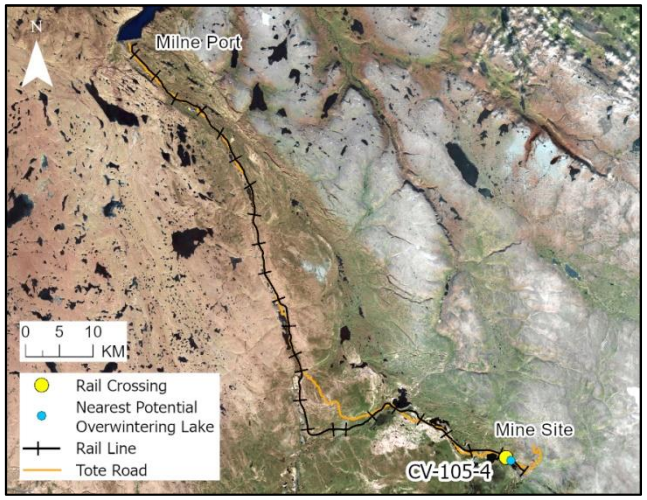
RAIL CV-105-4

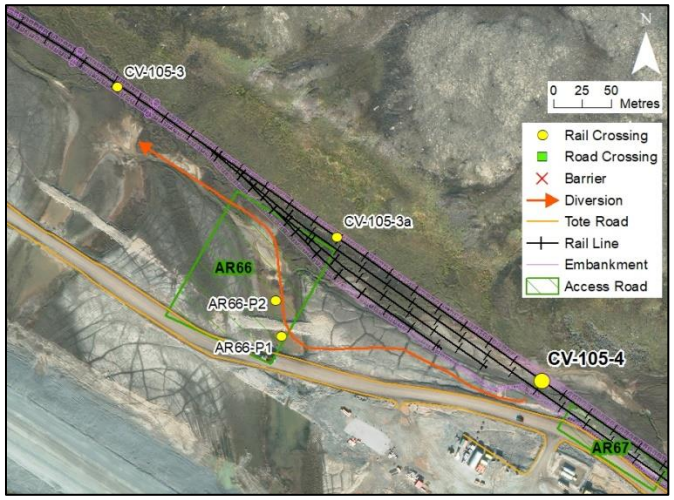
LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-105-4	**Dates Surveyed:**	22-Jun-19; 19-Aug-19; 29-Aug-20	**Waterbody Type:**	Stream
Project Interaction:	Stream Crossing + Stream Infilling + Stream diversion	**Centreline UTM Coordinates:**	17W 559222 E 7914359 N	**Culvert Length (m):**	30
Number of Barrels:	1	**Culvert Diameter/Span (mm):**	900	**Slope (%):**	2

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal **Stream Order:** 3 **Drainage Basin Area (km^2):** 2.124





SUMMARY

The rail crosses an unnamed seasonal stream at culvert CV-105-4 and will infill a portion of that stream flowing northwest to the pond at CV-105-3. The stream will be reconstructed between the rail and the Tote Road and will be directed to this same pond. This system feeds into a larger stream that is crossed by the rail at CV-104-5 approximately 900 m downstream from the centreline. It then flows west to the Tote Road crossing BG-01 and then flows south and discharges to Camp Lake (approximately 2.0 km from CV-105-4). The stream is also crossed by the rail at CV-105-2, 105-3, 106-1, 106-1a, 106-2, and 106-3. There is a small lake (CV-106-3) with sufficient depth to provide overwintering for Ninespine Stickleback and possibly also juvenile char approximately 750 m upstream of the site. This stream is generally shallow and slow-moving pool/flat habitat over cobble/gravel/fines substrate throughout, interspersed with larger, connected ponds (e.g., the pond at CV-105-3). All of these habitat types are present within the CV-105-4 infill area.

There are no upstream or downstream barriers in this stream between the potential overwintering waterbodies.

This stream provides open-water season rearing habitat for juvenile Arctic Char, particularly in the deeper runs and pools. The stream does not provide overwintering or spawning habitat for char due to lack of flow and sufficient depth in winter. This stream also provides open-water season rearing and spawning habitat for Ninespine Stickleback. Depths are insufficient to support overwintering for this species.

