CV-23-2 at the rail crossing during summer (A) and aerially 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-23-3 **Dates Surveyed:** 30 June & 23 August, 2018 **UTM Coordinates:** 17 W 518695 7959425

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 spot in 2018. There is no fish habitat at this crossing.

Photographs

A **B**

Figure 1. Views of CV-23-3 at the rail crossing during summer (A) and aerially 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-23-4 **Dates Surveyed:** 30 June & 23 August, 2018 **UTM Coordinates:** 17 W 518754 7959335

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

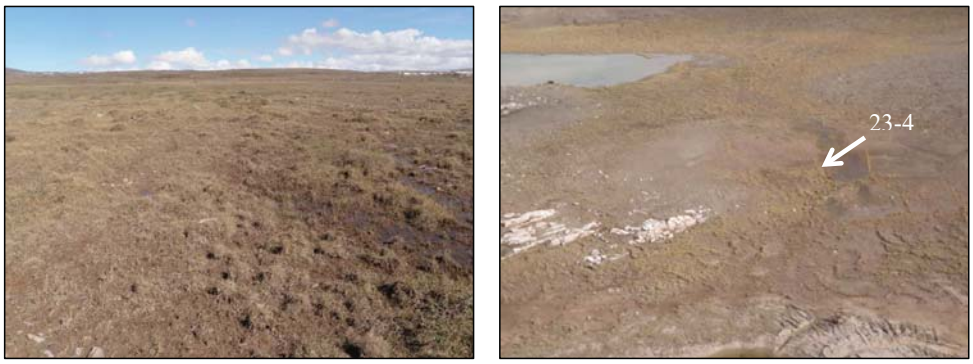
Fish Habitat Potential

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

Comments & Summary

This was a dry or nearly dry low point in 2018. There is no fish habitat at this crossing.

Photographs



A **B**

Figure 1. Views of CV-23-4 at the rail crossing during summer (A) and aerially 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-24-1 **Dates Surveyed:** 30 June & 23 August, 2018 **UTM Coordinates:** 17 W 518988 7958946

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

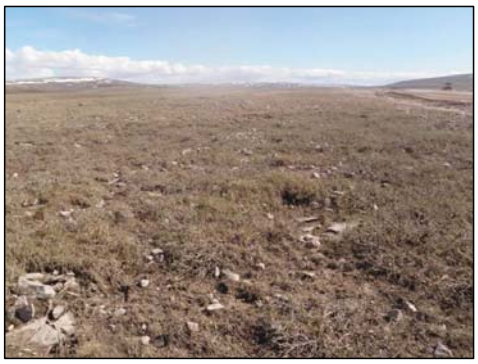
Fish Habitat Potential

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

Comments & Summary

This was a dry or nearly dry low point in 2018. There is no fish habitat at this crossing.

Photographs



A

B

Figure 1. Views of CV-24-1 at the rail crossing during summer (A) and aerially 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-24-3 **Dates Surveyed:** 1 July & 23 August, 2018 **UTM Coordinates:** 17 W 519153 7958481

General Physical Characteristics

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

Fisheries Data

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

Fish Habitat Potential

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

Comments & Summary

This is a dry or nearly dry marshy terrestrial spot with no connections to other waterbodies and multiple upstream and downstream soft barriers (subsurface flow). There is no fish habitat at this crossing.

Photographs

A **B**

Figure 1. Aerial views of CV-24-3 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-25-1 **Dates Surveyed:** 1 July & 23 August, 2018 **UTM Coordinates:** 17 W 519225 7958229

General Physical Characteristics

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

Fisheries Data

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

Fish Habitat Potential

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

Comments & Summary

This is a dry or nearly dry marshy terrestrial spot with no connections to other waterbodies and multiple upstream and downstream soft barriers (subsurface flow). This is part of the same system as several other crossings. There is no fish habitat at this crossing.

Photographs

A **B**

Figure 1. Aerial views of CV-25-1 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-25-2 **Dates Surveyed:** 1 July & 23 August, 2018 **UTM Coordinates:** 17 W 519507 7958144

General Physical Characteristics

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

Fisheries Data

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

Fish Habitat Potential

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

Comments & Summary

This is a marshy terrestrial spot with no connections to other waterbodies and multiple upstream and downstream soft barriers (no surface water). This is part of the same system as several other nearby crossings. There is no fish habitat at this crossing.

Photographs

A **B** **C**

Figure 1. Views of CV-25-2 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-25-2 **Dates Surveyed:** 1 July & 23 August, 2018 **UTM Coordinates:** 17 W 519507 7958144

Photographs

A

Figure 2. Aerial view of CV-25-2 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-25-3 **Dates Surveyed:** 1 July & 23 August, 2018 **UTM Coordinates:** 17 W 519661 7958016

General Physical Characteristics

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

Fisheries Data

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

Fish Habitat Potential

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

Comments & Summary

This is a marshy terrestrial spot with no connections to other waterbodies and multiple upstream and downstream soft barriers (no surface water). This is part of the same system as several other nearby crossings. There is no fish habitat at this crossing.

Photographs

A **B** **C**

Figure 1. Aerial views of CV-25-3 at the rail crossing during summer (A) and (B), and fall (C).

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

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-26-1 **Dates Surveyed:** 1 July & 23 August, 2018 **UTM Coordinates:** 17 W 519989 7957450

General Physical Characteristics

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

Fisheries Data

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

Fish Habitat Potential

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

Comments & Summary

This is a small, shallow pond that is part of a marshy terrestrial complex with no connections to overwintering waterbodies and multiple upstream and downstream soft barriers (no surface water). This is part of the same system as several other nearby crossings. There is no fish habitat at this crossing.

Photographs

A

B

Figure 1. Aerial views of CV-26-1 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-26-3 **Dates Surveyed:** 1 July & 23 August, 2018 **UTM Coordinates:** 17 W 520156 7957209

General Physical Characteristics

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

Fisheries Data

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

Fish Habitat Potential

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

Comments & Summary

This was a dry low point in 2018. There is no fish habitat at this crossing.

Photographs

A

Figure 1. Aerial view of CV-26-3 at the rail crossing during summer (A).

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

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-26-4 **Dates Surveyed:** 1 July & 23 August, 2018 **UTM Coordinates:** 17 W 520224 7957110

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 low point in 2018. There is no fish habitat at this crossing.

Photographs

A

Figure 1. Aerial views of CV-26-4 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-26-5 **Dates Surveyed:** 1 July & 23 August, 2018 **UTM Coordinates:** 17 W 520386 7956847

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 low point in 2018. There is no fish habitat at this crossing.

Photographs

A

Figure 1. Aerial view of CV-26-5 at the rail crossing during fall (A).

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

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-27-1 **Date Surveyed:** 1 July, 2018 **UTM Coordinates:** 17 W 520406 7956775

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 low point in 2018. There are no connections to other waterbodies under any flow scenarios. There is no fish habitat at this crossing.

Photographs

A

Figure 1. Aerial view of CV-27-1 at the rail crossing during fall (A).

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

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-27-2 **Dates Surveyed:** 1 July & 24 August, 2018 **UTM Coordinates:** 17 W 520412 7956735

General Physical Characteristics

Channel Confinement: PC **Channel Gradient (range):** 2-3° **Flow Regime:** Open Water

Hydrology & Habitat Characteristics

Site	Channel Width (m)		Water Depth (m) (Summer/Fall)				Water Velocity (m/s) (Summer/Fall)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	7.4	1.3 / 1.3	0.10 / -	0.16 / 0.30	0.12 / -	0.16 / 0.30	0.83 / -	0.28 / 0.38	0.03 / -	0.85 / 0.45
80D	9.7	3.0 / 2.0	0.20 / 0.20	0.12 / -	0.12 / 0.12	0.20 / 0.25	0.19 / 0.38	0.51 / -	0.04 / 0.18	0.60 / 0.50
60D	5.2	2.2 / 4.0	0.10 / 0.16	0.42 / -	0.32 / 0.14	0.50 / 0.50	0.11 / 0.29	0.09 / -	0.02 / 0.37	0.15 / 0.40
40D	5.5	2.0 / 1.0	0.09 / -	0.04 / 0.28	0.04 / -	0.10 / 0.28	0.32 / -	0.21 / 0.41	0.07 / -	0.40 / 0.50
20D	3.7	1.9 / 1.9	0.09 / 0.04	0.05 / -	0.03 / 0.06	0.10 / 0.10	0.21 / 0.32	0.15 / -	0.22 / 0.19	0.25 / 0.35
0	7.1	4.3 / 3.4	0.04 / 0.10	0.06 / -	0.07 / 0.12	0.10 / 0.15	0.16 / 0.40	0.16 / -	0.67 / 0.38	0.70 / 0.50
20U	3.4	2.1 / 2.3	0.10 / 0.08	0.08 / -	0.03 / 0.10	0.10 / 0.10	0.47 / 0.39	0.65 / -	0.18 / 0.56	0.70 / 0.70
40U	3.7	3.4 / 4.6	0.05 / 0.04	0.07 / -	0.05 / 0.12	0.10 / 0.15	0.54 / 0.32	0.56 / -	0.22 / 0.41	0.65 / 0.55
60U	2.1	1.4 / 1.8	0.08 / 0.24	0.13 / -	0.07 / 0.14	0.15 / 0.25	0.03 / 0.35	0.50 / -	0.12 / 0.27	0.50 / 0.40
80U	0.9	0.8 / 1.3	0.12 / 0.18	0.14 / -	0.06 / 0.10	0.15 / 0.20	0.42 / 0.98	0.06 / -	0.93 / 0.69	1.00 / 1.00
100U	1.5	1.0 / 1.1	0.16 / -	0.14 / 0.16	0.08 / -	0.20 / 0.20	0.16 / -	0.29 / 0.72	0.35 / -	0.40 / 0.75

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

Baffinland Iron Mines
Mary River Project

North/South Consultants Inc.
Aquatic Environment Specialists

Fish Habitat Quality

Arctic Char - MARGINAL

Ninespine Stickleback – NOT FISH-BEARING

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-27-2 **Dates Surveyed:** 1 July & 24 August, 2018 **UTM Coordinates:** 17 W 520412 7956735

Fisheries Data

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

Species	Season	Effort (min)	Total Caught/Observed	CPUE	Length Range (mm)
ARCH	Summer	4.62	1	0.22	111
	Fall	4.07	3	0.74	68 - 155
NNST	Summer	4.62	0	-	N/A
	Fall	4.07	0	-	N/A

Fish Habitat Potential

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

Comments & Summary

Stream provides important habitat for juvenile Arctic Char during the open water season.

