

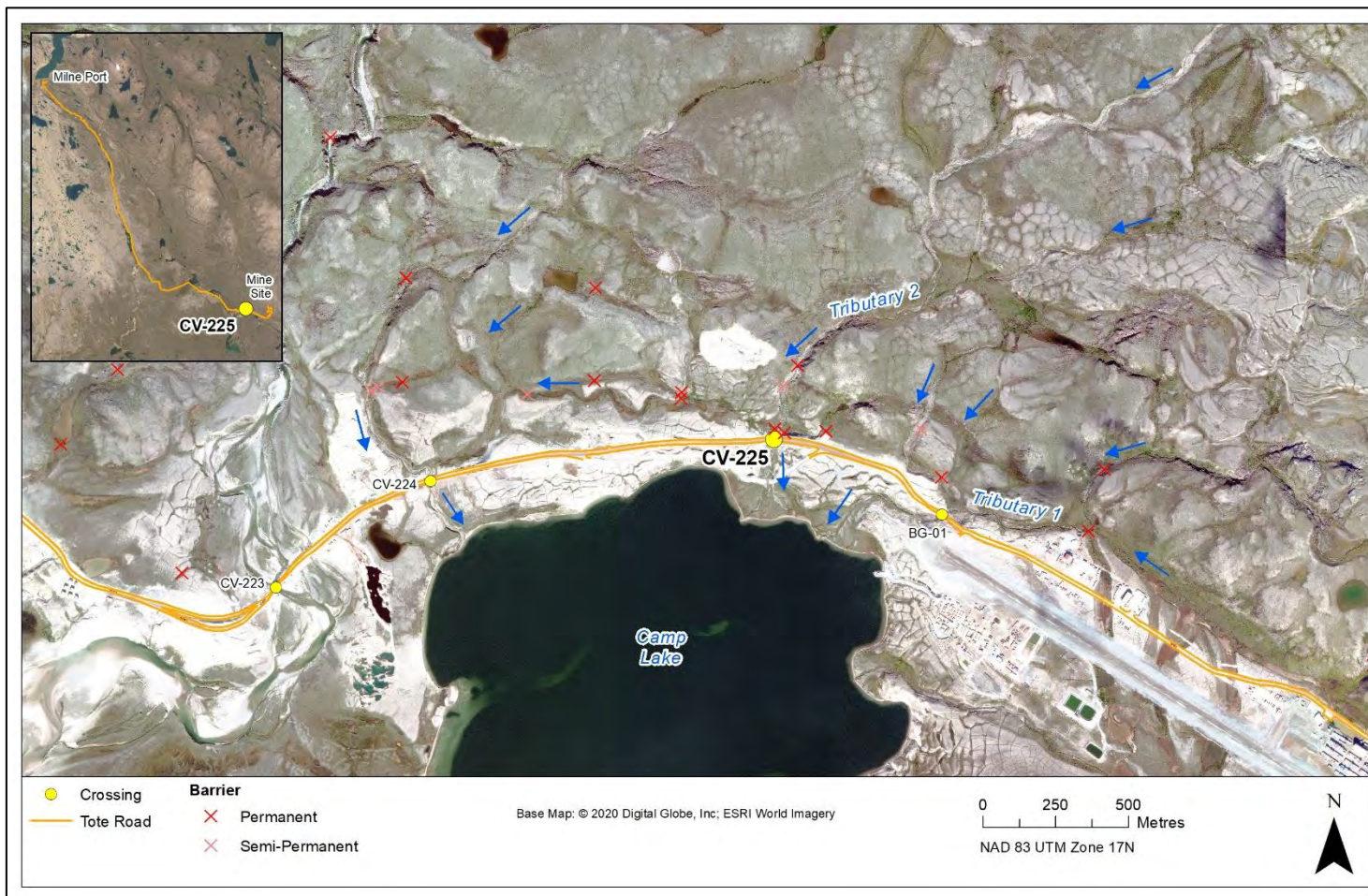
TOTE ROAD CV-225

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-225	Dates Surveyed:	11-Jul-23	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 554421 E 7915187 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 3



BAFFINLAND IRON MINES
MARY RIVER PROJECT

 **North/South Consultants Inc.**
Aquatic Environment Specialists

FISH HABITAT:

ARCTIC CHAR - YES

NINESPINE STICKLEBACK - POTENTIAL

TOTE ROAD CV-225

SITE SUMMARY

The Tote Road crosses an unnamed stream at site CV-225 that flows south into Camp Lake 250 m downstream of the crossing. Camp Lake has been extensively surveyed and is known to support both overwintering and char spawning.