RAIL CV-105-4

BARRIERS

Upstream/ Downstream	UTM		Barrier Type			Height (m)	Gradient (°)	Description	Site Label
	Easting	Northing	1	2	3				
Downstream	NO BARRIERS								
Upstream	NO BARRIERS								

FISH HABITAT POTENTIAL

Nearest Potential Overwintering Habitat - ARCH: Unnamed Lake/Camp Lake **Distance to Nearest Potential Overwintering Habitat - ARCH (km):** 0.75/2.0

Overwintering Habitat Upstream of Site - ARCH (Y/N): Small unnamed lake (0.75 km upstream at CV-106-3)

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

FISHING SITES

RAIL CV-105-4

FISHERIES DATA

Date: 29-Aug-20 **Temperature (°C):** 11.0 **Gear Used:** Backpack Electrofishing

Species	Reach	Microhabitat Type	Distance Fished (m)	Effort (Seconds)	Fish Captured	CPUE (No. Fish/60 Seconds)	Length Range (mm)
ARCH	1	Sand Flat	20	105	1	0.57	116
NNST	1	Sand Flat	20	105	2	1.14	18 - 27
ARCH	2	Shallow Run	50	213	0	0.00	-
NNST	2	Shallow Run	50	213	2	0.56	23 – 26
ARCH	3	Deep Run	44	237	17	4.30	80 – 160
NNST	3	Deep Run	44	237	1	0.25	30
ARCH	4	Sand Flat	72	249	0	0.00	-
NNST	4	Sand Flat	72	249	7	1.69	19 – 34
ARCH	5	Deep Pool	9	55	1	1.09	140
NNST	5	Deep Pool	9	55	0	0.00	-
ARCH	6	Deep Run	33	258	20	4.65	88 – 175
NNST	6	Deep Run	33	258	3	0.70	18 – 70
ARCH	7	Riffle/Run	46	175	1	0.34	123
NNST	7	Riffle/Run	46	175	3	1.03	20 – 30
ARCH	8	Deep Run	39	380	12	1.89	99 – 214
NNST	8	Deep Run	39	380	0	0.00	-
ARCH	9	Sand Flat	121	616	0	0.00	-
NNST	9	Sand Flat	121	616	47	4.58	18 – 62

RAIL CV-105-4

MICROHABITAT SUMMARY STATISTICS

Microhabitat Type	Species	Effort (Seconds)	Fish Captured	CPUE (No. Fish/60 Seconds)	Mean Fork Length (mm)	Length Range (mm)
Deep Pool	**ARCH**	55	1	1.09	140	140
Deep Pool	**NNST**	55	0	0.00	-	-
Deep Run	**ARCH**	875	49	3.36	134	80 – 214
Deep Run	**NNST**	875	4	0.27	36	18 - 70
Riffle/Run	**ARCH**	175	1	0.34	123	123
Riffle/Run	**NNST**	175	3	1.03	23	20 - 30
Shallow Run	**ARCH**	213	0	0.00	-	-
Shallow Run	**NNST**	213	2	0.56	25	23 – 26
Sand Flat	**ARCH**	970	1	0.06	116	116
Sand Flat	**NNST**	970	56	3.46	31	18 - 62

COMMENTS

Dozens of YOY stickleback were observed in wide flat habitat at 160 m upstream from the rail centreline and from 120 to 380 m downstream within the infill area in 2019. Larger juvenile char were observed mainly in a narrow section of the stream from 100-130 m upstream, with a more observed from the crossing centreline to 200 m upstream.

Detailed electrofishing data collected by microhabitat from CV-105-3 to CV-105-4 (i.e., the infill area) during summer/fall 2020 identified clear differences in habitat use between the two species in this stream system. The two most common habitat types in the area are sand flats (49% of total habitat) and deep runs (27% of total habitat). Sand flats are characterized by wide channels with shallow (<0.10), slow-moving water over sand with occasional cobble; these areas were used almost exclusively by stickleback (particularly juveniles). Deep runs are characterized by deeper (>0.20 m), flowing water in shallow channels with vertical to overhanging banks over silt/cobble substrate; these area were used almost exclusively by juvenile char (particularly char >120 mm).