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

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-27-2 **Dates Surveyed:** 1 July & 24 August, 2018 **UTM Coordinates:** 17 W 520412 7956735

Photographs

A **B** **C**

Figure 1. Summer (top) and fall (bottom) views of CV-27-2 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-27-2 **Dates Surveyed:** 1 July & 24 August, 2018 **UTM Coordinates:** 17 W 520412 7956735

Photographs

A **B** **C**

Figure 2. Summer (top) and fall (bottom) views of CV-27-2 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-27-2 **Dates Surveyed:** 1 July & 24 August, 2018 **UTM Coordinates:** 17 W 520412 7956735

Photographs

A **B** **C**

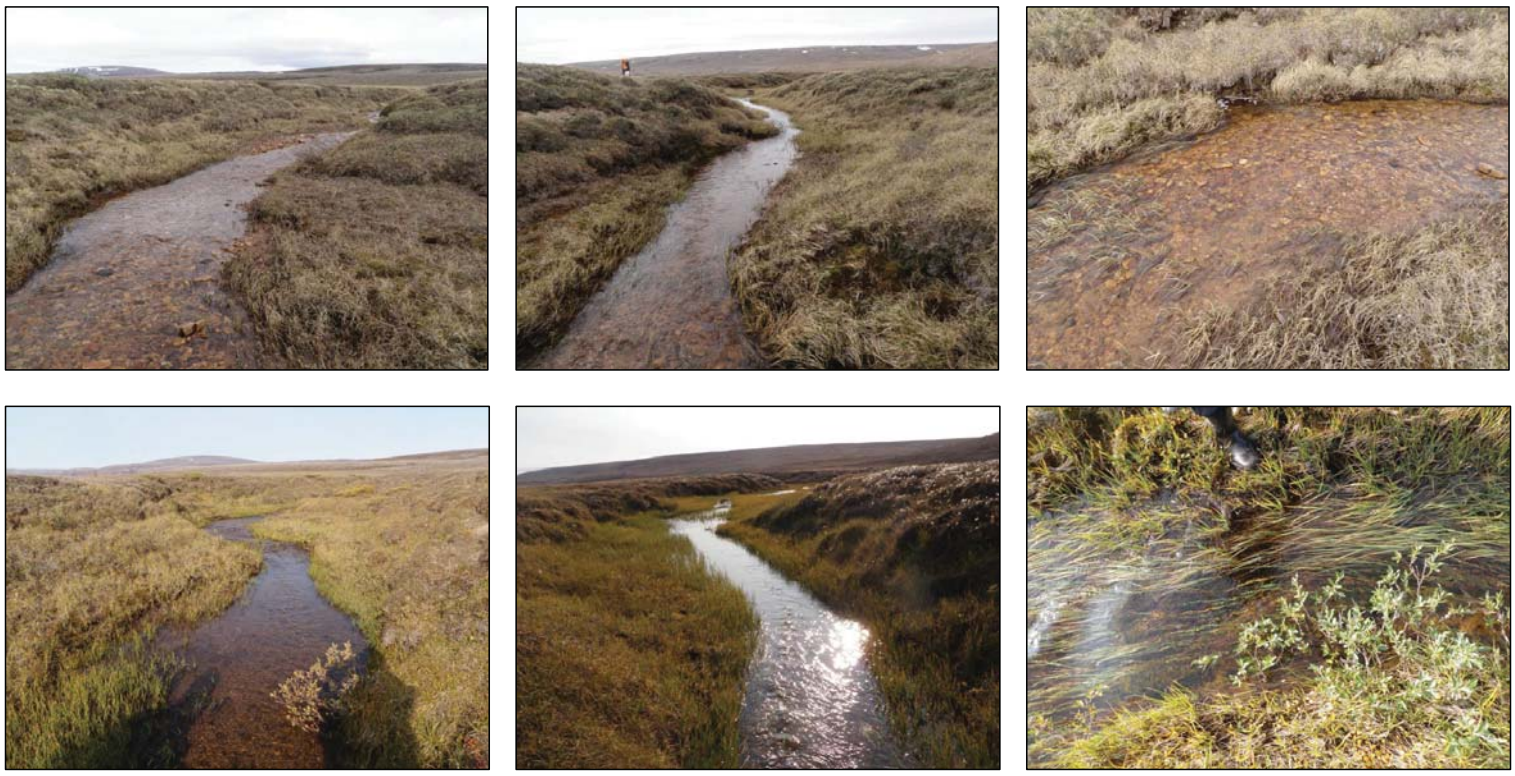
Figure 3. Summer (top) and fall (bottom) views of CV-27-2 at the 60 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-27-2 **Dates Surveyed:** 1 July & 24 August, 2018 **UTM Coordinates:** 17 W 520412 7956735

Photographs



A **B** **C**

Figure 4. Summer (top) and fall (bottom) views of CV-27-2 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-27-2 **Dates Surveyed:** 1 July & 24 August, 2018 **UTM Coordinates:** 17 W 520412 7956735

Photographs

A **B** **C**

Figure 5. Summer (top) and fall (bottom) views of CV-27-2 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-27-2 **Dates Surveyed:** 1 July & 24 August, 2018 **UTM Coordinates:** 17 W 520412 7956735

Photographs

A **B** **C**

Figure 6. Summer (top) and fall (bottom) views of CV-27-2 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-27-2 **Dates Surveyed:** 1 July & 24 August, 2018 **UTM Coordinates:** 17 W 520412 7956735

Photographs

A B C

Figure 7. Summer (top) and fall (bottom) views of CV-27-2 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-27-2 **Dates Surveyed:** 1 July & 24 August, 2018 **UTM Coordinates:** 17 W 520412 7956735

Photographs

A **B** **C**

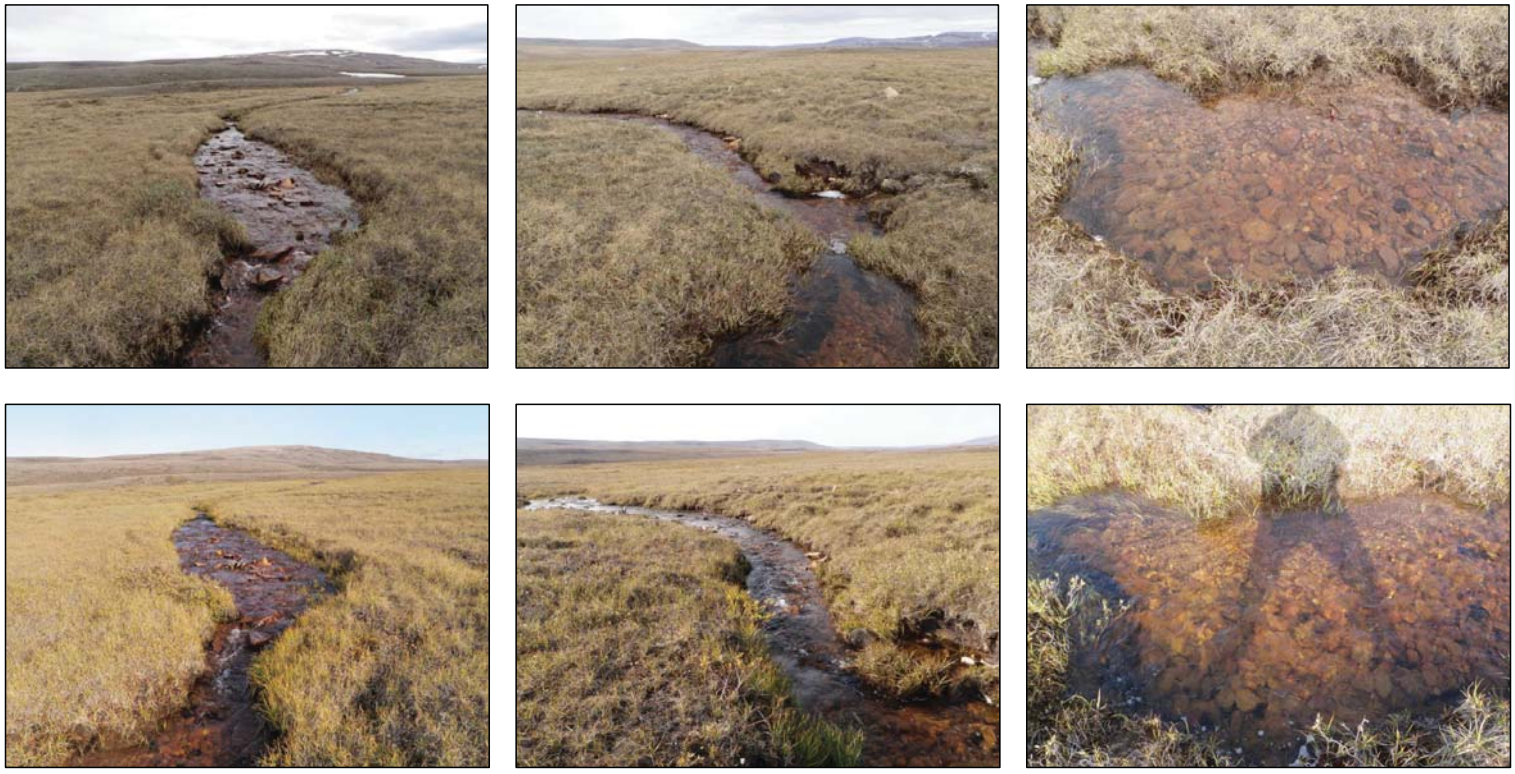
Figure 8. Summer (top) and fall (bottom) views of CV-27-2 at the 40 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-27-2 **Dates Surveyed:** 1 July & 24 August, 2018 **UTM Coordinates:** 17 W 520412 7956735

