APPENDIX 6-1.

DETAILED AQUATIC HABITAT ASSESSMENTS FOR WATERBODIES IN THE STEENSBY PORT AREA.

Exploration Property Aquatic Habitat Assessment

Location

Watercourse Name:	**UTM:**
Site:	**Dates Surveyed:**

Site Description/Physical Characteristics

Confinement:

Channel Gradient:

Hydrology

	Spr	Sum
Bankfull Width (m):		
Wetted Width (m):		
Riffle-Crest Depth (m):		
Pool Depth (m):		
D (m):		
D_{95} (m):		
Point Velocities (m/s)		
Riffle:		
Pool:		
Behind a rock:		

Stream/Riparian Habitat

Channel Morphology:

Substrate Composition:

Stream Cover:

Aquatic Vegetation:

Riparian Vegetation:

Barriers Present (Y/N):
Location:

Lakes Present (Y/N):
Location:

L/R Bank Characteristics

	Spr	Sum
Bank Height (L/R; m):		
Bank Stability:		
Erosion Potential:		

Water Quality

	Spr	Sum
Specific Conductance (µS/cm):		
TDS (g/l):		
DO (mg/l)		
%DO:		
Water Temp (˚C):		

Fish Habitat

	Spr	Sum
Spawning:	ARCH - NNST -	ARCH - NNST -
Feeding:	ARCH - NNST -	ARCH - NNST -
Migration:	ARCH - NNST -	ARCH - NNST -

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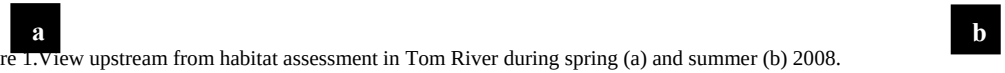


Figure 1.View upstream from habitat assessment in Tom River during spring (a) and summer (b) 2008.

Figure 2.View downstream from habitat assessment in Tom River during spring (a) and summer (b) 2008.

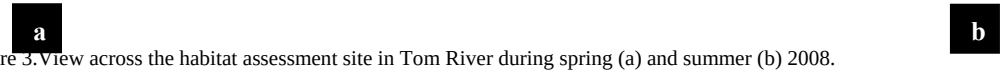
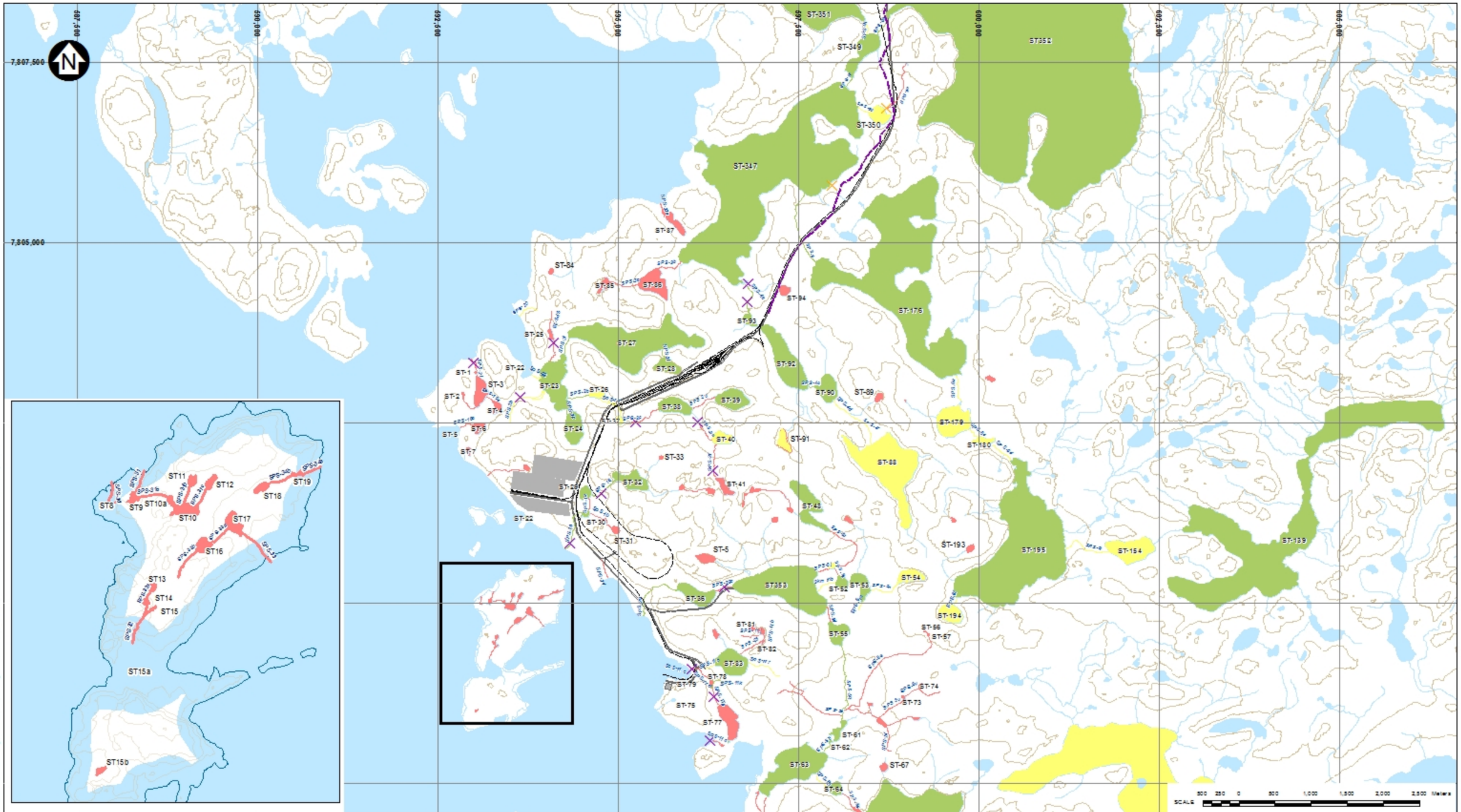


Figure 3.View across the habitat assessment site in Tom River during spring (a) and summer (b) 2008.



LEGEND:

- RAIL ALIGNMENT (PROPOSED)
- CONSTRUCTION ACCESS ROAD (PROPOSED)
- FISH BARRIER (CONFIRMED)
- FISH BARRIER (REMOTELY SENSED)
- WATER
- INFRASTRUCTURE (PROPOSED FOR OPERATIONS PERIODS)

REV	DD/MM/YY	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
-	DD/MM/10	ISSUED FOR --	-	-	-	-

NOTES:

1. BASE MAP: © HER MAJESTY THE QUEEN IN RIGHTS OF CANADA DEPARTMENT OF NATURAL RESOURCES (2008). ALL RIGHTS RESERVED.
2. TOPOGRAPHY PROVIDED BY EAGLE MAPPING (2008).
3. PROPOSED RAILWAY AND CONSTRUCTION ACCESS ROAD ALIGNMENTS PROVIDED BY CANRAIL CONSULTANTS INC. DRAWING NO.: RAILWAY ALIGNMENT AND CONST ACCESS RD - MARY RIVER STEENSBY2010 -120JUG2010.dwg
4. STEENSBY INLET PORT SITE INFRASTRUCTURE PROVIDED BY JMSC DRAWING NO.: STEENSBY OPERATION PHASE FROM JMSC-01 - MAR 06 2009.dwg.
5. CONTOUR INTERVAL IS 25M AND IS IN METRES.

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Presence and Absence of Arctic Char

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P/J NO.: -
REF NO.: -
DATE: 17/11/2010
REV: -

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Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-029	**UTM:**	17 W 594542 7801518
Site:	ST-029	**Dates Surveyed:**	30-Jul-08, 13:32

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Sum
Bankfull Width (m):	N/A
Wetted Width (m):	N/A
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	8.20
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Riparian Habitat

Substrate Composition: **N:** 50% lg cobble, 15% sm cobble, 15% gravel, 10% sand, 10% boulder

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Water Quality

	Sum
Specific Conductance (µS/cm):	N/M
TDS (g/l):	N/M
DO (mg/l)	N/M
%DO:	N/M
Water Temp (˚C):	N/M

Fish Habitat Use

Spawning:	ARCH - H NNST – H
Feeding:	ARCH - H NNST – H
Migration:	ARCH - N NNST - N

Steensby Port Site Aquatic Habitat Assessment

Figure 1. Pan view from north shore of ST-029 during summer (a and b) 2008.

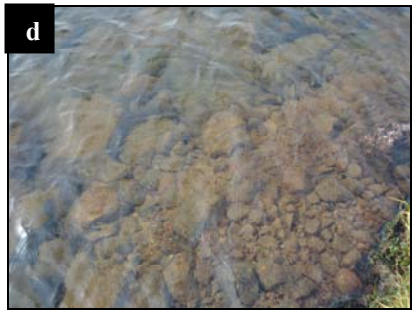

Figure 2. View of substrate along north shore (c and d) of ST-029 during summer 2008.