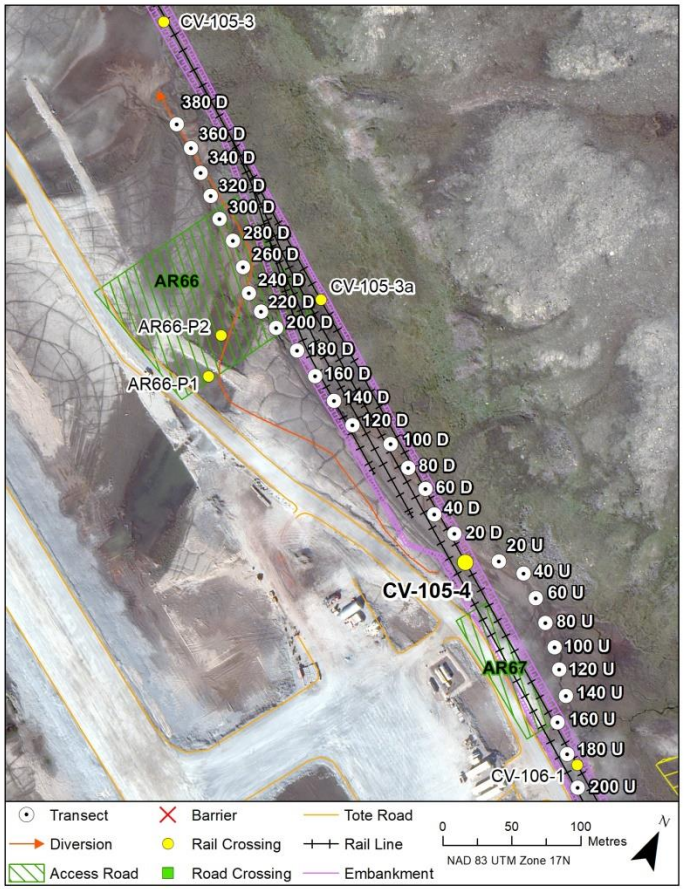
RAIL CV-105-4

GENERAL HABITAT CHARACTERISTICS

Channel Confinement: PC **Stream Morphology:** Sinuous **Riparian Vegetation Type (%):** Grass 80, Willow 10, Other 10

Centreline	Height (m)	Stability	Materials (%)	Shape
LHB	0.20	Moderate	Boulder 10, CGS 50, Organic 40	Sloping
RHB	0.15	Moderate	CGS 50, Organic 50	Sloping

HABITAT SURVEY SITES



RAIL CV-105-4

HYDROLOGY & HABITAT CHARACTERISTICS: 22-JUN-19

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

Stage: Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	5.4	2.6	-	-	-	0.05	-	-	-	0.05
80D	7.5	5.4	-	-	-	0.05	-	-	-	0.05
60D	21.7	1.6	-	-	-	0.03	-	-	-	0.08
40D	16.6	2.6	-	-	-	0.03	-	-	-	0.05
20D	14.9	3.2	-	-	-	0.05	-	-	-	0.02
0 (Centreline)	19.1	4.4	-	-	-	0.07	-	-	-	0.08
20U	14.9	3.5	-	-	-	0.03	-	-	-	0.05
40U	14.8	4.9	-	-	-	0.05	-	-	-	0.01
60U	16.0	3.8	-	-	-	0.05	-	-	-	0.10
80U	10.9	4.0	-	-	-	0.08	-	-	-	0.00
100U	8.6	8.0	-	-	-	0.10	-	-	-	0.02

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Flat	Rapids	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	-	-	-	-	-	-	-	-	-	-	-	-
80D	-	-	-	-	-	-	-	-	-	-	-	-
60D	-	-	-	-	-	-	-	-	-	-	-	-
40D	-	-	-	-	-	-	-	-	-	-	-	-
20D	-	-	-	-	-	-	-	-	-	-	-	-
0 (Centreline)	-	-	-	-	-	-	-	-	-	-	-	-
20U	-	-	-	-	-	-	-	-	-	-	-	-
40U	-	-	-	-	-	-	-	-	-	-	-	-
60U	-	-	-	-	-	-	-	-	-	-	-	-
80U	-	-	-	-	-	-	-	-	-	-	-	-
100U	-	-	-	-	-	-	-	-	-	-	-	-

OTHER NOTES / OBSERVATIONS

This is a generally small, shallow, slow-moving stream with primarily fine substrate. Nearest potential overwintering lakes are either Camp Lake downstream or the small, unnamed upstream lake at CV-106-3. The latter likely only provides overwintering for stickleback and juvenile char. There are no adult char in this stream.