Photographs



A B C

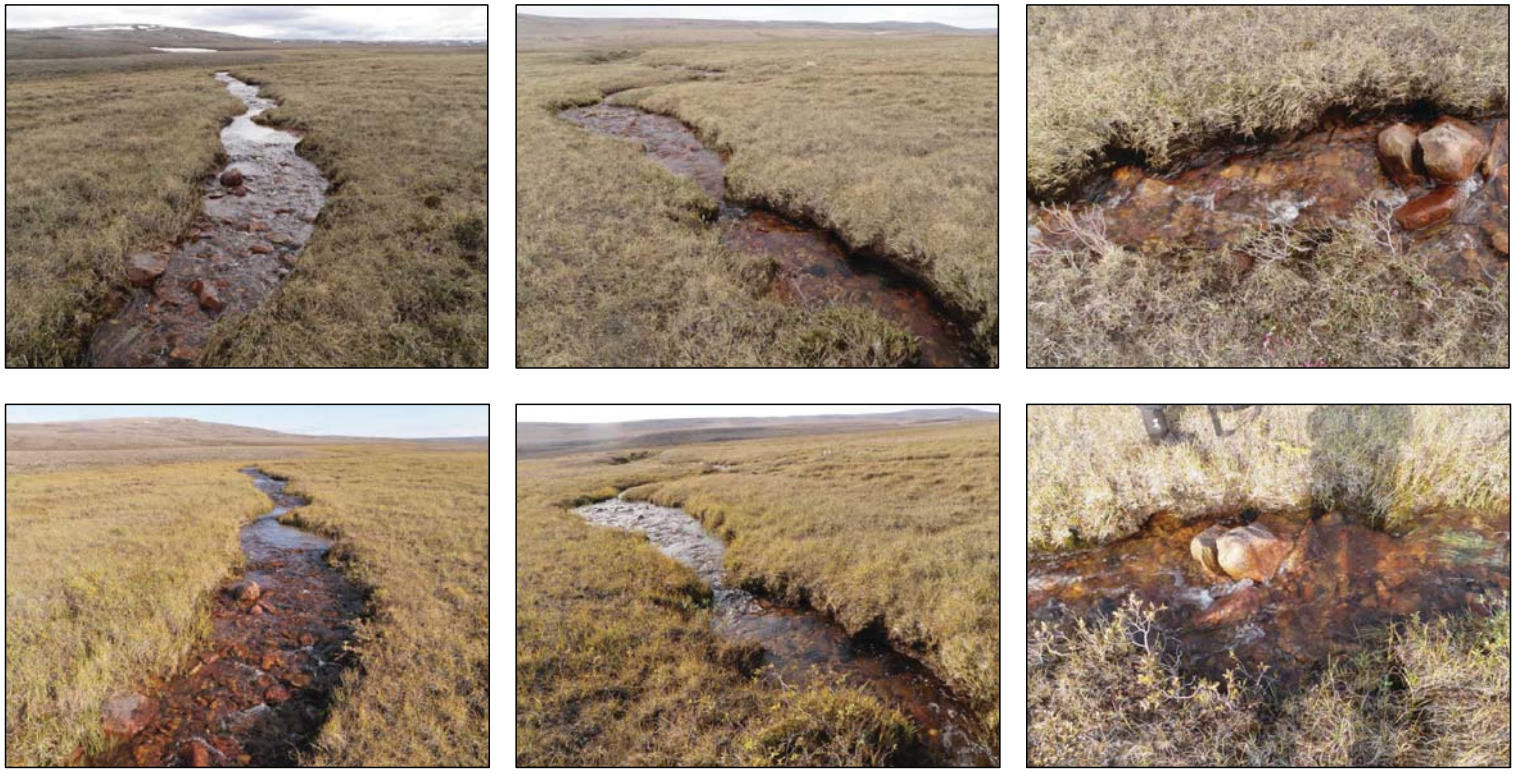
Figure 9. Summer (top) and fall (bottom) views of CV-27-2 at the 60 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-27-2 **Dates Surveyed:** 1 July & 24 August, 2018 **UTM Coordinates:** 17 W 520412 7956735

Photographs



A **B** **C**

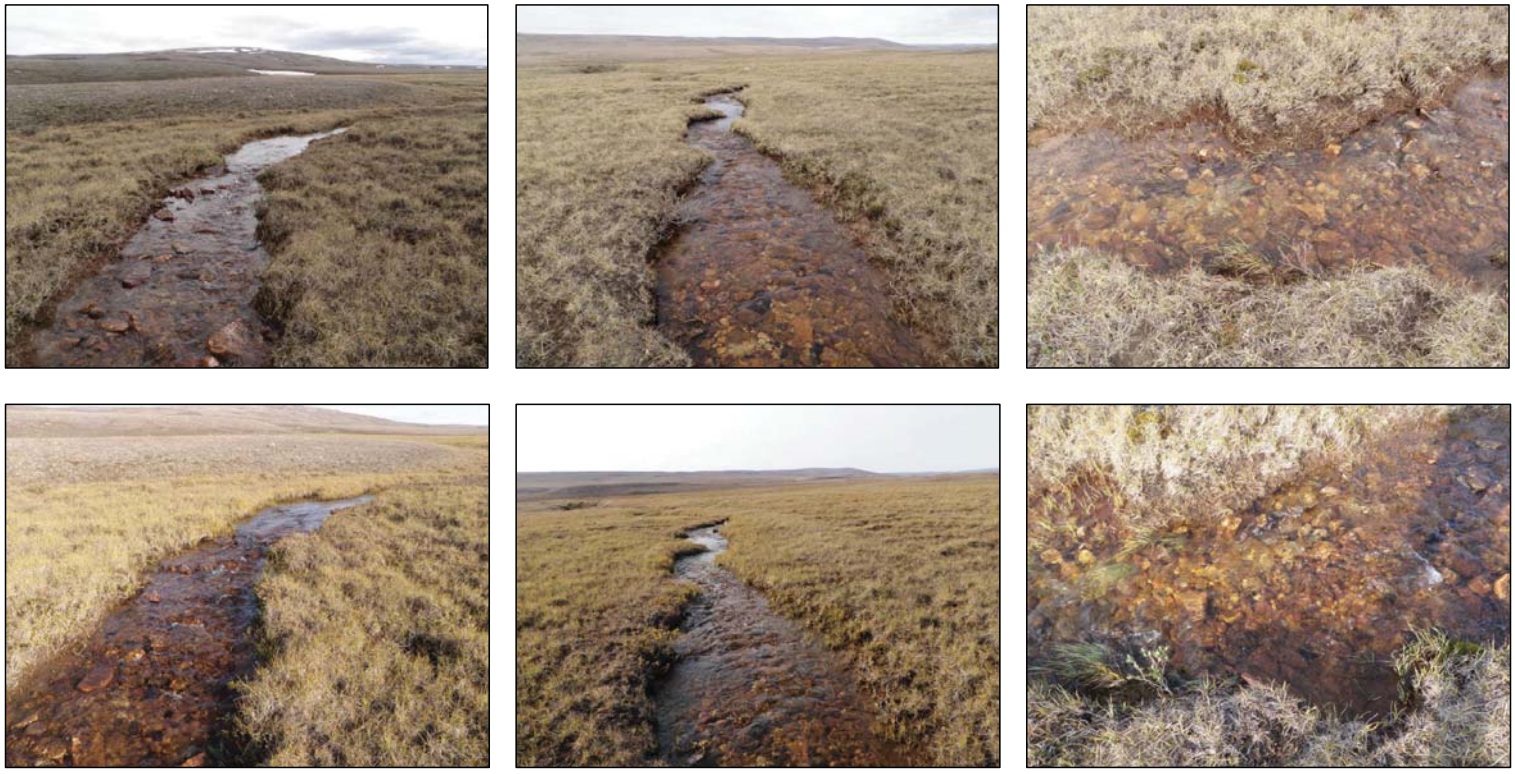
Figure 10. Summer (top) and fall (bottom) views of CV-27-2 at the 80 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-27-2 **Dates Surveyed:** 1 July & 24 August, 2018 **UTM Coordinates:** 17 W 520412 7956735

Photographs



A **B** **C**

Figure 11. Summer (top) and fall (bottom) views of CV-27-2 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-27-3 **Dates Surveyed:** 30 June & 23 August, 2018 **UTM Coordinates:** 17 W 520516 7956235

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 5-10° **Flow Regime:** None

Fisheries Data

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

Fish Habitat Potential

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

Comments & Summary

This was a dry low point in 2018. There is no fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-27-3 at the rail crossing during summer (A) and aerially 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-27-4 **Dates Surveyed:** 30 June & 23 August, 2018 **UTM Coordinates:** 17 W 520564 7956131

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 5-10° **Flow Regime:** None

Fisheries Data

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

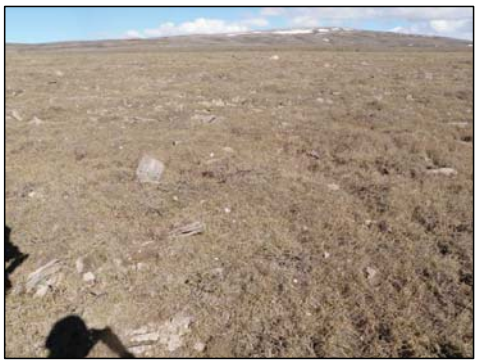
Fish Habitat Potential

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

Comments & Summary

This was a dry low point in 2018. There is no fish habitat at this crossing.