Figure 3. View of substrate near gill net set (e and f) in ST-029 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-029	**UTM:**	17 W 594574 7801448
Site:	ST-029	**Date/Time Surveyed:**	August 7, 2010 @ 18:12

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 20% boulders, 75% large cobble, 5% small cobble.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	4.0
TDS (g/L):	0.03
DO (mg/L):	11.62
Turbidity (NTU):	4.5
pH:	6.60
Water Temp (˚C):	13.8

Fish Habitat Use

Spawning:	ARCH - H NNST - H
Rearing:	ARCH - H NNST - H
Wintering:	ARCH - H NNST - H
Migration Corridor:	ARCH - N NNST - N

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Photographs

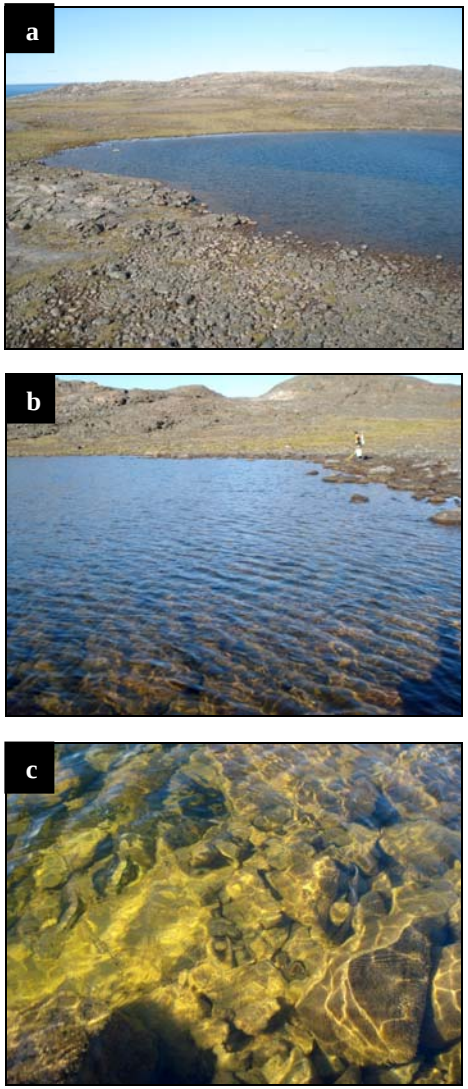

Figure 1. Aerial view of ST-029 (a), view from the shoreline (b), and substrate (c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 594574 7801448
End UTM:	17 W 594599 7801468
Electrofisher Settings (v/Hz/duty cycle):	700/60/12
Effort (dec.min):	9.0

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	14	1.6	N/M	N/M
NNST	1 (YOY)	0.1	N/M	N/M

Comments

Lake appears to be totally isolated, but provides overwintering and spawning habitat for both species.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-030	**UTM:**	17 W 594592 7801254
Site:	ST-030	**Date/Time Surveyed:**	August 7, 2010 @ 17:55

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 1% boulders, 9% large cobble, 10% small cobble, 80% sand.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	4.8
TDS (g/L):	0.03
DO (mg/L):	10.71
Turbidity (NTU):	40.2
pH:	6.51
Water Temp (˚C):	17.3

Fish Habitat Use

Spawning:	ARCH - N NNST - H
Rearing:	ARCH - H NNST - H
Wintering:	ARCH - H NNST - H
Migration Corridor:	ARCH - N NNST - N

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Photographs

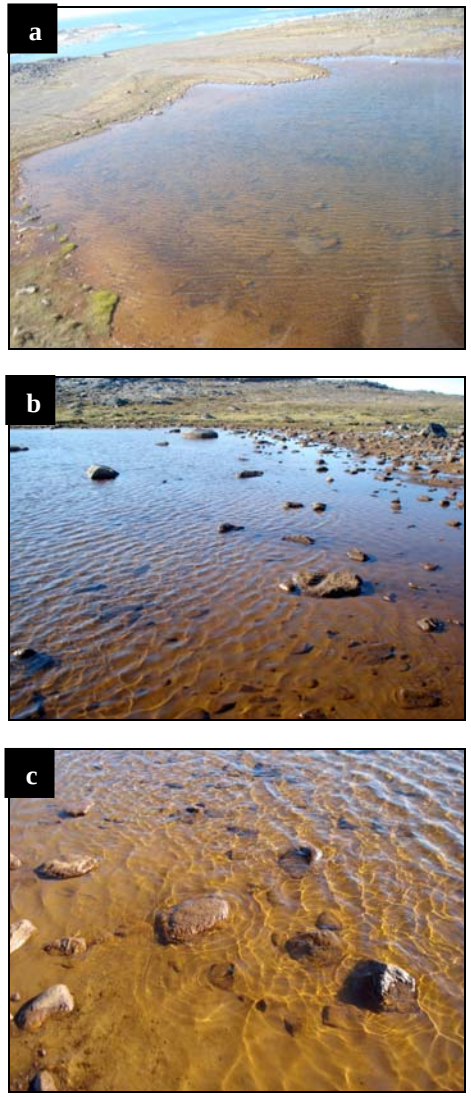

Figure 1. Aerial view of ST-030 (a), view from the shoreline (b), and substrate (c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 594592 7801254
End UTM:	N/A
Electrofisher Settings (v/Hz/duty cycle):	400/60/12
Effort (dec.min):	8.0

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	1	0.1	~120	N/M
NNST	Many YOY	N/M	N/M	N/M

Comments

Unlikely provides any overwinter habitat and is not ideal habitat for ARCH, but provides abundant spawning habitat for NNST.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-032	**UTM:**	17 W 595146 7801703
Site:	ST-032	**Dates Surveyed:**	31-Jul-08, 09:53

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Sum
Bankfull Width (m):	N/A
Wetted Width (m):	N/A
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	10.00
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Shoreline Habitat

Substrate Composition: 35% boulder, 35% cobble, 30% sand

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Water Quality

	Sum
Specific Conductance (µS/cm):	N/M
TDS (g/l):	N/M
DO (mg/l)	N/M
%DO:	N/M
Water Temp (˚C):	N/M

Fish Habitat Use

Spawning:	ARCH - M NNST - L
Feeding:	ARCH - H NNST - L
Migration:	ARCH - N NNST - N

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Steensby Port Site Aquatic Habitat Assessment

Figure 1.View of ST-032 from shore during summer (a and b) 2008.

Figure 2 View of substrate (c and d) in ST-032 during summer 2008.

Figure 3. View of substrate (e) in ST-032 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: ST-032
Site: ST-032

UTM: 17 W 595167 7801567
Date/Time Surveyed: August 7, 2010 @ 17:18

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 90% boulders, 10% large cobble.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	2.7
TDS (g/L):	0.02
DO (mg/L):	11.27
Turbidity (NTU):	3.8
pH:	7.35
Water Temp (˚C):	12.9

Fish Habitat Use

Spawning:	ARCH - M NNST - L
Rearing:	ARCH - H NNST - L
Wintering:	ARCH - H NNST - L
Migration Corridor:	ARCH - N NNST - N

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Photographs

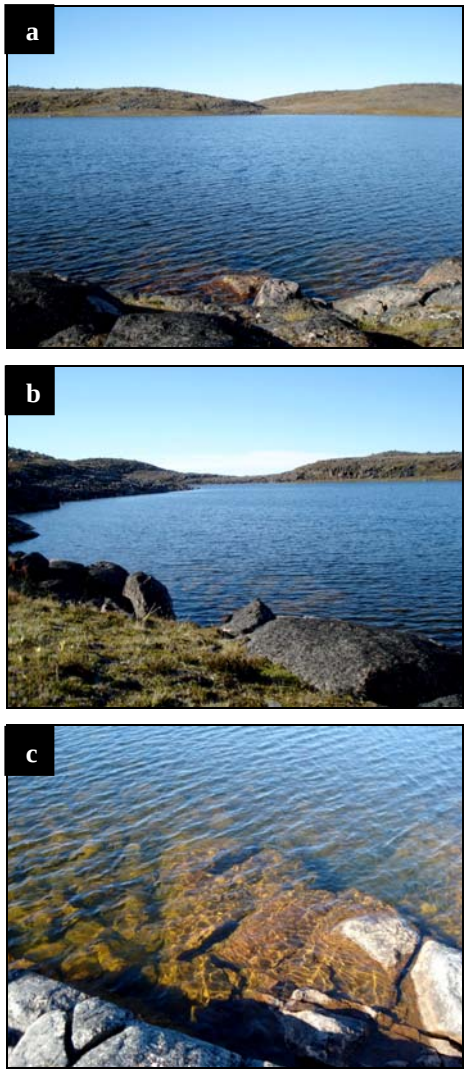


Figure 1. Aerial view of ST-032 (a), view from the shoreline (b), and substrate (c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 595167 7801567
End UTM:	17 W 595210 7801573
Electrofisher Settings (v/Hz/duty cycle):	400/60/12
Effort (dec.min):	5.0

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	1 (juvenile)	0.2	~80	N/M
NNST	0	0.0	N/M	N/M

Comments

Potential overwintering in this lake.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-001a
UTM Coordinates: 17 W 594657 7801348
Date/Time Surveyed: August 7, 2010 @ 17:46

General Physical Characteristics

Floodplain Width (m):	>100	**Channel Pattern:**	Sinuous	**Stage:**	Low
Channel Confinement:	UC	**Channel Gradient (range):**	1-2^{o}	**Flow Regime:**	Permanent
Bank Height (range in m):	N/M	**Bank Shape:**	N/A		

In Situ Water Quality Data

Temperature (^{o}C):	14.4	**Specific Conductance (mS/m):**	11.3	**Turbidity (NTU):**	3.8
Dissolved Oxygen (mg/L):	8.35	**TDS (g/L):**	0.07	**pH:**	6.88

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)				
	Wetted	**High Water**	**25%**	**50%**	**75%**	**Max**	**25%**	**50%**	**75%**	**Max**	**Min**
0	N/M	N/M	N/M	0.08	N/M	0.08	N/M	0.00	N/M	0.05	N/M

Distance and Direction from Assessment UTM (m)	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	**Pool (<0.2 m)**	**Pool (>0.2 m)**	**Run**	**Cascade**	**Other**	**Fines**	**Gravel**	**Small Cobble**	**Large Cobble**	**Boulders**
0	1	95	4				50			25	25

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-001a
UTM Coordinates: 17 W 594657 7801348
Date/Time Surveyed: August 7, 2010 @ 17:46

Fisheries Data

Gear Used: Observation
Effort (min): N/A
Electrofisher Settings: N/A

Start UTM: U/S of the assessment site
End UTM: N/A

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	None	N/A	N/M	N/M
NNST	Many	N/A	N/M	N/M

Fish Habitat Potential

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

Comments & Summary

Many NNST were observed, but ARCH do not appear to have access to this site from any potential overwintering area.