RAIL CV-105-4

HYDROLOGY & HABITAT CHARACTERISTICS: 19-AUG-19

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

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	7.0	5.1	0.03	0.02	0.05	0.05	0.19	too shallow	0.25	0.25
80D	20.8	7.8	0.05	0.06	0.08	0.08	0.13	0.15	0.07	0.17
60D	19.0	2.1	0.04	0.06	0.03	0.10	0.32	0.34	0.22	0.34
40D	13.9	2.9	0.04	0.05	0.07	0.15	0.09	0.25	0.31	0.31
20D	15.3	3.3	0.06	0.06	0.06	0.06	0.27	0.21	0.12	0.27
0 (Centreline)	15.7	2.7	0.06	0.10	0.07	0.12	0.05	0.20	0.15	0.40
20U	15.2	3.4	0.15	0.09	0.06	0.15	0.14	0.14	0.14	0.31
40U	14.5	3.3	0.12	0.07	0.04	0.12	0.21	0.13	0.00	0.33
60U	11.9	4.3	0.05	0.05	0.03	0.05	0.16	0.25	0.14	0.25
80U	23.6	4.9	0.03	0.05	0.04	0.07	0.20	0.23	0.15	0.25
100U	2.3	1.5	0.40	0.40	0.35	0.56	0.05	0.06	0.05	0.06

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Flat	Rapids	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	-	20	-	-	-	80	-	85	10	5	-	20
80D	-	25	-	-	-	75	-	100	-	-	-	25
60D	10	30	-	-	-	60	-	100	-	-	10	30
40D	10	40	-	-	-	50	-	90	5	5	10	40
20D	10	30	-	-	-	60	-	90	10	-	10	30
0 (Centreline)	20	30	-	-	-	50	-	80	5	15	20	30
20U	20	20	-	-	-	60	-	80	10	10	20	20
40U	20	40	-	-	-	40	-	70	20	10	20	40
60U	40	30	-	-	-	30	-	30	30	40	40	30
80U	50	30	-	-	-	20	-	20	30	50	50	30
100U	10	20	40	30	-	-	-	40	20	40	10	20

OTHER NOTES / OBSERVATIONS

Habitat was suitable for both species in both seasons.

RAIL CV-105-4

22-JUN-19

A

B

C

D

E

F

Photos 1. Photos taken at the crossing centreline (top) and 20 m downstream (bottom) in spring: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

22-JUN-19

A

B

C

D

E

F

Photos 2. Photos taken 40 m downstream (top) and 60 m downstream (bottom) in spring: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

22-JUN-19

A

B

C

D

E

F

Photos 3. Photos taken 80 m downstream (top) and 100 m downstream (bottom) in spring: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

22-JUN-19

A

B

C

D

E

F

Photos 4. Photos taken 20 m upstream (top) and 40 m upstream (bottom) in spring: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

22-JUN-19

A

B

C

D

E

F

Photos 5. Photos taken 60 m upstream (top) and 80 m upstream (bottom) in spring: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

22-JUN-19

A

B

C

Photos 6. Photos taken 100 m upstream (top) in spring: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

RAIL CV-105-4

19-AUG-19

A

B

C

D

E

F

Photos 7. Photos taken at the crossing centerline in summer/fall: (A) facing upstream; (B) facing downstream; (C) across (left bank looking at right bank); (D) diagonal from right bank above the centreline looking downstream; (E) across (right bank looking at left bank); and (F) diagonal from right bank below the centreline looking upstream.

RAIL CV-105-4

19-AUG-19

A

B

C

D

E

F

Photos 8. Photos taken 20 m downstream (top) and 40 downstream (bottom) in summer/fall: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

19-AUG-19

A

B

C

D

E

F

Photos 9. Photos taken 60 m downstream (top) and 80 m downstream (bottom) in summer/fall: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

19-AUG-19

A

B

C

Photos 10. Photos taken 100 m downstream in summer/fall: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

RAIL CV-105-4

19-AUG-19

A

B

C

D

E

F

Photos 11. Photos taken 20 m upstream (top) and 40 m upstream (bottom) in summer/fall: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