Photographs



A

B

Figure 1. Views of CV-27-4 at the rail crossing during summer (A) and aerially 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-27-5 **Dates Surveyed:** 30 June & 23 August, 2018 **UTM Coordinates:** 17 W 520699 7955833

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 5-10° **Flow Regime:** None

Fisheries Data

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

Fish Habitat Potential

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

Comments & Summary

This was a nearly dry spot in 2018. Lack of water and multiple soft barriers downstream (no surface water, steep gradient) prevent fish access to the crossing. There is no fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-27-5 at the rail crossing during summer (A) and aerially 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-28-1 **Dates Surveyed:** 30 June & 23 August, 2018 **UTM Coordinates:** 17 W 520722 7955784

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. The area has already been disturbed by Tote Road activities. There is no fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-28-1 at the rail crossing during summer (A) and aerially with nearby 28-2, 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-28-2 **Dates Surveyed:** 30 June & 23 August, 2018 **UTM Coordinates:** 17 W 520749 7955722

General Physical Characteristics

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

Fisheries Data

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

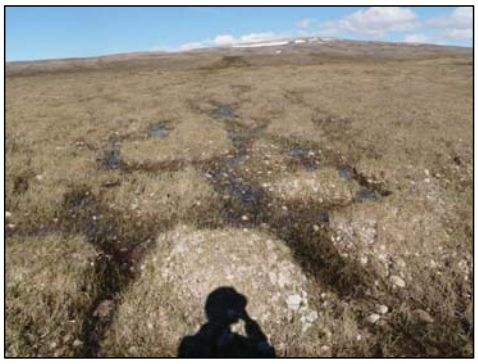
Fish Habitat Potential

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

Comments & Summary

This was a marshy terrestrial area with some surface flows in 2018. There are multiple soft barriers downstream of the crossing with no fish access from Phillips Creek. There is no fish habitat at this crossing.

Photographs



A

B

C

Figure 1. Views of CV-28-2 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-28-2 **Dates Surveyed:** 30 June & 23 August, 2018 **UTM Coordinates:** 17 W 520749 7955722

Photographs

A

Figure 2. Aerial view of CV-28-2 and nearby 28-1 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-28-3 **Dates Surveyed:** 5 July & 23 August, 2018 **UTM Coordinates:** 17 W 520891 7955261

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

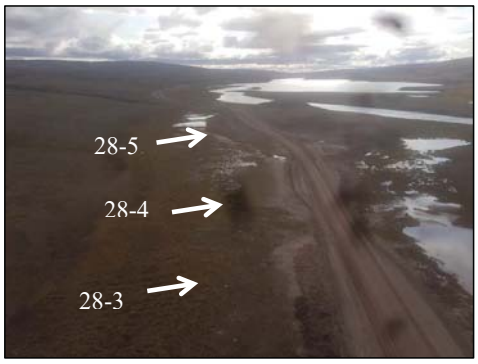
Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

This was a dry to nearly dry low point during 2018. It is part of the same marshy terrestrial area as 28-4 and 28-5 characterized by disconnected patches of shallow surface water and no connection to larger waterbodies. There is no fish habitat at this crossing.

Photographs

A



B

Figure 1. Views of CV-28-3 at the rail crossing during summer (A) and aerially, with 28-4 and 28-5, 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-28-4 **Dates Surveyed:** 5 July & 23 August, 2018 **UTM Coordinates:** 17 W 520924 7955182

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

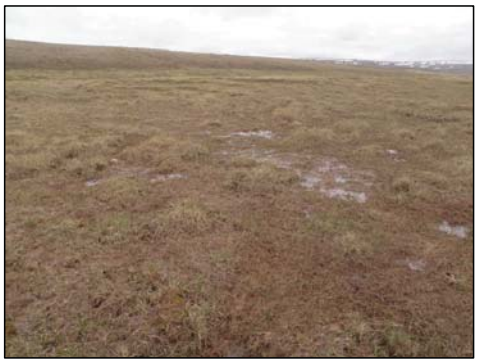
Fish Habitat Potential

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

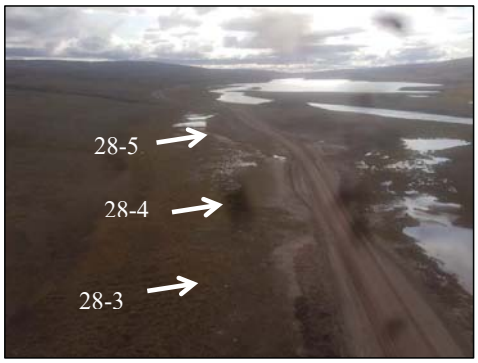
Comments & Summary

This was a dry to nearly dry low point during 2018. It is part of the same marshy terrestrial area as 28-3 and 28-5 characterized by disconnected patches of shallow surface water and no connection to larger waterbodies. There is no fish habitat at this crossing.

Photographs



A



B

Figure 1. Views of CV-28-4 at the rail crossing during summer (A) and aerially, with 28-3 and 28-5, 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-28-5 **Dates Surveyed:** 5 July & 23 August, 2018 **UTM Coordinates:** 17 W 521005 7955067

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

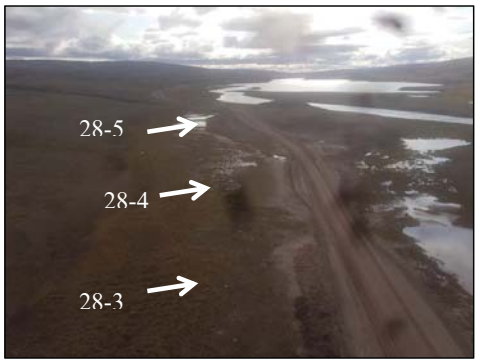
Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

This was a barely wetted pond in 2018. It is part of the same marshy terrestrial area as 28-3 and 28-4 characterized by disconnected patches of shallow, fishless surface water and no connection to larger waterbodies. There is no fish habitat at this crossing.

Photographs

A



B

Figure 1. Views of CV-28-5 at the rail crossing during summer (A) and aerially, with 28-3 and 28-4, 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-28-6 **Dates Surveyed:** 5 July & 24 August, 2018 **UTM Coordinates:** 17 W 521092 7954969

General Physical Characteristics

Channel Confinement: PC **Channel Gradient (range):** 4-7° **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	TOTE ROAD CROSSING									
80D	TOTE ROAD CROSSING									
60D	25.0	- / 5.4	- / 0.06	- / 0.02	- / 0.02	- / 0.10	- / 0.27	- / 0.21	- / 0.28	- / 0.30
40D	7.0	- / 5.2	- / 0.12	- / -	- / 0.06	- / 0.15	- / 0.29	- / -	- / 0.22	- / 0.30
20D	4.5	- / 2.2	- / 0.06	- / -	- / 0.02	- / 0.10	- / 0.46	- / -	- / 0.49	- / 0.50
0	4.3	2.7 / 4.3	0.06 / 0.03	0.08 / 0.06	0.06 / 0.02	0.10 / 0.10	0.43 / 0.06	0.40 / 0.20	0.16 / 0.13	0.50 / 0.20
20U	5.2	4.5 / 4.6	0.14 / 0.04	0.02 / 0.06	0.02 / 0.08	0.15 / 0.15	0.51 / 0.29	0.13 / 0.42	0.20 / 0.43	0.55 / 0.50
40U	3.6	3.3 / 3.3	0.05 / 0.04	0.07 / 0.10	0.05 / 0.04	0.10 / 0.10	0.54 / 0.27	0.56 / 0.48	0.22 / 0.18	0.65 / 0.55
60U	7.3	6.7 / 7.0	0.10 / 0.02	0.16 / 0.10	0.08 / 0.06	0.20 / 0.15	0.39 / 0.27	0.13 / 0.46	0.18 / 0.39	0.45 / 0.50
80U	6.7	5.8 / 5.4	0.04 / 0.08	0.02 / 0.06	0.08 / 0.02	0.10 / 0.10	0.05 / 0.49	0.01 / 0.08	0.08 / 0.16	0.20 / 0.50
100U	17.7	6.2 / 7.4	0.02 / 0.06	0.03 / 0.04	0.06 / 0.02	0.08 / 0.08	0.04 / 0.23	0.16 / 0.20	0.24 / 0.18	0.30 / 0.30