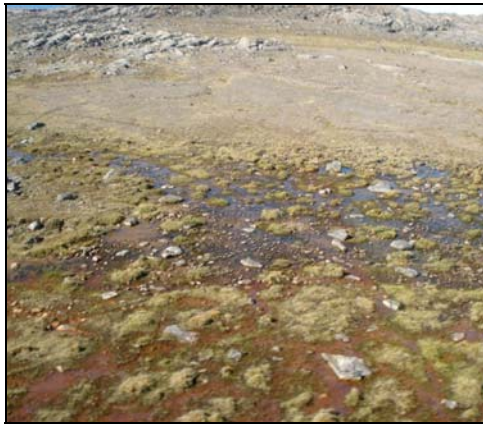
Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-001a
UTM Coordinates: 17 W 594657 7801348

Date/Time Surveyed: August 7, 2010 @ 17:46

Photographs



A

B

C

D

Figure 1. (A) Aerial view of stream SPS-001a; and (B) view upstream of habitat assessment; (C) view downstream of habitat assessment; (D) view across the habitat assessment site.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	SPS-018	**UTM:**	17W 594683 7801483
Site:	SPS-018	**Dates Surveyed:**	27-Jul-08, 13:35

Site Description/Physical Characteristics

Confinement: Unconfined

Channel Gradient: 5˚

Hydrology

	Sum
Bankfull Width (m):	39.32
Wetted Width (m):	2.46
Riffle-Crest Depth (m):	0.18
Pool Depth (m):	0.17
D (m):	NM
D_{95} (m):	3.50
Point Velocities (m/s)	
Riffle:	0.23
Pool:	0.06
Behind a rock:	NM

Stream/Riparian Habitat

Channel Morphology: 60% pool (50% shallow, 10% deep), 30% riffle, 10% cascade

Substrate Composition: 35% fines, 25% 1g cobble, 15% sm cobble, 15% boulder, 10% gravel

Stream Cover: 35% FT, 25% 1g cobble, 15% boulder, 10% deep pool

Aquatic Vegetation: Periphyton

Riparian Vegetation: Grasses, willows, moss

Barriers Present (Y/N): Y
Location: US ~ 100 m

Lakes Present (Y/N): Y
Location: DS ~ 1 km

L/R Bank Characteristics

	Sum
Bank Height (L/R; m):	0.14/Undef
Bank Stability:	Mod-High
Erosion Potential:	Low-Mod

Water Quality

	Sum
Specific Conductance (µS/cm):	2.00
TDS (g/l):	0.02
DO (mg/l)	10.13
%DO:	NM
Water Temp (˚C):	12.75

Fish Habitat Use

Spawning:	ARCH - N NNST - M
Feeding:	ARCH - H NNST - H
Migration:	ARCH - L NNST - L

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Steensby Port Site Aquatic Habitat Assessment

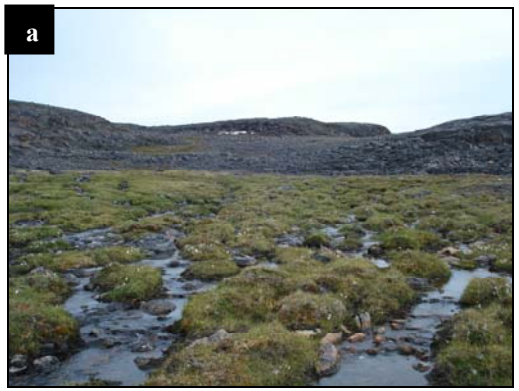

Figure 1.View upstream (a) and downstream (b) from habitat assessment in reach 1 of SPS-018 during summer 2008.

Figure 2.View across (c) the habitat assessment site in reach 1 of SPS-018 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	SPS-019	**UTM:**	17W 594402 7801209
Site:	SPS-019 Reach 1	**Dates Surveyed:**	27-Jul-08,15:45

Site Description/Physical Characteristics

Confinement: Partial Confinement

Channel Gradient: <1˚

Hydrology

	Sum
Bankfull Width (m):	32.92
Wetted Width (m):	20.13
Riffle-Crest Depth (m):	0.20
Pool Depth (m):	0.51
D (m):	NM
D_{95} (m):	5.3
Point Velocities (m/s)	
Riffle:	0.20
Pool:	0.00
Behind a rock:	NM

Stream/Riparian Habitat

Channel Morphology:	94% pool, 5% riffle, 1% cascade
Substrate Composition:	40% 1g cobble, 25% boulder, 20% sand, 15% sm cobble
Stream Cover:	40% 1g cobble, 30% deep pool, 25% boulder
Aquatic Vegetation:	Periphyton, unique plants (pictures)
Riparian Vegetation:	Grasses, willow, moss
Barriers Present (Y/N):	Unknown
Location:	NA
Lakes Present (Y/N):	Y
Location:	DS - Steensby Inlet

L/R Bank Characteristics

	Sum
Bank Height (L/R; m):	0.05/UD
Bank Stability:	Low-moderate
Erosion Potential:	Moderate-High

Water Quality

	Sum
Specific Conductance (µS/cm):	4.00
TDS (g/l):	0.03
DO (mg/l)	10.17
%DO:	NM
Water Temp (˚C):	14.36

Fish Habitat Use

Spawning:	ARCH - N NNST - L
Feeding:	ARCH - H NNST - M
Migration:	ARCH - M NNST - L

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Steensby Port Site Aquatic Habitat Assessment

Figure 1.View upstream (a) and downstream (b) from habitat assessment in Reach 1 of SPS-019 during summer 2008.

Figure 2.View across (c) the habitat assessment site in Reach 1 of SPS-019 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	SPS-019	**UTM:**	17W 594388 7801110
Site:	SPS-019 Reach 2	**Dates Surveyed:**	27-Jul-08, 16:20

Site Description/Physical Characteristics

Confinement: Partial Confinement

Channel Gradient: 2˚

Hydrology

	Sum
Bankfull Width (m):	21.03
Wetted Width (m):	2.53
Riffle-Crest Depth (m):	0.07
Pool Depth (m):	0.07
D (m):	NM
D_{95} (m):	3.75
Point Velocities (m/s)	
Riffle:	0.55
Pool:	0.00
Behind a rock:	NM

Stream/Riparian Habitat

Channel Morphology:	70% riffle, 30% pool (all shallow)
Substrate Composition:	10% 1g cobble, 80% sm cobble, 10% gravel
Stream Cover:	10% 1g cobble
Aquatic Vegetation:	Black periphyton
Riparian Vegetation:	Willows, flowers, grass, moss
Barriers Present (Y/N):	Unknown
Location:	NA
Lakes Present (Y/N):	Y
Location:	DS - Steensby Inlet

L/R Bank Characteristics

	Sum
Bank Height (L/R; m):	0.2/0.5; UD
Bank Stability:	Low-moderate
Erosion Potential:	Moderate-High

Water Quality

	Sum
Specific Conductance (µS/cm):	8.00
TDS (g/l):	0.05
DO (mg/l)	9.75
%DO:	NM
Water Temp (˚C):	13.50

Fish Habitat Use

Spawning:	ARCH - N NNST - N
Feeding:	ARCH - H NNST - L
Migration:	ARCH - L NNST - N

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Steensby Port Site Aquatic Habitat Assessment

Figure 1.View upstream (a) and downstream (b) from habitat assessment in Reach 2 of SPS-019 during summer 2008.