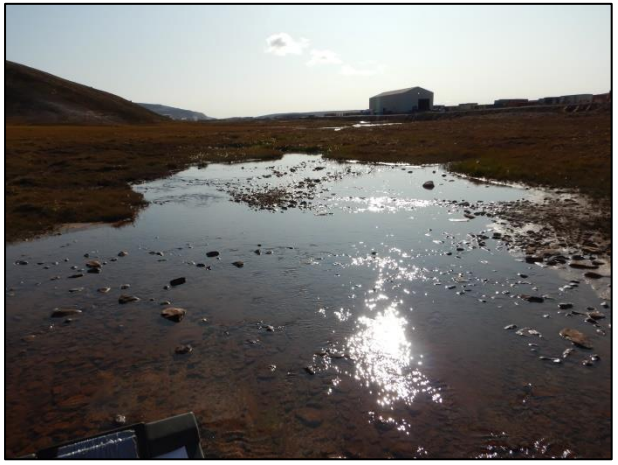
RAIL CV-105-4

19-AUG-19

A

B

C



D

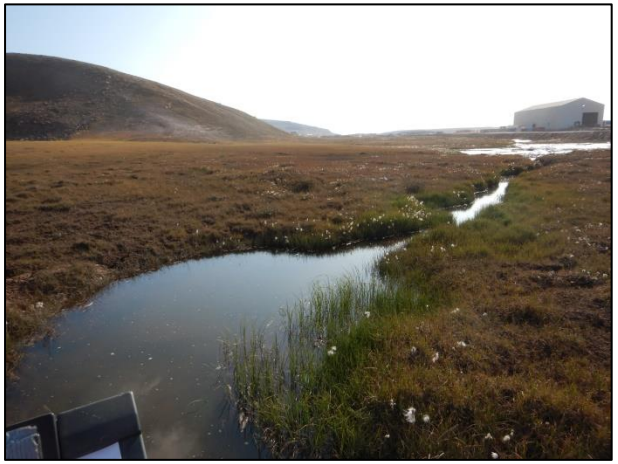
E

F

Photos 12. Photos taken 60 m upstream (top) and 80 m upstream (bottom) in summer/fall: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

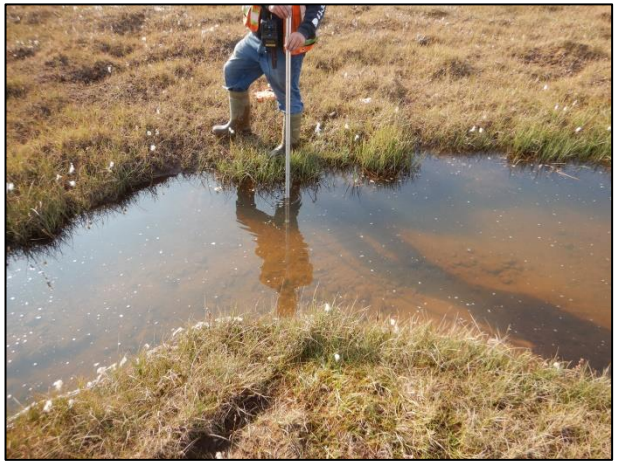
RAIL CV-105-4

19-AUG-19



A

B



C

Photos 13. Photos taken 100 m upstream in summer/fall: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

RAIL CV-105-4

HYDROLOGY & HABITAT CHARACTERISTICS: DOWNSTREAM SURVEY

Date: 22-Jun-19

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
220D	1.0	1.0	-	-	-	0.50	-	-	-	0.02
200D	1.9	1.7	-	-	-	0.35	-	-	-	0.05
180D	16.5	2.6	-	-	-	0.15	-	-	-	0.01
160D	9.0	3.8	-	-	-	0.20	-	-	-	0.01
140D	1.9	1.7	-	-	-	0.30	-	-	-	0.00
120D	2.8	1.6	-	-	-	0.20	-	-	-	0.25

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Flat	Rapids	Fines	Gravel	Small Cobble	Large Cobble	Boulders
220D	-	-	-	-	-	-	-	-	-	-	-	-
200D	-	-	-	-	-	-	-	-	-	-	-	-
180D	-	-	-	-	-	-	-	-	-	-	-	-
160D	-	-	-	-	-	-	-	-	-	-	-	-
140D	-	-	-	-	-	-	-	-	-	-	-	-
120D	-	-	-	-	-	-	-	-	-	-	-	-

OTHER NOTES / OBSERVATIONS

A reconnaissance survey was conducted in spring from 120-220 m downstream. A detailed habitat survey was completed from 120 to 380 m downstream in summer/fall. Deeper runs with some larger substrates separated by wide, shallow, sandy flats were typical for these downstream surveyed areas.