Detailed habitat data were collected in the crossing area in spring 2023. Wetted widths ranged from 6.4 to 12.9 m. The stream was moderately deep throughout, with higher velocities upstream of the crossing where the natural gradient increases. Maximum water depth varied between 0.21 and 0.38 m. Maximum velocities exceeded 1 m/s at all transects. Stream morphology was primarily riffle with some areas of pooling. The substrate was mainly cobble throughout.

One juvenile and one potential adult char were captured downstream of the crossing in spring 2023. The low catch rates in spring 2023 and presence of a potential adult likely a result of very high freshet flows. Char use habitat in the stream for rearing and there is potential for adult use in the deeper pools near Camp Lake. There is no char spawning or overwintering habitat in the stream.

Ninespine Stickleback are abundant within Camp Lake and have been captured in the lowermost reaches of this stream near its confluence with the lake, but the species has not been captured near the road. Relatively high velocities during the open-water period likely prevent this species from using habitat near the road.

TOTE ROAD CV-225

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	P
NNST	P	N	P	P

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
Downstream	ARCH	11-Jul-23	9.0	50	224	2	0	0.54	89-420
	NNST					0	0	0.00	-
Upstream	ARCH			50	132	0	0	0.00	-
	NNST					0	0	0.00	-

OTHER NOTES / OBSERVATIONS

A potential adult Arctic Char was captured in the deep scour pools immediately downstream of the culverts. Char are typically abundant in this stream following freshet once velocities decrease. However, the naturally increasing gradient upstream of the crossing may limit use to larger juveniles, with smaller juveniles using the slower habitat downstream. There is no char spawning or overwintering in this stream. Stickleback appear to be restricted to the lowermost reaches of the stream near Camp Lake.

TOTE ROAD CV-225

HYDROLOGY CHARACTERISTICS: 11-JUL-23

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: High

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	30.0	10.2	-	-	-	0.28	-	-	-	1.37
60D	15.9	7.6	-	-	-	0.33	-	-	-	1.36
30D	18.4	10.5	-	-	-	0.38	-	-	-	1.47
0 (Centreline)	UNDER TOTE ROAD									
30U	16.9	10.3	-	-	-	0.21	-	-	-	1.82
60U	16.6	6.4	-	-	-	0.21	-	-	-	1.63
100U	21.2	12.9	-	-	-	0.29	-	-	-	1.96

OTHER NOTES / OBSERVATIONS

The stream is wide, moderately deep, and relatively fast. Wetted widths ranged from 2.8 to 10.1 m. Maximum depths ranged from 0.21 to 0.38 m and maximum velocities ranged from 1.36 – 1.96 m/s.

TOTE ROAD CV-225

HABITAT CHARACTERISTICS: 11-JUL-23

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: High

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	80	12	2	5	-	-	-	10	15	30	35	10
60D	85	8	2	5	-	-	-	15	25	40	15	5
30D	80	15	10	5	-	-	-	10	5	70	10	5
0 (Centreline)	UNDER TOTE ROAD											
30U	75	10	5	10	-	-	-	25	20	40	10	5
60U	80	3	3	4	10	-	-	5	10	30	40	15
100U	75	5	2	3	15	-	-	10	10	45	10	25

OTHER NOTES / OBSERVATIONS

Stream morphology was primarily riffle. The substrate was fairly uniform, mostly consisting of small and large cobble.

TOTE ROAD CV-225

11-JUL-23



A



B



C



D



E



F

Photos 1-1. Photos taken 30 m downstream (top) and 60 m downstream (bottom) in spring 2023: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-225

11-JUL-23



A



B



C

Photos 1-2. Photos taken 100 m downstream in spring 2023: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-225

11-JUL-23



A



B



C



D



E



F

Photos 1-3. Photos taken 30 m upstream (top) and 60 m upstream (bottom) in spring 2023: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-225

11-JUL-23



A



B



C

Photos 1-4. Photos taken 100 m upstream in spring 2023: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

APPENDIX C

Erosion and Sediment Controls implemented in 2023

2023 TOTE ROAD CULVERT EROSION AND SEDIMENTATION CONTROL IMPLEMENTATION SUMMARY



Excavator lining swale in the upstream south swale at BG-04 with rip-rap stone

Throughout the 2023 summer season, locations along the Tote Road were assessed and various erosion and sediment controls were implemented to reduce sedimentation into the water bodies. This process involved creating additional erosion and sedimentation control plans specific to each culvert, primarily using a combined method of armouring the road embankments with rip-rap stones, check-dams, and silt fences. During the process of installing ESC to the culverts additional culverts were identified as needed further ESC due to observing potentially risks to the water bodies.