Figure 3.View across (c) the habitat assessment site in Reach 2 of SPS-019 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Crossing ID: SPS-019
UTM Coordinates: 17 W 594386 7801049
Date/Time Surveyed: 7-Aug-10 / 18:33

General Physical Characteristics

Floodplain Width (m):	N/M	**Channel Pattern:**	Meandering	**Stage:**	Low
Channel Confinement:	UC	**Channel Gradient (range):**	1-5^{o}	**Flow Regime:**	Permanent
Bank Height (range in m):	N/M	**Bank Shape:**	N/A		

In Situ Water Quality Data

Temperature (^{o}C):	16.1	**Specific Conductance (mS/m):**	7.8	**Turbidity (NTU):**	2.5
Dissolved Oxygen (mg/L):	10.45	**TDS (g/L):**	0.05	**pH:**	6.45

Hydrology & Habitat Characteristics

Distance and Direction from Crossing (m)	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)				
	Wetted	High Water	25%	50%	75%	Max	25%	50%	75%	Max	Min
20D	1.6	1.6	0.06	0.03	0.02	N/M	0.09	0.05	0.08	N/M	N/M
0	2.0	2.0	0.03	0.03	0.08	N/M	0.54	0.21	0.08	N/M	N/M
20U	5.0	5.0	0.01	0.00	0.02	N/M	0.05	0.00	0.25	N/M	N/M

Distance and Direction from Crossing (m)	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
20D	50	50						40	40	20	
0		50			50			40	40	20	
20U		50			50			49	50		1

Steensby Port Site Aquatic Habitat Assessment

Location

Crossing ID: SPS-019
UTM Coordinates: 17 W 594386 7801049
Date/Time Surveyed: 7-Aug-10 / 18:33

Fisheries Data

Gear Used: Electrofishing
Start UTM: N/A
Effort (min): 3.0
End UTM: N/A
Electrofisher Settings: 700V, 60Hz, 12%

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	2	0.7	N/M	N/M
NNST	0	0	N/M	N/M

Fish Habitat Potential

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

Comments & Summary

Barrier at waypoint: 17 W 594389 7801040. Fish probably coming from upstream due to barrier.

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Fish Habitat Quality – MARGINAL

Steensby Port Site Aquatic Habitat Assessment

Location

Crossing ID: SPS-019
UTM Coordinates: 17 W 594386 7801049
Date/Time Surveyed: 7-Aug-10 / 18:33

Photographs

A **B** **C** **D**

Figure 1. (A) Aerial view of Stream SPS-019; (B) view upstream of habitat assessment; (C) view downstream of habitat assessment; and (D) view across habitat assessment.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-022	**UTM:**	17 W 593754 7803165
Site:	ST-022	**Date/Time Surveyed:**	August 8, 2010 @ 13:08

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 40% large cobble, 40% small cobble, 10% gravel, 10% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	0.279
TDS (g/L):	1.8
DO (mg/L):	11.44
Turbidity (NTU):	3.4
pH:	6.04
Water Temp (˚C):	13.8

Fish Habitat Use

Spawning:	ARCH - N NNST - N
Rearing:	ARCH - N NNST - N
Wintering:	ARCH - N NNST - N
Migration Corridor:	ARCH - N NNST - N

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Fish Habitat Quality – NOT FISH-BEARING

Steensby Port Site Aquatic Habitat Assessment

Photographs

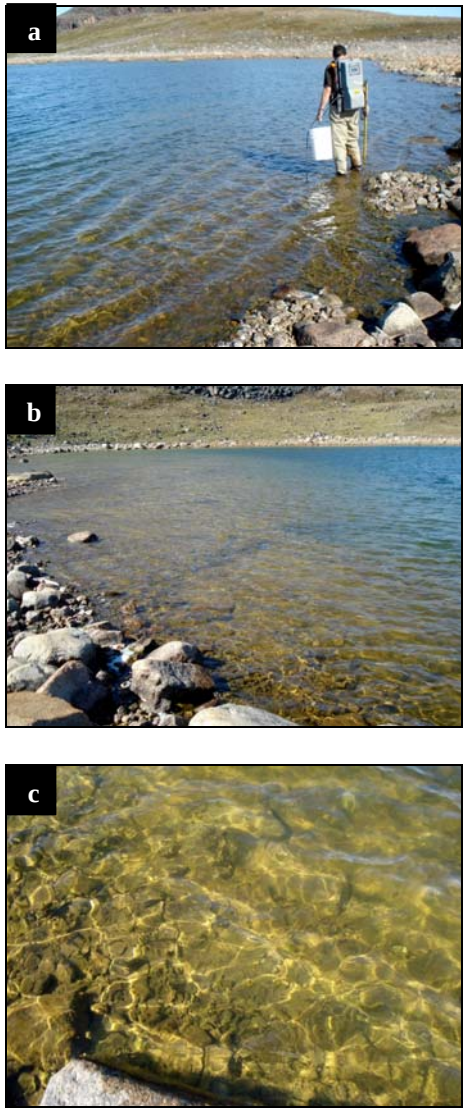

Figure 1. Aerial view of ST-022 (a), view from the shoreline (b), and substrate (c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 593754 7803165
End UTM:	17 W 593805 7803229
Electrofisher Settings (v/Hz/cycle duty):	50/20/10
Effort (dec.min):	5.0

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0.0	N/M	N/M
NNST	0	0.0	N/M	N/M

Comments

Lake is deep enough for over-wintering. Although no fish were caught or observed, there is a very low possibility of some marine fish entering at high tide. *in situ* salinity was measured at 0.1%.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-023	**UTM:**	17 W 594071 7803053
Site:	ST-023	**Dates Surveyed:**	26-Jul-08, 9:28

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Sum
Bankfull Width (m):	N/A
Wetted Width (m):	N/A
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max D (m):	5.80
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Riparian Habitat

Substrate Composition: **~ 1m:** 30% 1g cobble, 25% sm cobble, 20% fines (sand/clay), 15% boulder
1-2m: 70% fines, 20% 1g cobble, 10% boulder

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Water Quality

	Sum
Specific Conductance (µS/cm):	N/M
TDS (g/l):	N/M
DO (mg/l)	N/M
%DO:	N/M
Water Temp (˚C):	9.0

Fish Habitat Use

Spawning:	ARCH - M NNST - H
Feeding:	ARCH - H NNST - H
Migration:	ARCH - L NNST - N

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Steensby Port Site Aquatic Habitat Assessment

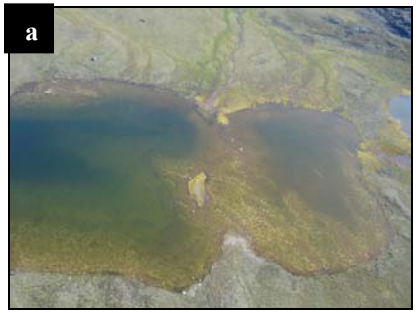

Figure 1. Aerial views of ST-023 during summer (a and b) 2008.

Figure 2. View of substrate along north shoreline of ST-023 during summer (c and d) 2008.

Figure 3.View of substrate along west shore of ST-023 during summer (e) 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-024	**UTM:**	17 W 594419 7802579
Site:	ST-024	**Dates Surveyed:**	04-Aug-08, 9:44

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Sum
Bankfull Width (m):	N/A
Wetted Width (m):	N/A
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max D (m):	4.40
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Riparian Habitat

Substrate Composition: **E, W and S:** 70% 1g cobble, 20% sand, 10% boulder **N:** 50% 1g cobble, 20% sm cobble, 20% boulder, 10% gravel

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Water Quality

	Sum
Specific Conductance (µS/cm):	N/M
TDS (g/l):	N/M
DO (mg/l)	N/M
%DO:	N/M
Water Temp (˚C):	N/M

Fish Habitat Use

Spawning:	ARCH - L NNST - M
Feeding:	ARCH - M NNST - H
Migration:	ARCH - N NNST - N

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Steensby Port Site Aquatic Habitat Assessment

Figure 1. Pan view from shore (a and b) of ST-024 during summer 2008.

Figure 2. View of substrate (c and d) of ST-024 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-026	**UTM:**	17 W 594736 7802832
Site:	ST-026	**Date/Time Surveyed:**	August 9, 2010 @ 11:32

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology:	N/A
Substrate Composition:	10 boulders, 5% large cobble, 85% fines.
Stream Cover:	N/A
Aquatic Vegetation:	N/A
Riparian Vegetation:	N/A
Barriers Present (Y/N):	N/A
Location:	N/A
Lakes Present (Y/N):	N/A
Location:	N/A

Water Quality

	Summer
Specific Conductance (mS/m):	8.2
TDS (g/L):	0.05
DO (mg/L):	11.07
Turbidity (NTU):	3.2
pH:	6.32
Water Temp (˚C):	15.5

Fish Habitat Use

Spawning:	ARCH - N NNST - H
Rearing:	ARCH - L NNST - H
Wintering:	ARCH - N NNST - L
Migration Corridor:	ARCH - N NNST - M

Steensby Port Site Aquatic Habitat Assessment

Photographs

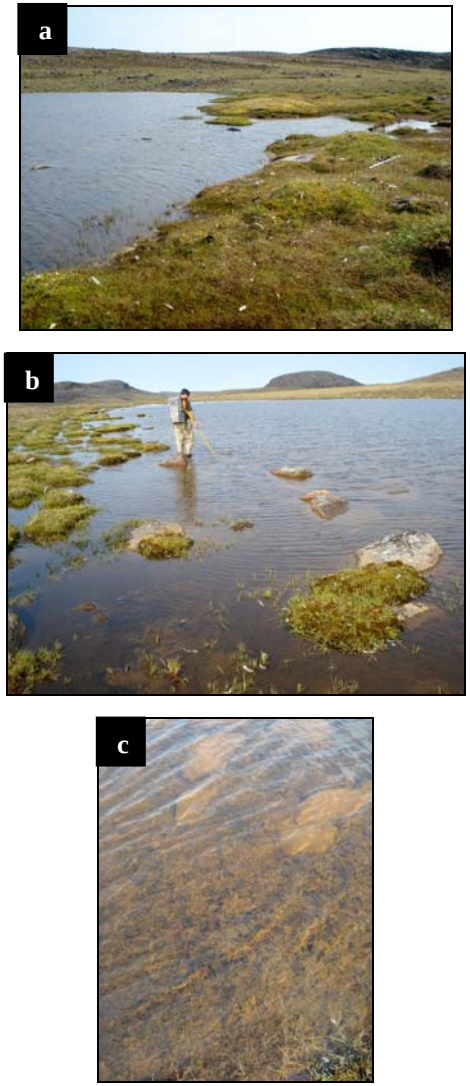

Figure 1. Aerial view of ST-026 (a), view from the shoreline (b), substrate.