Site	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	TOTE ROAD CROSSING										
80D	TOTE ROAD CROSSING										
60D	90	10	-	-	-	-	10	30	60	-	-
40D	80	10	-	-	10	-	-	10	90	-	-
20D	20	20	-	-	60	-	-	10	90	-	-
0	50	15	-	-	35	-	5	5	60	30	-
20U	40	25	-	-	35	-	5	5	60	30	-
40U	50	20	-	-	30	-	-	5	60	35	-
60U	50	20	-	-	30	-	-	5	60	35	-
80U	40	20	-	-	40	-	-	5	60	30	5
100U	45	15	-	-	40	-	-	5	60	30	5

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-28-6 **Dates Surveyed:** 5 July & 24 August, 2018 **UTM Coordinates:** 17 W 521092 7954969

Fisheries Data

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

Species	Season	Effort (min)	Total Caught/Observed	CPUE	Length Range (mm)
ARCH	Summer	5.88	33	5.61	49 - 95
	Fall	3.67	0	-	N/A
NNST	Summer	5.88	0	-	N/A
	Fall	3.67	0	-	N/A

Fish Habitat Potential

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

Comments & Summary

This rail crossing is a few metres upstream of CV-112 on the Tote Road. Provides important char rearing habitat 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-28-6 **Dates Surveyed:** 5 July & 24 August, 2018 **UTM Coordinates:** 17 W 521092 7954969

Photographs

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

A **B** **C**

Figure 1. Summer (top) and fall (bottom) views of CV-28-6 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-28-6 **Dates Surveyed:** 5 July & 24 August, 2018 **UTM Coordinates:** 17 W 521092 7954969

Photographs

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

A **B** **C**

Figure 2. Summer (top) and fall (bottom) views of CV-28-6 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-28-6 **Dates Surveyed:** 5 July & 24 August, 2018 **UTM Coordinates:** 17 W 521092 7954969

Photographs

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

A

B

C

Figure 3. Summer (top) and fall (bottom) views of CV-28-6 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-28-6 **Dates Surveyed:** 5 July & 24 August, 2018 **UTM Coordinates:** 17 W 521092 7954969

Photographs

A B C

Figure 4. Summer (top) and fall (bottom) views of CV-28-6 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-28-6 **Dates Surveyed:** 5 July & 24 August, 2018 **UTM Coordinates:** 17 W 521092 7954969

Photographs

A B C

Figure 5. Summer (top) and fall (bottom) views of CV-28-6 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-28-6 **Dates Surveyed:** 5 July & 24 August, 2018 **UTM Coordinates:** 17 W 521092 7954969

Photographs

A B C

Figure 6. Summer (top) and fall (bottom) views of CV-28-6 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-28-6 **Dates Surveyed:** 5 July & 24 August, 2018 **UTM Coordinates:** 17 W 521092 7954969

Photographs

A B C

Figure 7. Summer (top) and fall (bottom) views of CV-28-6 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-28-6 **Dates Surveyed:** 5 July & 24 August, 2018 **UTM Coordinates:** 17 W 521092 7954969

Photographs

A B C

Figure 8. Summer (top) and fall (bottom) views of CV-28-6 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-28-6 **Dates Surveyed:** 5 July & 24 August, 2018 **UTM Coordinates:** 17 W 521092 7954969

Photographs

A **B** **C**

Figure 9. Summer (top) and fall (bottom) views of CV-28-6 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-28-7 **Dates Surveyed:** 5 July & 23 August, 2018 **UTM Coordinates:** 17 W 521305 7954680

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 mostly dry spot during 2018 with some ponding occurring alongside the Tote Road. Steep gradient and lack of surface flow prevent access from Phillips Creek downstream. There is no fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-28-7 at the rail crossing during summer (A) and aerially 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-29-1 **Dates Surveyed:** 5 July & 23 August, 2018 **UTM Coordinates:** 17 W 521341 7954608

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 was a mostly dry spot during 2018 with some ponding occurring alongside the Tote Road. Steep gradient and lack of surface flow prevent access from Phillips Creek downstream. There is no fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-29-1 at the rail crossing during summer (A) and aerially 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-29-2 **Date Surveyed:** 5 July and 25 August, 2018 **UTM Coordinates:** 17 W 521379 7954516

General Physical Characteristics

Channel Confinement: C **Channel Gradient (range):** 8-12° **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	5.0	- / 1.8	- / 0.06	- / 0.08	- / 0.08	- / 0.10	- / 0.41	- / 0.50	- / 0.16	- / 0.50
80D	6.0	- / 1.7	- / 0.04	- / 0.06	- / 0.10	- / 0.10	- / 0.64	- / 0.51	- / 0.46	- / 0.70
60D	9.5	- / 2.4	- / 0.14	- / 0.06	- / 0.10	- / 0.15	- / 0.23	- / 0.50	- / 0.56	- / 0.60
40D	10.2	- / 8.2	- / 0.08	- / 0.02	- / 0.02	- / 0.10	- / 0.57	- / 0.22	- / 0.21	- / 0.60
20D	TOTE ROAD CROSSING									
0	8.6	4.1 / 5.5	0.02 / 0.02	0.06 / 0.04	0.02 / 0.02	0.10 / 0.10	0.11 / 0.20	0.57 / 0.39	0.25 / 0.23	0.60 / 0.45
20U	13.0	- / 4.9	- / 0.02	- / 0.02	- / 0.08	- / 0.10	- / 0.38	- / 0.32	- / 0.26	- / 0.45
40U	11.9	7.8 / 8.8	0.04 / 0.04	0.04 / 0.02	0.06 / 0.02	0.08 / 0.06	0.24 / 0.25	0.29 / 0.24	0.20 / 0.36	0.30 / 0.40
60U	9.6	7.9 / 7.3	0.03 / 0.04	0.10 / 0.04	0.02 / 0.04	0.10 / 0.06	0.37 / 0.14	0.27 / 0.47	0.21 / 0.16	0.40 / 0.50
80U	5.8	4.6 / 5.2	0.10 / 0.04	0.02 / 0.06	0.08 / 0.10	0.10 / 0.10	0.41 / 0.29	0.19 / 0.79	0.78 / 0.31	0.80 / 0.80
100U	7.2	6.4 / 6.3	0.02 / 0.02	0.08 / 0.04	0.02 / 0.06	0.10 / 0.10	0.44 / 0.33	0.50 / 0.96	0.29 / 0.19	0.50 / 1.00

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

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-29-2 **Date Surveyed:** 5 July and 25 August, 2018 **UTM Coordinates:** 17 W 521379 7954516

Fisheries Data

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

Species	Season	Effort (min)	Total Caught/Observed	CPUE	Length Range (mm)
ARCH	Summer	5.07	20	3.95	64 - 118
	Fall	4.48	4	0.89	55 - 75
NNST	Summer	5.07	0	-	N/A
	Fall	4.48	0	-	N/A

Fish Habitat Potential

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

Comments & Summary

This rail crossing is immediately upstream of CV-111 on the Tote Road. Provides important char rearing habitat throughout the open water season, but increasing gradient upstream of the crossing likely limits natural char use to less than 100 m of upstream habitat. Water temperatures in survey streams during fall sampling averaged approximately 5°C and fish had already begun downstream movements towards overwintering habitat, likely reducing catch totals.

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-29-2 **Date Surveyed:** 5 July and 25 August, 2018 **UTM Coordinates:** 17 W 521379 7954516

Photographs

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

A **B** **C**

Figure 1. Summer (top) and fall (bottom) views of CV-29-2 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-29-2 **Date Surveyed:** 5 July and 25 August, 2018 **UTM Coordinates:** 17 W 521379 7954516

Photographs

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

A

B

C

Figure 2. Summer (top) and fall (bottom) views of CV-29-2 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-29-2 **Date Surveyed:** 5 July and 25 August, 2018 **UTM Coordinates:** 17 W 521379 7954516

Photographs

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

A **B** **C**

Figure 3. Summer (top) and fall (bottom) views of CV-29-2 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-29-2 **Date Surveyed:** 5 July and 25 August, 2018 **UTM Coordinates:** 17 W 521379 7954516

Photographs

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

A **B** **C**

Figure 4. Summer (top) and fall (bottom) views of CV-29-2 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-29-2 **Date Surveyed:** 5 July and 25 August, 2018 **UTM Coordinates:** 17 W 521379 7954516

Photographs

A **B** **C**

Figure 5. Summer (top) and fall (bottom) views of 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-29-2 **Date Surveyed:** 5 July and 25 August, 2018 **UTM Coordinates:** 17 W 521379 7954516