RAIL CV-105-4

HYDROLOGY & HABITAT CHARACTERISTICS: DOWNSTREAM SURVEY

Date: 19-Aug-19

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
380D	9.9	2.2	-	-	-	0.19	-	-	-	0.2
360D	15.3	3.4	-	-	-	0.20	-	-	-	0.35
340D	6	4.2	-	-	-	0.30	-	-	-	0.05
320D	3.2	2.8	-	-	-	0.35	-	-	-	0.05
300D	4.2	3.2	-	-	-	0.23	-	-	-	0.19
280D	35	4.9	-	-	-	0.14	-	-	-	0.19
260D	25.1	4.1	-	-	-	0.11	-	-	-	0.23
240D	13.1	2.5	-	-	-	0.11	-	-	-	0.21
220D	2.7	1.7	-	-	-	0.47	-	-	-	0.07
200D	1.9	1.6	-	-	-	0.48	-	-	-	0.36
180D	5.4	1.9	-	-	-	0.30	-	-	-	0.25
160D	10.4	5.0	-	-	-	0.15	-	-	-	0.26
140D	2.6	1.2	-	-	-	0.16	-	-	-	0.16
120D	1.8	1.3	-	-	-	0.07	-	-	-	0.39

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Flat	Rapids	Fines	Gravel	Small Cobble	Large Cobble	Boulders
380D	10	40	-	30	-	20	-	30	30	40	-	-
360D	40	30	-	-	-	30	-	30	30	40	-	-
340D	-	80	-	-	-	20	-	90	-	10	-	-
320D	-	90	10	-	-	-	-	100	-	-	-	-
300D	-	30	-	-	-	70	-	100	-	-	-	-
280D	20	30	-	-	-	50	-	100	-	-	-	-
260D	10	20	-	-	-	70	-	95	-	5	-	-
240D	-	40	-	10	-	50	-	90	-	10	-	-
220D	-	20	20	60	-	-	-	100	-	-	-	-
200D	-	10	10	80	-	-	-	50	20	30	-	-
180D	30	10	-	30	-	30	-	90	-	10	-	-
160D	30	30	-	20	-	20	-	60	10	30	-	-
140D	10	30	-	60	-	-	-	30	20	50	-	-
120D	-	30	-	20	-	50	-	100	-	-	-	-

RAIL CV-105-4

22-JUN-19 – DOWNSTREAM SURVEY

A

B

C

D

E

F

Photos 14. Photos taken 120 m downstream (top) and 140 m downstream (bottom) in spring: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

22-JUN-19 – DOWNSTREAM SURVEY

A

B

C

D

E

F

Photos 15. Photos taken 160 m downstream (top) and 180 m downstream (bottom) in spring: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

22-JUN-19 – DOWNSTREAM SURVEY

A

B

C

D

E

F

Photos 16. Photos taken 200 m downstream (top) and 220 m downstream (bottom) in spring: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

19-AUG-19 – DOWNSTREAM SURVEY

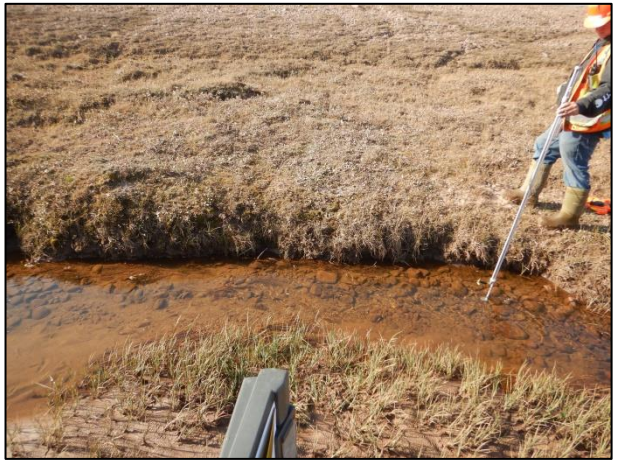
A

B

C

D

E



F

Photos 17. Photos taken 120 m downstream (top) and 140 m downstream (bottom) in summer/fall: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