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 594736 7802832
End UTM:	17 W 594673 7802845
Electrofisher Settings (v/Hz/duty cycle):	N/M
Effort (dec.min):	5.5

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0.0	N/M	N/M
NNST	15	2.7	45-65	N/M

Comments

Also observed many YOY NNST. Overwintering unlikely.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-027	**UTM:**	17 W 595126 7803529
Site:	ST-027	**Dates Surveyed:**	26-Jul-08, 12:58

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Sum
Bankfull Width (m):	N/A
Wetted Width (m):	N/A
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	23.00
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Riparian Habitat

Substrate Composition:	75% boulder/cobble, 25% compact sand **At shoreline**: 50%boulder, 50% cobble
Aquatic Vegetation:	Stringy green weeds
Riparian Vegetation:	N/A
Barriers Present (Y/N):	N/A
Location:	N/A

Water Quality

	Sum
Specific Conductance (µS/cm):	N/M
TDS (g/l):	N/M
DO (mg/l)	N/M
%DO:	N/M
Water Temp (˚C):	9.0

Fish Habitat Use

Spawning:	ARCH - H NNST - L
Feeding:	ARCH - H NNST - M
Migration:	ARCH - L NNST - N

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Steensby Port Site Aquatic Habitat Assessment

Figure 1. Pan view from west shoreline of ST-027 during summer (a) 2008.

Figure 2. View of substrate along north (b) and west (c) shores of ST-027 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-028	**UTM:**	17 W 595660 7803288
Site:	ST-028	**Dates Surveyed:**	4-Aug-08, 16:53

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Sum
Bankfull Width (m):	N/A
Wetted Width (m):	N/A
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Shoreline Habitat

Substrate Composition:	**S:** 50% lg cobble, 40% boulder, 10% fines
Aquatic Vegetation:	Macrophytes
Riparian Vegetation:	N/A
Barriers Present (Y/N):	N/A
Location:	N/A

Water Quality

	Sum
Specific Conductance (µS/cm):	N/M
TDS (g/l):	N/M
DO (mg/l)	N/M
%DO:	N/M
Water Temp (˚C):	N/M

Fish Habitat Use

Spawning:	ARCH - L NNST - M
Feeding:	ARCH - M NNST - M
Migration:	ARCH - N NNST - N

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Steensby Port Site Aquatic Habitat Assessment

Figure 1. Pan view of ST-028 (a and b) during summer 2008.

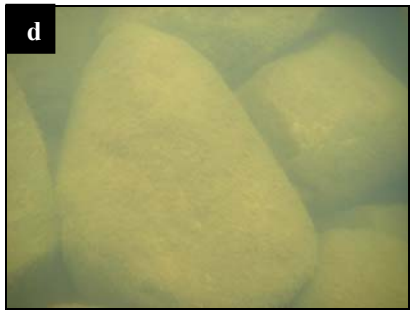

Figure 2. Shoreline view (c) and substrate view (d) of ST-028 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: ST-037
Site: ST-037

UTM: 17 W 595002 7802597
Date/Time Surveyed: August 9, 2010 @ 10:58

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 90% fines, 10% cobble

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	8.3
TDS (g/L):	0.05
DO (mg/L):	10.32
Turbidity (NTU):	11.9
pH:	6.35
Water Temp (˚C):	15.8

Fish Habitat Use

Spawning:	ARCH - N NNST - H
Rearing:	ARCH - L NNST - H
Wintering:	ARCH - N NNST - L
Migration Corridor:	ARCH - N NNST - N

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Photographs

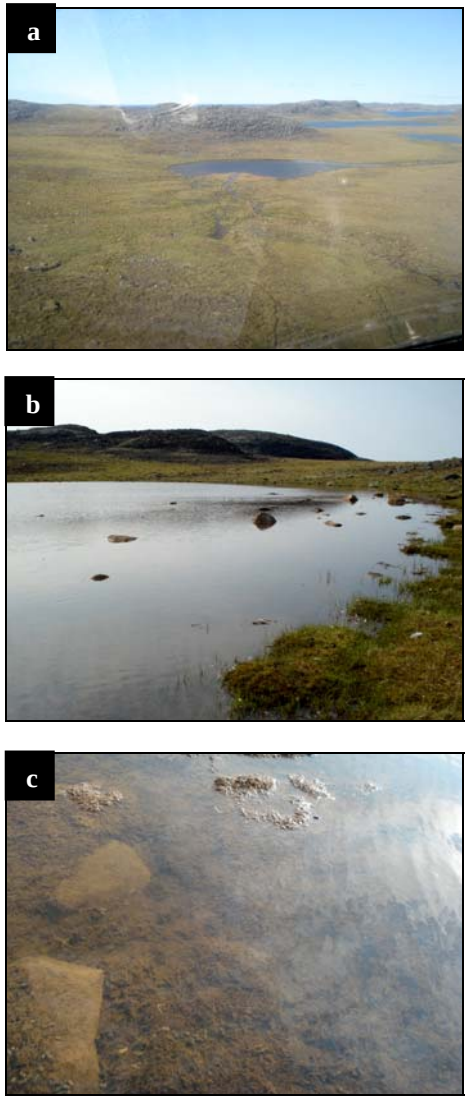

Figure 1. Aerial view of ST-037 (a), view from the shoreline (b), and substrate (c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 595002 7802597
End UTM:	17 W 594965 7802530
Electrofisher Settings (v/Hz/duty cycle):	600/50/12
Effort (dec.min):	4.5

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0.0	N/M	N/M
NNST	many YOY	N/A	N/M	N/M

Comments

YOY NNST abundant, but too small to catch. Overwintering unlikely.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-038	**UTM:**	17 W 595557 7804633
Site:	ST-038	**Date/Time Surveyed:**	August 9, 2010 @ 9:25

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 5% boulders, 5% large cobble, 10% small cobble, 80% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	3.9
TDS (g/L):	0.03
DO (mg/L):	11.13
Turbidity (NTU):	2.2
pH:	4.99
Water Temp (˚C):	13.2

Fish Habitat Use

Spawning:	ARCH - H NNST - H
Rearing:	ARCH - H NNST - H
Wintering:	ARCH - H NNST - H
Migration Corridor:	ARCH - N NNST - N

Steensby Port Site Aquatic Habitat Assessment

Photographs

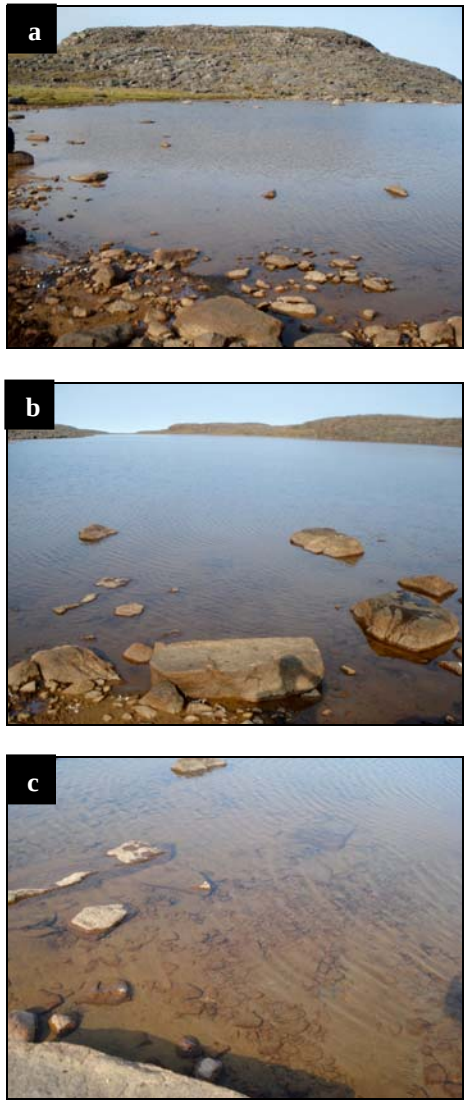

Figure 1. Aerial view of ST-038 (a), view from the shoreline (b), and substrate (c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 596012 7802648
End UTM:	17 W 596017 7802691
Electrofisher Settings (v/Hz/duty cycle):	600/60/12
Effort (dec.min):	5.0

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	3 (YOY)	0.6	30-40	N/M
NNST	4	0.8	30-65	N/M

Comments

Lake is most likely isolated. Hundreds of both fish species seen while flying over the lake.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-039	**UTM:**	17 W 596805 7802820
Site:	ST-039	**Date/Time Surveyed:**	August 9, 2010 @ 8:25