Photographs

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

A **B** **C**

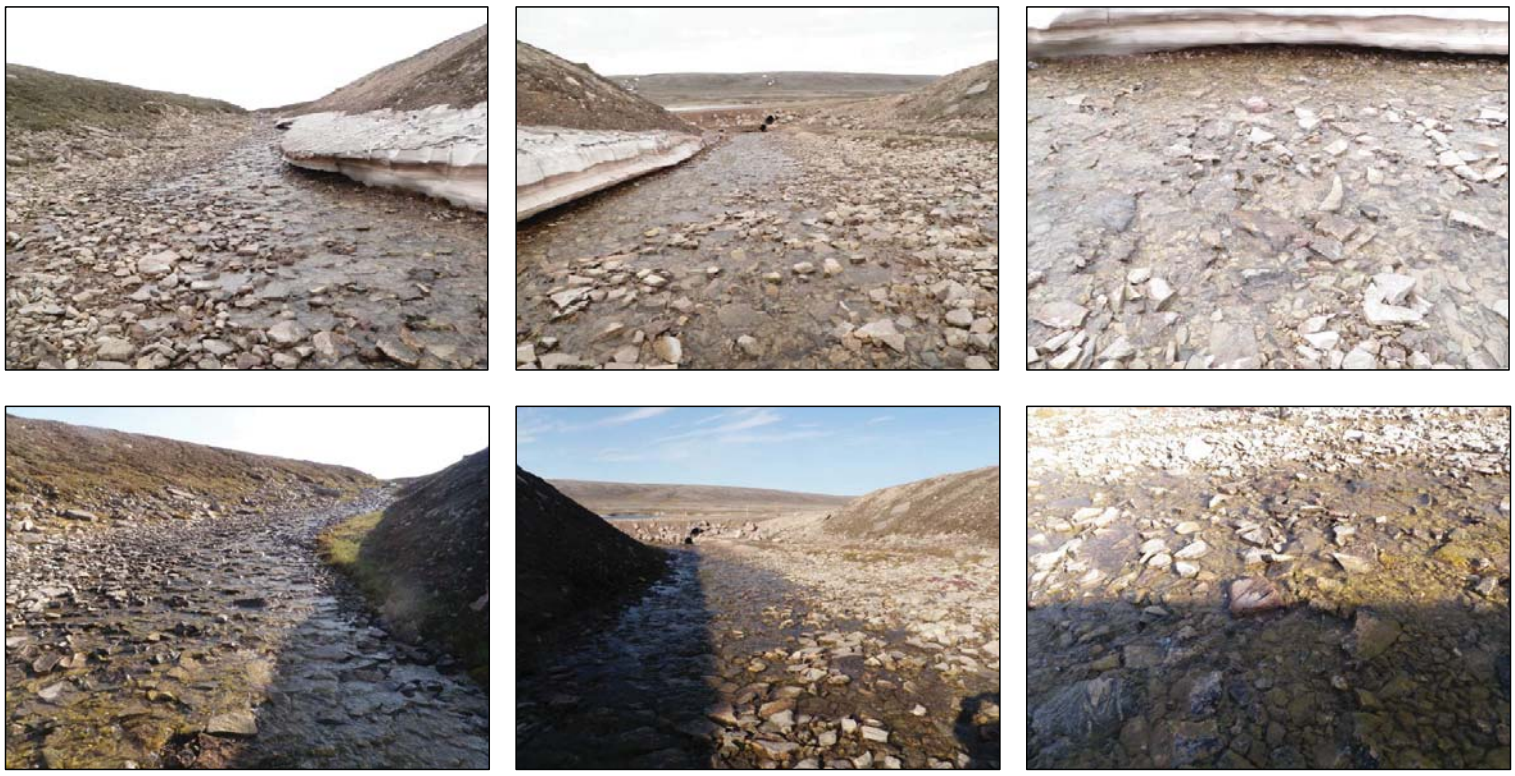
Figure 6. Summer (top) and fall (bottom) views of CV-29-2 at the 20 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-29-2 **Date Surveyed:** 5 July and 25 August, 2018 **UTM Coordinates:** 17 W 521379 7954516

Photographs



A B C

Figure 7. Summer (top) and fall (bottom) views of CV-29-2 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-29-2 **Date Surveyed:** 5 July and 25 August, 2018 **UTM Coordinates:** 17 W 521379 7954516

Photographs

A **B** **C**

Figure 8. Summer (top) and fall (bottom) views of CV-29-2 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-29-2 **Date Surveyed:** 5 July and 25 August, 2018 **UTM Coordinates:** 17 W 521379 7954516

Photographs

A B C

Figure 9. Summer (top) and fall (bottom) views of CV-29-2 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-29-2 **Date Surveyed:** 5 July and 25 August, 2018 **UTM Coordinates:** 17 W 521379 7954516

Photographs

A B C

Figure 10. Summer (top) and fall (bottom) views of CV-29-2 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-29-3 **Dates Surveyed:** 5 July & 23 August, 2018 **UTM Coordinates:** 17 W 521464 7954306

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 was a dry, grassy valley in 2018. Steep gradient and lack of surface flow prevent access from Phillips Creek downstream. There is no fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-29-3 at the rail crossing during summer (A) and aerially 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-29-4 **Dates Surveyed:** 5 July & 23 August, 2018 **UTM Coordinates:** 17 W 521512 7954187

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 was a dry, grassy valley in 2018. Steep gradient and lack of surface flow prevent access from Phillips Creek downstream. There is no fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-29-4 at the rail crossing during summer (A) and aerially 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-29-5 **Dates Surveyed:** 5 July & 23 August, 2018 **UTM Coordinates:** 17 W 521541 7954115

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 was a nearly dry, grassy valley in 2018. Steep gradient and lack of surface flow prevent access from Phillips Creek downstream over all flow regimes. There is no fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-29-5 at the rail crossing during summer (A) and aerially 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-30-1 **Dates Surveyed:** 5 July & 23 August, 2018 **UTM Coordinates:** 17 W 521569 7954040

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 was a dry, grassy, rocky hillside in 2018. Steep gradient and lack of surface flow prevent access from Phillips Creek downstream over all flow regimes. There is no fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-30-1 at the rail crossing during summer (A) and aerially 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-30-2 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521609 7953873

General Physical Characteristics

Channel Confinement: UC **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 a dry or nearly dry, grassy hillside in 2018. Steep gradient and lack of a channel or surface flow prevent access from Phillips Creek downstream over all flow regimes. There is no fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-30-2 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-30-3 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521635 7953720

General Physical Characteristics

Channel Confinement: UC **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 a nearly dry, grassy hillside in 2018. Steep gradient and lack of surface flow and connectivity prevent access from Phillips Creek downstream over all flow regimes. There is no fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-30-3 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-30-4 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521676 7953461

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 Tote Road ditch pond with very little water in 2018. This site is not connected to any other waterbody. There is no fish habitat at this crossing.

Photographs

A **B**

Figure 1. Views of CV-30-4 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-30-5 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521687 7953363

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 2-4° **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	15.0	- / 2.6	- / -	- / 0.02	- / -	- / 0.04	- / -	- / 0.11	- / -	- / 0.15
20D	TOTE ROAD CROSSING									
0	1.5	0.7 / 1.1	- / -	0.08 / 0.02	- / -	0.08 / 0.06	- / -	0.12 / 0.18	- / -	0.12 / 0.18
40U	0.5	0.5 / -	- / -	0.08 / -	- / -	0.08 / -	- / -	0.63 / -	0.16 / -	0.65 / -
50U	0.8	- / 0.8	- / -	- / 0.04	- / -	- / 0.05	- / -	- / 0.26	- / -	- / 0.26
60U	0.4	0.4 / -	- / -	0.08 / -	- / -	0.08 / -	- / -	0.08 / -	- / -	0.10 / -
80U	0.3	0.3 / -	- / -	0.10 / -	- / -	0.10 / -	- / -	0.07 / -	- / -	0.08 / -
100U	0.9	0.6 / 0.9	- / -	0.04 / 0.20	- / -	0.05 / 0.20	- / -	0.11 / 0.03	- / -	0.15 / 0.10

Site	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	40	60	-	-	-	-	80	-	20	-	-
20D	TOTE ROAD CROSSING										
0	35	65	-	-	-	-	60	30	10	-	-
40U	40	60	-	-	-	-	60	30	10	-	-
50U	40	60	-	-	-	-	90	10	-	-	-
60U	50	50	-	-	-	-	60	40	-	-	-
80U	40	60	-	-	-	-	95	5	-	-	-
100U	20	80	-	-	-	-	95	5	-	-	-

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-30-5 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521687 7953363

Fisheries Data

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

Species	Season	Effort (min)	Total Caught/Observed	CPUE	Length Range (mm)
ARCH	Summer	2.67	8	3.00	46 - 57
	Fall	-	N/A	N/A	N/A
NNST	Summer	2.67	0	-	N/A
	Fall	-	N/A	N/A	N/A

Fish Habitat Potential

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

Comments & Summary

This rail crossing is immediately upstream of CV-106 on the Tote Road. Provides marginal char rearing habitat throughout the open water season. Quality and use of habitat restricted by shallow water and predominantly fine substrate. Note that a rip-rap barrier from 0-50 m downstream of the Tote Road was blocking fish movements during fall 2018, so electrofishing was not conducted. The barrier is scheduled to be removed.

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

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-30-5 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521687 7953363

Photographs

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

A

B

C

Figure 1. Summer (top) and fall (bottom) views of CV-30-5 at the 100 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-30-5 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521687 7953363

Photographs

A **B** **C**

Figure 2. Summer (top) and fall (bottom) views of CV-30-5 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-30-5 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521687 7953363

Photographs

NO PHOTO

NO PHOTO

NO PHOTO

A **B** **C**

Figure 3. Summer (top) and fall (bottom) views of CV-30-5 at the 40 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

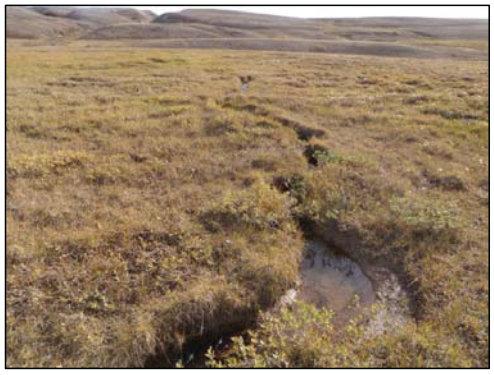
Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-30-5 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521687 7953363