19-AUG-19 – DOWNSTREAM SURVEY

A

B

C

D

E

F

Photos 18. Photos taken 160 m downstream (top) and 180 m downstream (bottom) in summer/fall: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

19-AUG-19 – DOWNSTREAM SURVEY

A

B

C

D

E

F

Photos 19. Photos taken 200 m downstream (top) and 220 m downstream (bottom) in summer/fall: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

19-AUG-19 – DOWNSTREAM SURVEY

A

B

C

D

E

F

Photos 20. Photos taken 240 m downstream (top) and 260 m downstream (bottom) in summer/fall: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

19-AUG-19 – DOWNSTREAM SURVEY

A

B

C

D

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Photos 21. Photos taken 280 m downstream (top) and 300 m downstream (bottom) in summer/fall: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

19-AUG-19 – DOWNSTREAM SURVEY

A

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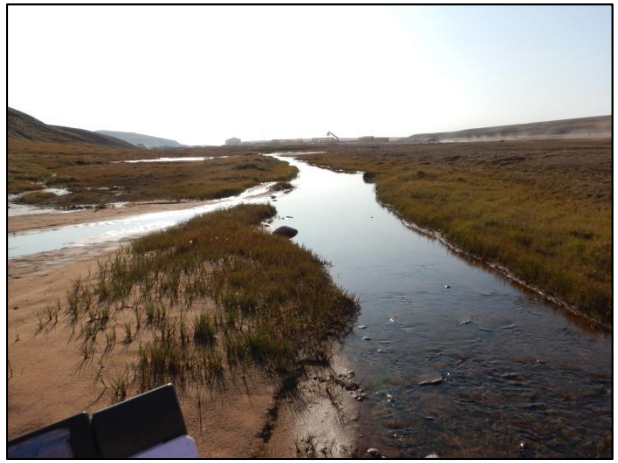
Photos 22. Photos taken 320 m downstream (top) and 340 m downstream (bottom) in summer/fall: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

19-AUG-19 – DOWNSTREAM SURVEY



A

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Photos 23. Photos taken 360 m downstream (top) and 380 m downstream (bottom) in summer/fall: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

HYDROLOGY & HABITAT CHARACTERISTICS: UPSTREAM SURVEY

Date: 19-Aug-19

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
120U	0.7	0.7	0.43	0.43	0.42	0.45	0.15	0.14	0.13	0.15
140U	10.1	4.6	0.10	0.05	0.06	0.12	0.21	0.15	0.05	0.28
160U	18.0	17.1	0.06	0.08	0.06	0.10	0.08	0.23	0.13	0.23
180U	25.0	1.9	0.20	0.16	0.15	0.20	0.04	0.16	0.05	0.53
200U	7.2	5.0	0.08	0.02	0.10	0.18	0.15	too shallow	0.86	0.86

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Flat	Rapids	Fines	Gravel	Small Cobble	Large Cobble	Boulders
120U	-	10	30	60	-	-	-	40	20	40	-	-
140U	10	70	-	10	-	10	-	60	20	20	-	-
160U	20	70	-	-	-	10	-	70	10	20	-	-
180U	10	20	10	60	-	-	-	10	20	70	-	-
200U	30	50	-	-	-	20	-	90	10	-	-	-

OTHER NOTES / OBSERVATIONS

Upstream habitat (120-200 m upstream) was similar to the crossing area, with narrow, deep runs separated by wide, shallow flats. The transect at 180 m upstream from the CV-105-4 centreline overlaps with the centreline for CV-106-1.

RAIL CV-105-4

19-AUG-19 – UPSTREAM SURVEY

A

B

C

D

E

F

Photos 24. Photos taken 120 m upstream (top) and 140 m upstream (bottom) in summer/fall: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

19-AUG-19 – UPSTREAM SURVEY

A

B

C

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Photos 25. Photos taken 160 m upstream (top) and 180 m upstream (bottom) in summer/fall: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

RAIL CV-105-4

19-AUG-19 – UPSTREAM SURVEY

A

B

C

Photos 26. Photos taken 200 m upstream in summer/fall: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).