Bellow is a series of pictures documenting the additions made to the tote road culverts between the Milne Inlet and Mary River sites.

CULVERT LOCATIONS INDEX

Crossing	Approximate Road km	UTM 17W	
		Easting	Northing
CV-129	15	512381	7966781
CV-114	29	520273	7956530
CV-112	31.5	521033	7954934
CV-111	32	521363	7954522
CV-106	33	521663	7953391
CV-102	36	521936	7950590
CV-079	50	525538	7937313
CV-078	51.5	525852	7936786
CV-072	54	526897	7934575
CV-061	57.5	527268	7931365
CV-059	60	528094	7929348
CV-058	60	528322	7928839
CV-057	60.5	528378	7928658
BG-50	63	529316	7926811
CV-049	63.5	529654	7926545
CV-211	74	536480	7920019
BG-33	77	539713	7921097
CV-030	77.5	540122	7921310
CV-215	79.5	541954	7922176
CV-216	80.5	542763	7921725
BG-30	84.5	546070	7919843
BG-29	85.5	546229	7919878
BG-27	86.5	547875	7919356
BG-24	88	548766	7918877
BG-17	90	550703	7917643
BG-04	94	553250	7915101
CV-001	94.5	553544	7914896
BG-03	96	554720	7915021
CV-224	97.5	556238	7915045
BG-01	100	558000	7914928
CV-186	103	560705	7913498
CV-187	103.5	560956	7913414

CV-129 – KM15

The road embankment surrounding the culvert was reinforced with rip-rap stone.



Upstream looking west



Downstream looking north (left) and south (right)

CV-114 – KM29

The road embankments surrounding the culvert area were reinforced with rip-rap stone. The swale to the north on the upstream side was lined with rip-rap stone and a series of check-dams were added. On the upstream north side a silt fence was installed.



Upstream looking north



Downstream looking east

CV-112 – KM31.5

The road embankment surrounding the culvert are was reinforced with rip-rap stone. On the upstream south and downstream north sides silt fences were installed.



Upstream looking north



Downstream looking north

CV-111 – KM32

The road embankments surrounding the culvert area was reinforced with rip-rap stone. The upstream side swales were lined with rip-rap stone and check-dams were added. On the downstream embankments silt fences were installed.



Upstream looking west



Downstream looking north

CV-106 – KM33

The road embankments surrounding the culvert area were reinforced with rip-rap. On the upstream south embankments, a silt fence was installed.



Upstream looking north



Downstream looking south

CV-102 – KM36

The road embankment surrounding the culvert area was reinforced with rip-rap stone. On the upstream embankments silt fences were installed.



Upstream looking north (left) and south (right)



Downstream looking east

CV-079 – KM50

The road embankments to the north of the culvert area were reinforced with rip-rap stone. On the upstream north embankment a silt fence was installed.



Upstream looking west

CV-078 – KM51

The road embankment surrounding the culvert area with rip-rap stone. The upstream north swale was lined with rip-rap stone and check-dams were added. On the upstream north and downstream south embankments silt fences were installed.



Upstream looking south (left) and west (right north embankment)



Downstream looking east (north embankment) and south (right)

CV-072 – KM54

The upstream road embankment in the culvert area was reinforced with rip-rap stone.



Upstream looking north

CV-061 – KM57.5

The downstream road embankment surrounding the culvert area was reinforced with rip-rap stone.



Downstream looking east

CV-059 – KM60

The road embankment surrounding the culvert area was reinforced with rip-rap stone. In the swale on the upstream south side was lined with rip-rap stone and check-dams were added.



Upstream looking south



Downstream looking east

CV-058 – KM60

The road embankments on the upstream south side and surrounding the downstream culvert area were reinforced with rip-rap stone. On the upstream south embankment a silt fence was installed.