Photographs

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



A **B** **C**

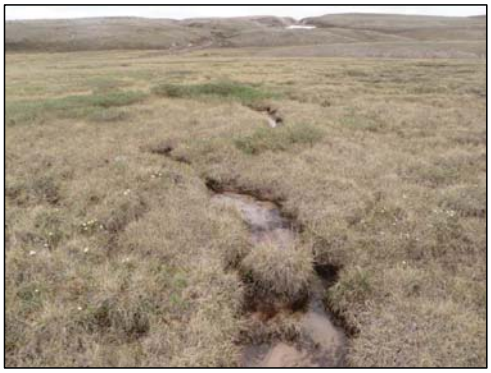
Figure 4. Summer (top) and fall (bottom) views of CV-30-5 at the 50 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-30-5 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521687 7953363

Photographs



NO PHOTO

NO PHOTO

NO PHOTO

A **B** **C**

Figure 5. Summer (top) and fall (bottom) views of CV-30-5 at the 60 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-30-5 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521687 7953363

Photographs

NO PHOTO

A

NO PHOTO

B

NO PHOTO

C

Figure 6. Summer (top) and fall (bottom) views of CV-30-5 at the 80 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-30-5 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521687 7953363

Photographs

A **B** **C**

Figure 7. Summer (top) and fall (bottom) views of CV-30-5 at the 100 m upstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-30-6 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521700 7953250

General Physical Characteristics

Channel Confinement: UC **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 shallow, marshy habitat adjacent to a fishless pond. This site is not connected to any other waterbody. There is no fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-30-6 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-30-7 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521712 7953143

General Physical Characteristics

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

Fisheries Data

Gear Used: Backpack Electrofisher **Effort (min):** 1.43 **Transect Length (m):** 100

Fish Habitat Potential

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

Comments & Summary

This is a shallow, isolated, fishless pond. Fish were not captured or observed during the July survey. There is no fish habitat at this crossing.

Photographs

A

B

C

Figure 1. Views of CV-30-7 at the rail crossing during summer (A) and fall (B) and (C).

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

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-31-1 & CV-31-2 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521748 7952788 & 17 W 521749 7952776

General Physical Characteristics

Channel Confinement: PC **Channel Gradient (range):** 2-10° **Flow Regime:** Open Water

Hydrology & Habitat Characteristics

Site	Channel Width (m)		Water Depth (m) (Summer/Fall)				Water Velocity (m/s) (Summer/Fall)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	14.0	- / 2.0	- / 0.12	- / 0.26	- / -	- / 0.30	- / 0.83	- / 0.20	- / -	- / 0.85
80D	9.4	- / 3.9	- / 0.12	- / 0.02	- / 0.04	- / 0.15	- / 0.44	- / 0.24	- / 0.13	- / 0.50
60D	3.5	- / 1.4	- / 0.02	- / -	- / 0.10	- / 0.10	- / 0.32	- / -	- / 0.45	- / 0.50
40D	6.0	- / 3.8	- / 0.10	- / 0.06	- / 0.10	- / 0.10	- / 0.32	- / 0.15	- / 0.50	- / 0.50
20D	TOTE ROAD CROSSING									
0	12.2	6.0 / 7.4	0.16 / 0.04	0.10 / 0.04	0.06 / 0.04	0.20 / 0.15	0.17 / 0.16	0.31 / 0.13	0.30 / 0.20	0.35 / 0.25
20U	18.0	- / 8.0	- / 0.04	- / 0.10	- / 0.06	- / 0.15	- / 0.30	- / 0.45	- / 0.60	- / 0.65
40U	-	- / 15.6	- / 0.02	- / 0.08	- / 0.02	- / 0.10	- / 0.18	- / 0.34	- / 0.15	- / 0.40
60U	18.0	14.9 / 16.8	0.04 / 0.10	0.01 / 0.04	0.03 / 0.02	0.05 / 0.10	0.25 / 0.47	0.26 / 0.33	0.24 / 0.16	0.26 / 0.50
80U	13.9	10.1 / 10.3	0.05 / 0.06	0.10 / 0.08	0.06 / 0.06	0.10 / 0.10	0.44 / 0.12	0.55 / 0.48	0.07 / 0.36	0.55 / 0.50
100U	10.6	6.8 / 6.9	0.04 / 0.02	0.08 / 0.14	0.04 / 0.04	0.08 / 0.15	0.28 / 0.28	0.46 / 0.31	0.27 / 0.15	0.50 / 0.40

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	30	60	10	-	-	-	-	10	90	-	-
80D	50	50	-	-	-	-	5	15	80	-	-
60D	80	20	-	-	-	-	-	5	80	15	-
40D	80	20	-	-	-	-	-	5	70	25	-
20D	TOTE ROAD CROSSING										
0	25	45	-	-	30	-	15	15	60	10	-
20U	40	30	-	-	30	-	-	-	80	20	-
40U	15	25	-	-	60	-	-	-	60	40	-
60U	10	30	-	-	60	-	-	5	50	45	-
80U	10	30	-	-	60	-	-	5	50	45	-
100U	5	25	-	-	70	-	-	5	50	45	-

Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-31-1 & CV-31-2

Dates Surveyed: 5 July & 25 August, 2018

UTM Coordinates: 17 W 521748 7952788 & 17 W 521749 7952776

Fisheries Data

Gear Used: Backpack Electrofisher

Transect Length (m): 100

Species	Season	Effort (min)	Total Caught/Observed	CPUE	Length Range (mm)
ARCH	Summer	5.97	14	2.35	48 - 77
	Fall	3.12	1	0.32	78
NNST	Summer	5.97	0	-	N/A
	Fall	3.12	0	-	N/A

Fish Habitat Potential

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

Comments & Summary

Two channels in the same stream, immediately upstream of CV-104 on the Tote Road. Provide important rearing habitat for smaller 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, likely 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-31-1 & CV-31-2

Dates Surveyed: 5 July & 25 August, 2018

UTM Coordinates: 17 W 521748 7952788 & 17 W 521749 7952776

Photographs

NO PHOTO

NO PHOTO

NO PHOTO

A

B

C

Figure 1. Summer (top) and fall (bottom) views of CV-31-1 & CV-31-2 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-31-1 & CV-31-2

Dates Surveyed: 5 July & 25 August, 2018

UTM Coordinates: 17 W 521748 7952788 & 17 W 521749 7952776

Photographs

NO PHOTO

NO PHOTO

NO PHOTO

A

B

C

Figure 2. Summer (top) and fall (bottom) views of CV-31-1 & CV-31-2 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-31-1 & CV-31-2

Dates Surveyed: 5 July & 25 August, 2018

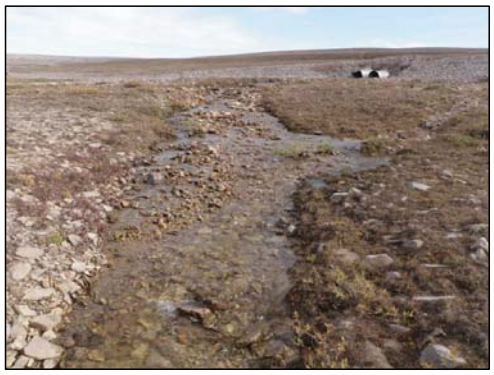
UTM Coordinates: 17 W 521748 7952788 & 17 W 521749 7952776

Photographs

NO PHOTO

NO PHOTO

NO PHOTO



A

B

C

Figure 3. Summer (top) and fall (bottom) views of CV-31-1 & CV-31-2 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-31-1 & CV-31-2

Dates Surveyed: 5 July & 25 August, 2018

UTM Coordinates: 17 W 521748 7952788 & 17 W 521749 7952776

Photographs

NO PHOTO

NO PHOTO

NO PHOTO

A

B

C

Figure 4. Summer (top) and fall (bottom) views of CV-31-1 & CV-31-2 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-31-1 & CV-31-2

Dates Surveyed: 5 July & 25 August, 2018

UTM Coordinates: 17 W 521748 7952788 & 17 W 521749 7952776

Photographs

A **B** **C**

Figure 5. Summer (top) and fall (bottom) views of CV-31-1 & CV-31-2 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-31-1 & CV-31-2

Dates Surveyed: 5 July & 25 August, 2018

UTM Coordinates: 17 W 521748 7952788 & 17 W 521749 7952776

Photographs

NO PHOTO

NO PHOTO

NO PHOTO

A

B

C

Figure 6. Summer (top) and fall (bottom) views of CV-31-1 & CV-31-2 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-31-1 & CV-31-2

Dates Surveyed: 5 July & 25 August, 2018

UTM Coordinates: 17 W 521748 7952788 & 17 W 521749 7952776

Photographs

NO PHOTO

NO PHOTO

NO PHOTO

A

B

C

Figure 7. Summer (top) and fall (bottom) views of CV-31-1 & CV-31-2 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-31-1 & CV-31-2

Dates Surveyed: 5 July & 25 August, 2018

UTM Coordinates: 17 W 521748 7952788 & 17 W 521749 7952776

Photographs

A B C

Figure 8. Summer (top) and fall (bottom) views of CV-31-1 & CV-31-2 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-31-1 & CV-31-2

Dates Surveyed: 5 July & 25 August, 2018

UTM Coordinates: 17 W 521748 7952788 & 17 W 521749 7952776

Photographs

A **B** **C**

Figure 9. Summer (top) and fall (bottom) views of CV-31-1 & CV-31-2 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-31-1 & CV-31-2

Dates Surveyed: 5 July & 25 August, 2018

UTM Coordinates: 17 W 521748 7952788 & 17 W 521749 7952776

Photographs

A **B** **C**

Figure 10. Summer (top) and fall (bottom) views of CV-31-1 & CV-31-2 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-31-3 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521763 7952346

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

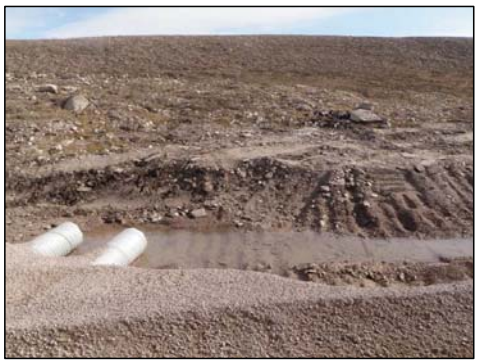
Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	N	N
NNST	N	N	N	N

Comments & Summary

This was a dry hillside in 2018 with some ponding where it meets the Tote Road. There is no fish habitat at this crossing.