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 10% fines, 10% small cobble, 60% large cobble, 20% boulders.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	4.4
TDS (g/L):	0.03
DO (mg/L):	9.9
Turbidity (NTU):	2.2
pH:	4.7
Water Temp (˚C):	13.0

Fish Habitat Use

Spawning:	ARCH - M NNST - H
Rearing:	ARCH - H NNST – H
Wintering:	ARCH - H NNST – H
Migration Corridor:	ARCH - N NNST - N

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Photographs

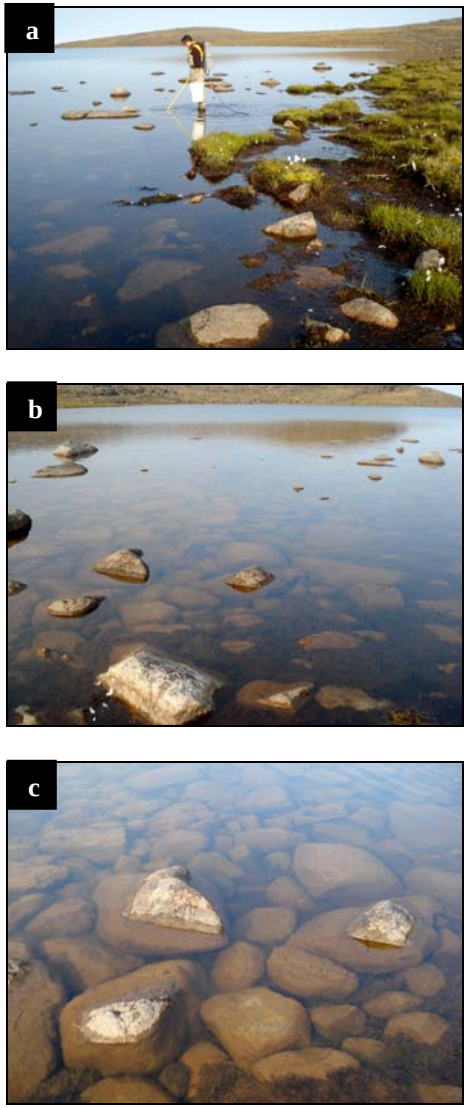

Figure 1. Aerial view of ST-039 (a), view from the shoreline (b), and substrate (c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 596805 7802820
End UTM:	17 W 596784 7802840
Electrofisher Settings (v/Hz/duty cycle):	400/60/12
Effort (dec.min):	5.5

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	3	0.55	110-150	N/M
NNST	6	1.1	40-60	N/M

Comments

This site possibly connected to ST-038 during high water.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-040	**UTM:**	17 W 596307 7802236
Site:	ST-040	**Date/Time Surveyed:**	August 9, 2010 @ 8:44

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 10% fines, 10% small cobble, 60% large cobble, 20% boulders

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	2.7
TDS (g/L):	0.02
DO (mg/L):	10.46
Turbidity (NTU):	2.3
pH:	4.7
Water Temp (˚C):	13.8

Fish Habitat Use

Spawning:	ARCH - N NNST – H
Rearing:	ARCH - L NNST – H
Wintering:	ARCH - L NNST – H
Migration Corridor:	ARCH - N NNST - N

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Photographs

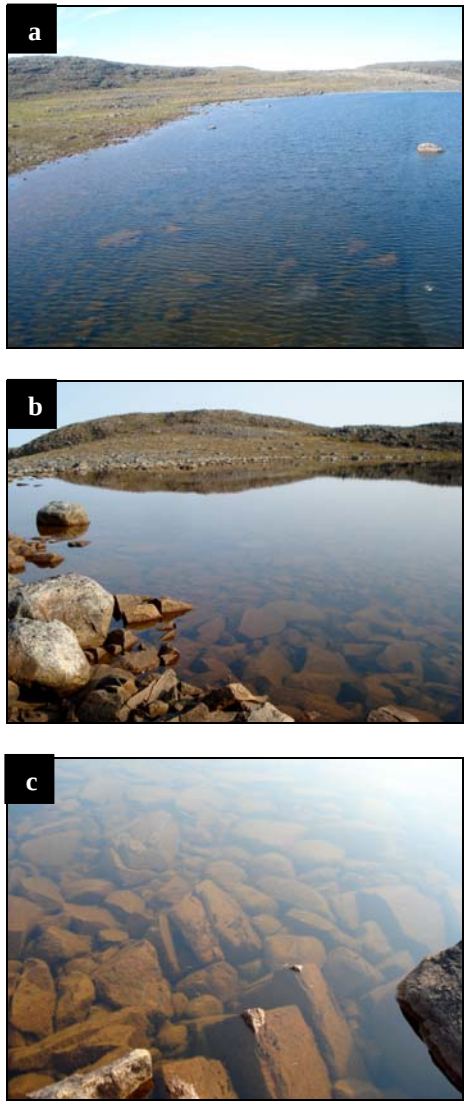

Figure 1. Aerial view of ST-040 (a), view from the shoreline (b), and substrate (c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 596307 7802236
End UTM:	17 W 596328 7802221
Electrofisher Settings (v/Hz/duty cycle):	600/60/12
Effort (dec.min):	6.0

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0.0	N/M	N/M
NNST	61	10.2	N/M	N/M

Comments

Never connected to ST-038 in any water condition.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-002b
UTM Coordinates: 17 W 594533 7802876
Date/Time Surveyed: August 9, 2010 @ 11:48

General Physical Characteristics

Floodplain Width (m):	>100	**Channel Pattern:**	Braided	**Stage:**	Low
Channel Confinement:	UC	**Channel Gradient (range):**	(U/S)1-2° (D/S)3-4°	**Flow Regime:**	Permanent
Bank Height (range in m):	Undefined	**Bank Shape:**	Undefined		

In Situ Water Quality Data

Temperature (°C):	N/M	**Specific Conductance (mS/m):**	N/M	**Turbidity (NTU):**	N/M
Dissolved Oxygen (mg/L):	N/M	**TDS (g/L):**	N/M	**pH:**	N/M

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)				
	Wetted	**High Water**	**25%**	**50%**	**75%**	**Max**	**25%**	**50%**	**75%**	**Max**	**Min**
20D	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M	0.50	N/M
0	N/M	N/M	0.04	0.08	0.06	0.10	0.41	0.07	0.46	0.50	N/M
20U	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M	0.10	N/M

Distance and Direction from Assessment UTM (m)	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	**Pool (<0.2 m)**	**Pool (>0.2 m)**	**Run**	**Cascade**	**Other**	**Fines**	**Gravel**	**Small Cobble**	**Large Cobble**	**Boulders**
20D	50	40	10				10	10	30	45	5
0	50	40	10				10	10	30	45	5
20U	20	80					90			10	

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-002b
UTM Coordinates: 17 W 594533 7802876
Date/Time Surveyed: August 9, 2010 @ 11:48

Fisheries Data

Gear Used: Electrofishing
Effort (min): 6
Electrofisher Settings: N/A

Start UTM: N/A
End UTM: N/A

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	3	0.5	120-205	N/M
NNST	47	7.8	50-70	N/M

Fish Habitat Potential

Species	Spawning	Overwintering	Rearing	Migration Corridor
ARCH	N	N	H (lower reaches)	L
NNST	M	N	H	H

Comments & Summary

Braided/marshy; downstream more channel-like. Upstream of waypoint is marshy/braided (only NNST present). Downstream of waypoint is similar to waypoint. Everything from ST-037 to large downstream lake connected. ARCH most likely do not pass upstream marshy area.

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-002b
UTM Coordinates: 17 W 594533 7802876
Date/Time Surveyed: August 9, 2010 @ 11:48

Photographs


A


B


C


D


E

Figure 1. (A) Upstream and (B) downstream aerial views of stream SPS-002b; (C) view upstream of the habitat assessment; (D) view downstream of the habitat assessment; (E) view across the habitat assessment .

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-002e
UTM Coordinates: 17 W 596037 7802623
Date/Time Surveyed: August 9, 2010 @ 9:02

General Physical Characteristics

Floodplain Width (m):	>100	**Channel Pattern:**	Sinuous	**Stage:**	Low
Channel Confinement:	UC	**Channel Gradient (range):**	1-3^{o}	**Flow Regime:**	Permanent
Bank Height (range in m):	0.20	**Bank Shape:**	Vertical		

In Situ Water Quality Data

Temperature (^{o}C):	10.0	**Specific Conductance (mS/m):**	3.9	**Turbidity (NTU):**	1.2
Dissolved Oxygen (mg/L):	12.04	**TDS (g/L):**	0.03	**pH:**	4.38

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)				
	Wetted	**High Water**	**25%**	**50%**	**75%**	**Max**	**25%**	**50%**	**75%**	**Max**	**Min**
0	0.2-0.5	N/M	0.17	0.17	0.17	0.30	0.00	0.01	0.15	0.47	N/M

Distance and Direction from Assessment UTM (m)	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	**Pool (<0.2 m)**	**Pool (>0.2 m)**	**Run**	**Cascade**	**Other**	**Fines**	**Gravel**	**Small Cobble**	**Large Cobble**	**Boulders**
0	10	45	45				5	5	60	30	

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-002e
UTM Coordinates: 17 W 596037 7802623
Date/Time Surveyed: August 9, 2010 @ 9:02

Fisheries Data

Gear Used: Electrofishing
Effort (min): 6.0
Electrofisher Settings: 600V, 60Hz, 12%

Start UTM: N/M
End UTM: N/M

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	23	3.8	32-120	N/M
NNST	1	0.2	N/M	N/M

Fish Habitat Potential

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

Comments & Summary

The stream channel is fairly uniform in shape. Definite spawning in d/s lake; not connected u/s even in high water. Electrofished from lake to 50m u/s. YOY ARCH present. No fish present upstream of barrier.