Upstream looking west



Downstream looking east

CV-057 – KM60.5

The road embankment surrounding the culvert area was reinforced with rip-rap stone.



Upstream looking west



Downstream looking east

BG-50 – KM63

The road embankment to the south of the culvert area was reinforced with rip-rap stone. The swale on the upstream south side was lined with rip-rap stone and check-dams were added. On the downstream south embankment a silt fence was installed/



Upstream looking south



Downstream looking north

CV-049 – KM63.5

The road embankment on the upstream north side was reinforced with rip-rap stone. The swale at the base of the reinforced embankment was lined also lined with rip-rap stone and check-dams were added.



Upstream looking south

CV-211 – KM74

The road embankment surrounding the culvert area on the downstream side was reinforced with rip-rap stone. The swale on the upstream south embankment was lined with rip-rap stone and check dams were added. At the outflow of the swale silt fences were installed.



Downstream looking east (south embankment)



Downstream looking east (north embankment)

BG-33 – KM77

The road embankment surrounding the culvert area on the downstream side was reinforced with rip-rap stone.



Downstream looking north



Downstream looking southeast

CV-030 – KM77.5

The road embankments surrounding the culvert areas on the downstream side was reinforced with rip-rap stone. On the embankments where rip-rap stone was added silt fences were installed.



Downstream looking east (north embankment)



Downstream looking east (south embankment)

CV-215 – KM79

The road embankments surrounding the culvert area were reinforced with rip-rap stone. On the downstream north embankment a silt fence was installed.



Upstream looking south (left) and north (right)



Downstream looking east (left, north embankment) and south (right)

BG-30 – KM84

The road embankment was reinforced in the culvert area with rip-rap stone. On the upstream north embankment a silt fence was replaced.



Upstream looking east



Downstream looking west

BG-29 – KM84

The road embankment in and surrounding the culvert area on the upstream side was reinforced with rip-rap stone. The swales on the upstream and downstream north sides were lined with rip-rap stone and check-dam were added. On the upstream south embankment a silt fence was installed.



Upstream looking south



Downstream looking south

BG-27 – KM86.5

The road embankment in the culvert area was reinforced with rip-rap stone. In the upstream north swale a rip-rap stone check-dam was added.



Upstream looking east



Downstream looking west

BG-24 – KM88

The road embankment in the culvert areas was reinforced with rip-rap stone. Along the embankment on the downstream side silt fences were installed.



Upstream looking east



Downstream looking south (left south embankment, right culvert area)

BG-17 – KM90

The road embankment in the culvert area was reinforced with rip-rap stone. The swales on the downstream south and upstream north sides were lined with rip-rap stone and check-dams added.



Upstream looking north



Downstream looking west

BG-04 – KM94

The road embankment surrounding the culvert area was reinforced with rip-rap stone. On the embankment bases silt fence was installed.



Upstream looking west



Downstream looking east

CV-001 – KM94.5

The road embankment surrounding the culvert area was reinforced with rip-rap stone. On the downstream north embankment a silt fence was replaced.



Upstream looking west



Downstream looking east

BG-03 – KM96

The road embankment surrounding the culvert area was reinforced with rip-rap stone.



Upstream looking west



Downstream looking south

CV-224 – KM97.5

The road embankment surrounding the culvert area was reinforced with rip-rap stone. The swales north of the culverts were lined with rip rap and check-dams added. On the downstream south embankment a silt fence was replaced.



Upstream looking south (left) and north (right)



Downstream looking north

BG-01 – KM100

The road embankments surrounding the culvert area were reinforced with rip-rap stone. The upstream north and downstream south swales were lined with rip-rap stone and check-dams were added. On the downstream north embankment a silt fence was replaced.



Downstream looking north



Upstream looking north (left)

CV-186 – KM103

The road embankments surrounding the culvert area was reinforced with rip-rap stone. The swale on the downstream south side was further lined with rip-rap stone and addition check-dams were installed.



Downstream looking north

CV-187 – KM103

The road embankment surrounding the culvert area was reinforced with rip-rap stone. The check-dam on the upstream north side was rebuilt, the downstream south swale was lined with rip-rap stone, check-dams were added to the swale, and a silt fence was installed at the base of the lined swale.



Upstream looking north



Downstream looking south