Photographs

A



B

Figure 1. Views of CV-31-3 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-31-4 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521772 7952278

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

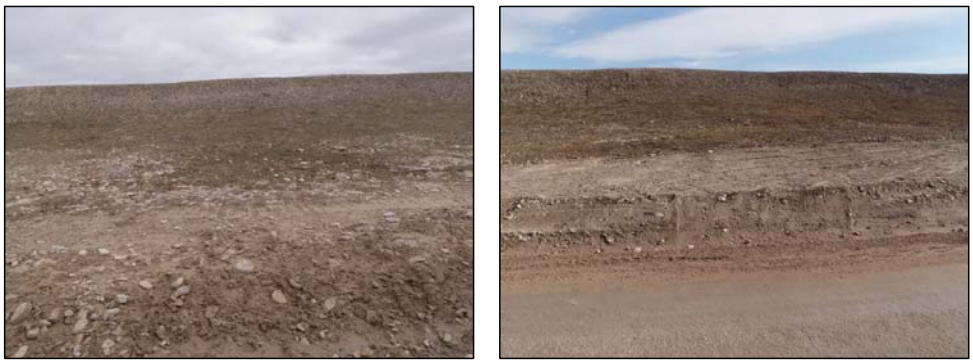
Fish Habitat Potential

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

Comments & Summary

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

Photographs



A **B**

Figure 1. Views of CV-31-4 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-32-1 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521827 7952066

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 in 2018. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-32-1 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-32-2 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521882 7951861

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 in 2018. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-32-2 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-32-3 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521946 7951620

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 in 2018. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-32-3 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-32-4 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521983 7951453

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 was a nearly dry, rocky depression on a hillside in 2018. Surface water was not maintained and there was no connectivity with other waterbodies. There is never fish habitat at this crossing.

Photographs

A **B**

Figure 1. Views of CV-32-4 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-33-1 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521990 7951011

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 hillside in 2018. There is never fish habitat at this crossing.

Photographs

A **B**

Figure 1. Views of CV-33-1 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-33-2 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521991 7950911

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 mostly terrestrial habitat and forming a pond at the Tote Road in 2018. There was no connection to Phillips Creek downstream. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-33-2 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-33-3 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521990 7950839

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 hillside in 2018. There is never fish habitat at this crossing.

Photographs

A **B**

Figure 1. Views of CV-33-3 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-33-4 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521976 7950733

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 thin layer of water flowing over rocks and terrestrial vegetation in 2018. There was insufficient water and no access from Phillips Creek. There is never fish habitat at this crossing.

Photographs

A

B

Figure 1. Views of CV-33-4 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-33-5 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521964 7950662

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 nearly dry hillside with some downstream pond formation at the Tote Road, but no connection with fish-bearing waterbodies. There is never fish habitat at this crossing.

Photographs

A **B**

Figure 1. Views of CV-33-5 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-33-6 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521947 7950568

General Physical Characteristics

Channel Confinement: UC **Channel Gradient (range):** 2° **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	- / 5.6	- / 0.09	- / 0.04	- / 0.08	- / 0.10	- / 0.13	- / 0.20	- / 0.29	- / 0.35
80D	12.5	- / 6.9	- / 0.02	-	- / 0.04	- / 0.05	- / 0.21	-	- / 0.40	- / 0.45
60D	12.8	- / 11.3	- / 0.02	- / 0.02	- / 0.02	- / 0.02	- / 0.09	- / 0.04	- / 0.07	- / 0.10
40D	13.5	- / 8.4	- / 0.04	-	- / 0.02	- / 0.05	- / 0.28	-	- / 0.12	- / 0.30
20D	20.0	- / 8.9	- / 0.04	-	- / 0.06	- / 0.08	- / 0.12	-	- / 0.24	- / 0.25
0	16.6	6.2 / 12.0	0.02 / -	0.06 / 0.02	0.06 / -	0.10 / 0.08	0.06 / -	0.02 / 0.11	0.10 / -	0.10 / 0.15
20U	22.0	- / 7.6	- / 0.01	-	- / 0.02	- / 0.05	- / 0.10	-	- / 0.12	- / 0.15
40U	24.5	8.1 / 8.1	0.07 / 0.04	0.01 / -	0.02 / 0.01	0.08 / 0.05	0.15 / 0.21	0.06 / -	0.16 / 0.08	0.20 / 0.25
60U	30.8	10.3 / 6.4	0.02 / 0.01	0.01 / -	0.02 / 0.04	0.03 / 0.05	0.14 / 0.11	0.04 / -	0.06 / 0.07	0.15 / 0.15
80U	21.7	6.0 / 8.6	0.03 / 0.02	0.02 / -	0.14 / -	0.15 / 0.11	0.12 / 0.20	0.09 / -	0.19 / -	0.20 / 0.20
100U	20.3	3.1 / 2.6	0.04 / 0.10	0.04 / -	0.03 / 0.08	0.05 / 0.10	0.06 / 0.05	0.19 / -	0.17 / 0.22	0.20 / 0.25

Site	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	70	10	-	-	20	-	-	-	90	10	-
80D	60	10	-	-	30	-	-	-	90	10	-
60D	60	10	-	-	30	-	-	-	90	10	-
40D	80	10	-	-	10	-	20	10	70	-	-
20D	30	70	-	-	-	-	80	10	10	-	-
0	55	45	-	-	-	-	55	35	10	-	-
20U	60	40	-	-	-	-	20	-	80	-	-
40U	45	45	-	-	-	10	-	10	90	-	-
60U	45	50	-	-	-	5	30	5	65	-	-
80U	40	60	-	-	-	-	15	5	80	-	-
100U	30	70	-	-	-	-	15	5	80	-	-

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

Fisheries Data

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

Species	Season	Effort (min)	Total Caught/Observed	CPUE	Length Range (mm)
ARCH	Summer	5.07	70	16.94	43 - 77
	Fall	3.00	3	1.00	34 - 42
NNST	Summer	5.07	0	-	N/A
	Fall	3.00	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 the Tote Road crossing at CV-102. This stream provides important rearing habitat for smaller juvenile Arctic Char throughout the open water season. Water temperatures in survey streams during fall sampling averaged approximately 5°C and fish had already begun downstream movements towards overwintering habitat.

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-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 1. Summer (top) and fall (bottom) views of CV-33-6 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-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 2. Summer (top) and fall (bottom) views of CV-33-6 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-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 3. Summer (top) and fall (bottom) views of CV-33-6 at the 60 m downstream cross-section; (A) looking upstream; (B) looking downstream; and (C) looking across.

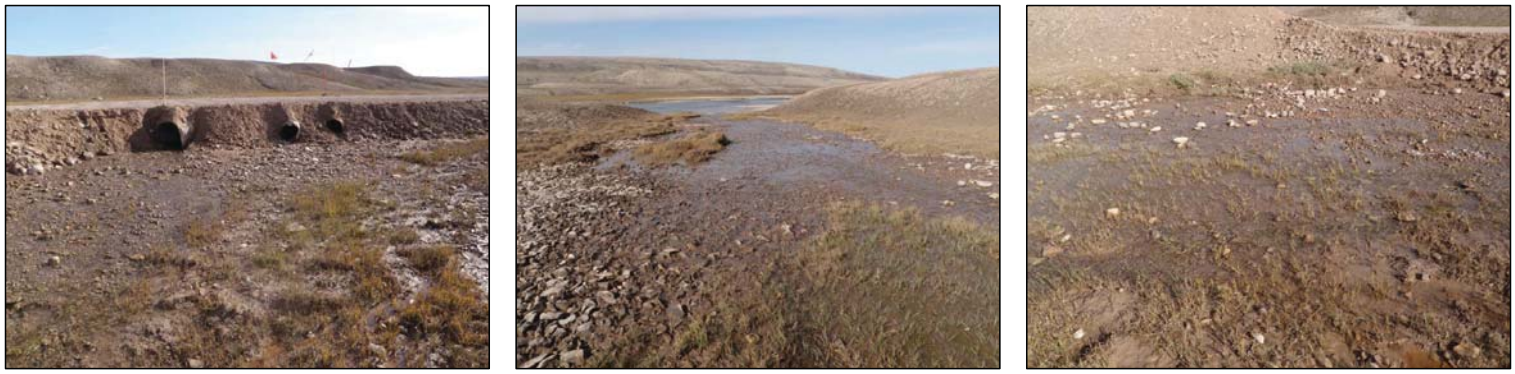
Phase 2 Milne Rail Corridor Aquatic Habitat Assessment

Location

Crossing ID: CV-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 4. Summer (top) and fall (bottom) views of CV-33-6 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-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 5. Summer (top) and fall (bottom) views of CV-33-6 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-33-6 **Dates Surveyed:** 5 July & 25 August, 2018 **UTM Coordinates:** 17 W 521947 7950568

Photographs

A **B** **C**

Figure 6. Summer (top) and fall (bottom) views of CV-33-6 at the rail crossing; (A) looking upstream; (B) looking downstream; and (C) looking across.