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-002e
UTM Coordinates: 17 W 596037 7802623
Date/Time Surveyed: August 9, 2010 @ 9:02

Photographs

A

B

C

Figure 1. (A) view upstream of habitat assessment; (B) view downstream of habitat assessment; and (C) view across the habitat assessment site.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-002h
UTM Coordinates: 17 W 593674 7802850
Date/Time Surveyed: August 8, 2010 @ 13:31

General Physical Characteristics

Floodplain Width (m): >100
Channel Pattern: Sinuous
Stage: Low
Channel Confinement: UC
Channel Gradient (range): 5°
Flow Regime: Permanent
Bank Height (range in m): Undefined
Bank Shape: Undefined

In Situ Water Quality Data

Temperature (°C): 19.9
Specific Conductance (mS/m): 19.5
Turbidity (NTU): 2.8
Dissolved Oxygen (mg/L): 9.34
TDS (g/L): 0.13
pH: 6.41

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)				
	Wetted	High Water	25%	50%	75%	Max	25%	50%	75%	Max	Min
0	0.80	N/M	N/M	0.10	N/M	N/M	N/M	0.10	N/M	N/M	N/M

Distance and Direction from Assessment UTM (m)	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
0	20	80					95		5		5

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-002h
UTM Coordinates: 17 W 593674 7802850
Date/Time Surveyed: August 8 2010 @ 13:31

Fisheries Data

Gear Used: Electrofishing
Effort (min): 2.5
Electrofisher Settings: 400V, 50 Hz, 12%

Start UTM: N/M
End UTM: N/M

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	15	6.0	N/M	N/M
NNST	2	0.8	45-55	N/M

Fish Habitat Potential

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

Comments & Summary

Flooded vegetation entire way down.

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-002h
UTM Coordinates: 17 W 593674 7802850
Date/Time Surveyed: August 8, 2010 @ 13:31

Photographs

A

B

C

Figure 1. (A) view upstream of the habitat assessment; (B) view downstream of the habitat assessment; (C) view across the habitat assessment.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	SPS-002i (formerly SPS-023)	**UTM:**	17 W 594246 7803513
Site:	SPS-002i	**Dates Surveyed:**	27-Jul-08, 11:08

Site Description/Physical Characteristics

Confinement: Unconfined to Partial

Channel Gradient: 4˚

Hydrology

	Sum
Bankfull Width (m):	30.18
Wetted Width (m):	3.87
Riffle-Crest Depth (m):	0.16
Pool Depth (m):	0.25
D (m):	NM
D_{95} (m):	4.20
Point Velocities (m/s)	
Riffle:	0.39
Pool:	0.10
Behind a rock:	NM

Stream/Riparian Habitat

Channel Morphology:	65% riffle, 35% pool
Substrate Composition:	DS - 60% 1g cobble, 20% boulder, 10% sm cobble, 10% FT; US - 60% boulder, 40% 1g cobble
Stream Cover:	60% 1g cobble, 20% boulder, 20% UC banks, 15% d. pool
Aquatic Vegetation:	flooded terrestrial, periphyton
Riparian Vegetation:	Grasses, willow, moss, wildflowers
Barriers Present (Y/N):	Unknown
Location:	NA
Lakes Present (Y/N):	Y
Location:	DS; US

L/R Bank Characteristics

	Sum
Bank Height (L/R; m):	NM
Bank Stability:	Low-moderate
Erosion Potential:	Moderate-high

Water Quality

	Sum
Specific Conductance (µS/cm):	18.00
TDS (g/l):	0.12
DO (mg/l)	10.37
%DO:	NM
Water Temp (˚C):	11.40

Fish Habitat Use

Spawning:	ARCH - N NNST - M
Feeding:	ARCH - H NNST - H
Migration:	ARCH - M NNST - M

Steensby Port Site Aquatic Habitat Assessment

Figure 1.View upstream (a) and downstream (b) from habitat assessment of SPS-002i during summer 2008.

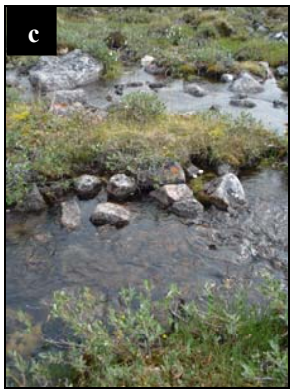

Figure 3.View across (c) the habitat assessment site of SPS-002i during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	SPS-017	**UTM:**	17 W 595001 7802717
Site:	SPS-017	**Dates Surveyed:**	27-Jul-08, 12:17

Site Description/Physical Characteristics

Confinement: Unconfined

Channel Gradient: <1˚

Hydrology

	Sum
Bankfull Width (m):	40.23
Wetted Width (m):	4.07
Riffle-Crest Depth (m):	0.16
Pool Depth (m):	0.32
D (m):	NM
D_{95} (m):	3.00
Point Velocities (m/s)	
Riffle:	0.45
Pool:	0.11
Behind a rock:	NM

Stream/Riparian Habitat

Channel Morphology: 60% riffle, 40% pool (35% shallow, 5% deep)

Substrate Composition: 53% FT, 20% sm cobble, 15% 1g cobble, 10% fines, 2% boulder

Stream Cover: 53% FT, 5% 1g cobble, 5% deep pool, 2% boulder

Aquatic Vegetation: None

Riparian Vegetation: Grass, moss, wildflower, willow

Barriers Present (Y/N): Unknown
Location: NA

Lakes Present (Y/N): Y
Location: DS; US

L/R Bank Characteristics

	Sum
Bank Height (L/R; m):	0.10/None
Bank Stability:	Low
Erosion Potential:	High

Water Quality

	Sum
Specific Conductance (µS/cm):	4.00
TDS (g/l):	0.02
DO (mg/l)	10.40
%DO:	NM
Water Temp (˚C):	12.60

Fish Habitat Use

Spawning:	ARCH - N NNST - H
Feeding:	ARCH - L NNST - H
Migration:	ARCH - N NNST - H

Steensby Port Site Aquatic Habitat Assessment

Figure 1.View upstream (a) and downstream (b) from habitat assessment in reach 1 of SPS-017 during summer 2008.

Figure 2.View across (c) the habitat assessment site in reach 1 of SPS-017 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Crossing ID: SPS-017
UTM Coordinates: 17 W 594978 7802736
Date/Time Surveyed: 9-Aug-10 / 11:10

General Physical Characteristics

Floodplain Width (m):	>100	**Channel Pattern:**	Sinuous/braided	**Stage:**	Low
Channel Confinement:	UC	**Channel Gradient (range):**	1-3^{o}	**Flow Regime:**	Permanent
Bank Height (range in m):	Undefined	**Bank Shape:**	Undefined		

In Situ Water Quality Data

Temperature (^{o}C):	16.0	**Specific Conductance (mS/m):**	7.7	**Turbidity (NTU):**	3.7
Dissolved Oxygen (mg/L):	11.22	**TDS (g/L):**	0.05	**pH:**	6.08

Hydrology & Habitat Characteristics

Distance and Direction from Crossing (m)	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)				
	Wetted	High Water	25%	50%	75%	Max	25%	50%	75%	Max	Min
0	1.7	21.7	0.17	0.09	0.08	N/M	0.20	0.09	0.00	N/M	N/M

Distance and Direction from Crossing (m)	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
20D							40			40	20
0	10	80	10				40			40	20
20U							70			30	

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Location

Crossing ID: SPS-017
UTM Coordinates: 17 W 594978 7802736
Date/Time Surveyed: 9-Aug-10 / 11:10

Fisheries Data

Gear Used: Electrofishing
Effort (min): 6.0
Electrofisher Settings: 600V, 50Hz, 12%
Start UTM: 50m upstream of site coordinates
End UTM: 50m downstream of site coordinates

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0	N/M	N/M
NNST	38	6.3	N/M	N/M

Fish Habitat Potential

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

Comments & Summary

Stream morphology and substrate composition is very similar downstream of assessment point.

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Location

Crossing ID: SPS-017
UTM Coordinates: 17 W 594978 7802736
Date/Time Surveyed: 9-Aug-10 / 11:10

Photographs

A

B

C

Figure 1. (A) view upstream of habitat assessment; (B) view downstream of habitat assessment; and (C) view across habitat assessment.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	SPS-022	**UTM:**	17 W 593838 7803137
Site:	SPS-022	**Dates Surveyed:**	27-Jul-08, 10:27

Site Description/Physical Characteristics

Confinement: Unconfined to Partial Confinement

Channel Gradient: 3˚

Hydrology

	Sum
Bankfull Width (m):	121.62
Wetted Width (m):	12.20
Riffle-Crest Depth (m):	0.11
Pool Depth (m):	0.31
D (m):	NM
D_{95} (m):	4.10
Point Velocities (m/s)	
Riffle:	0.37
Pool:	0.00
Behind a rock:	0.02

Stream/Riparian Habitat

Channel Morphology:	65% riffle, 30% pool, 5% cascade
Substrate Composition:	50% boulder, 50% 1g cobble
Stream Cover:	50% boulder, 40% 1g cobble, 10% deep pool
Aquatic Vegetation:	Periphyton (orange and green)
Riparian Vegetation:	Grasses, willow, moss, wildflowers
Barriers Present (Y/N):	Unknown
Location:	NA
Lakes Present (Y/N):	Y
Location:	DS; US

L/R Bank Characteristics

	Sum
Bank Height (L/R; m):	No banks – FT
Bank Stability:	Undefined
Erosion Potential:	moderate

Water Quality

	Sum
Specific Conductance (µS/cm):	15.00
TDS (g/l):	0.09
DO (mg/l)	10.25
%DO:	NM
Water Temp (˚C):	11.42

Fish Habitat Use

Spawning:	ARCH - N NNST - H
Feeding:	ARCH - M NNST - H
Migration:	ARCH - L NNST - H

Steensby Port Site Aquatic Habitat Assessment

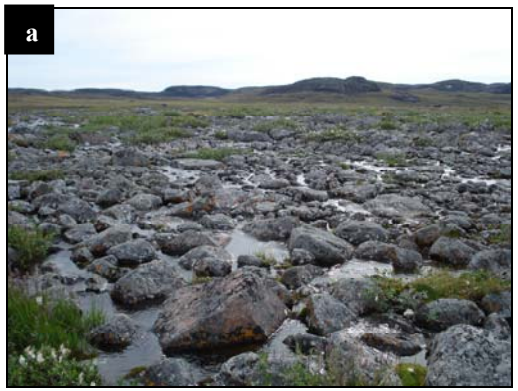

Figure 1.View upstream (a) and downstream (b) from habitat assessment of SPS-022 during summer 2008.

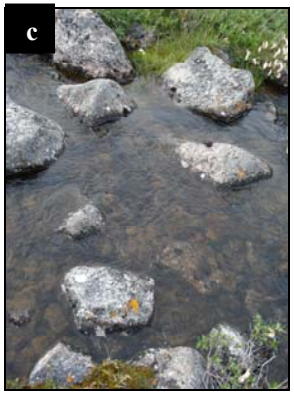

Figure 2.View across (c) the habitat assessment site of SPS-022 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-085	**UTM:**	17 W 594859 7804478
Site:	ST-085	**Date/Time Surveyed:**	August 9, 2010 @ 10:41

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 40% large cobble, 10% small cobble, 5% gravel, 45% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	2.5
TDS (g/L):	0.02
DO (mg/L):	10.82
Turbidity (NTU):	5.9
pH:	6.57
Water Temp (˚C):	14.9

Fish Habitat Use

Spawning:	ARCH - N NNST - N
Rearing:	ARCH - N NNST - N
Wintering:	ARCH - N NNST - N
Migration Corridor:	ARCH - N NNST - N

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Fish Habitat Quality – NOT FISH-BEARING

Steensby Port Site Aquatic Habitat Assessment

Photographs

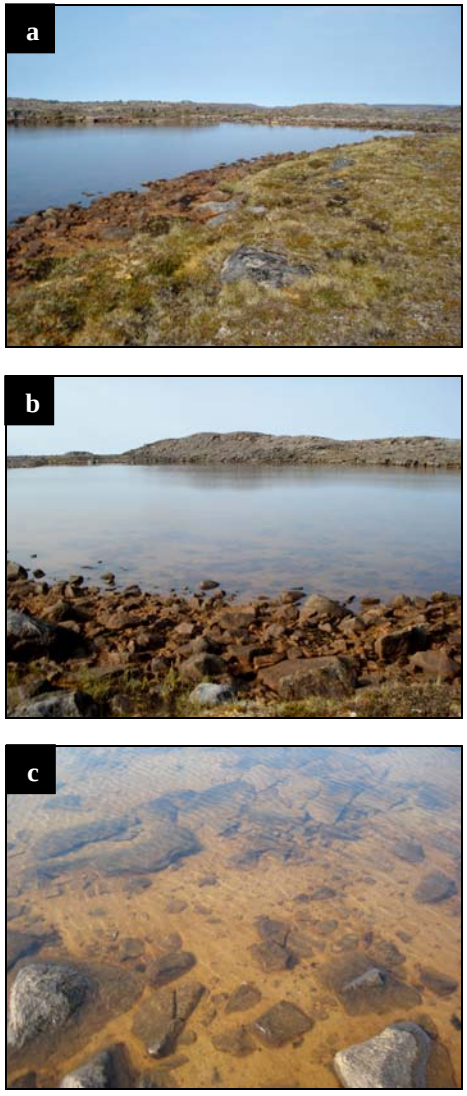

Figure 1. View from the shoreline of ST-085 (a,b) and substrate (c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17W 594859 7804478
End UTM:	17W 594819 7804506
Electrofisher Settings (v/Hz/duty cycle):	600/50/12
Effort (dec.min):	5.0

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0.0	N/M	N/M
NNST	0	0.0	N/M	N/M

Comments

Over-wintering possible but no fish were caught/observed.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-086	**UTM:**	17 W 595557 7804633
Site:	ST-086	**Date/Time Surveyed:**	August 9, 2010 @ 10:05

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 30% boulders, 10% large cobble, 10% small cobble, 50% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	24.7
TDS (g/L):	0.16
DO (mg/L):	10.54
Turbidity (NTU):	5.1
pH:	6.15
Water Temp (˚C):	14.2

Fish Habitat Use

Spawning:	ARCH - N NNST - H
Rearing:	ARCH - N NNST - H
Wintering:	ARCH - N NNST - L
Migration Corridor:	ARCH - N NNST - N

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Photographs

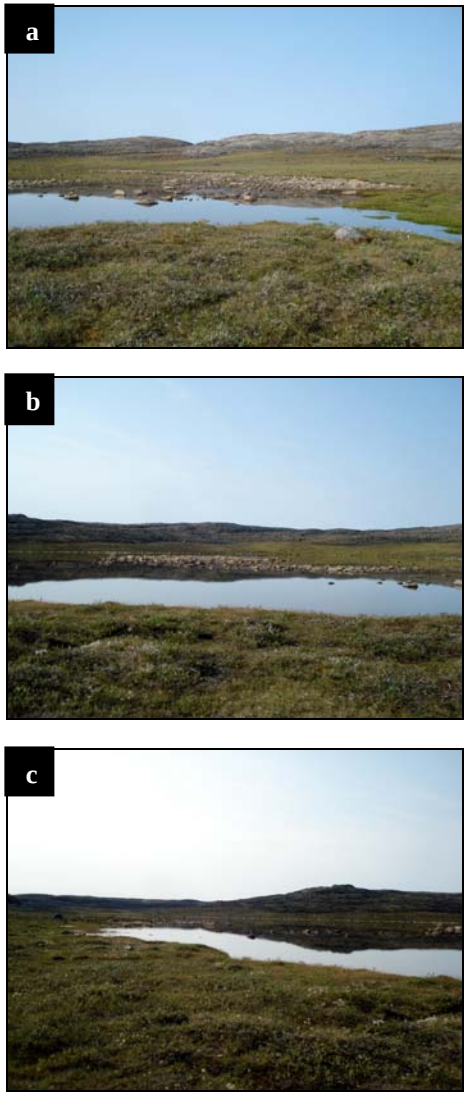

Figure 1. View from the shoreline of ST-086 (a,b,c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17W 595519 7804590
End UTM:	17W 595557 7804633
Electrofisher Settings (v/Hz/duty cycle):	200/20/10
Effort (dec.min):	6.5

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0.0	N/M	N/M
NNST	17	2.6	N/M	N/M

Comments

ARCH not present and overwintering unlikely, but it does provide suitable NNST spawning and rearing habitat.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-003b
UTM Coordinates: 17 W 595647 7804645
Date/Time Surveyed: August 9, 2010 @ 10:19

General Physical Characteristics

Floodplain Width (m):	>100	**Channel Pattern:**	Meandering	**Stage:**	Low
Channel Confinement:	UC	**Channel Gradient (range):**	1- 5/6^{o}	**Flow Regime:**	Permanent
Bank Height (range in m):	Undefined	**Bank Shape:**	Undefined		

In Situ Water Quality Data

Temperature (^{o}C):	15.1	**Specific Conductance (mS/m):**	25.2	**Turbidity (NTU):**	3.7
Dissolved Oxygen (mg/L):	11.35	**TDS (g/L):**	0.16	**pH:**	6.26

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)				
	Wetted	High Water	25%	50%	75%	Max	25%	50%	75%	Max	Min
0	N/M	N/M	N/M	N/M	N/M	0.25	N/M	N/M	N/M	0.05	N/M

Distance and Direction from Assessment UTM (m)	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
0	1	94	5				100				

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-003b
UTM Coordinates: 17 W 595647 7804645
Date/Time Surveyed: August 9, 2010 @ 10:19

Fisheries Data

Gear Used: Electrofishing
Effort (min): 3.5
Electrofisher Settings: 200V, 20Hz, 10%

Start UTM: 17 W 595647 7804645
End UTM: 17 W 595577 7804660

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0	N/M	N/M
NNST	~50 (including YOY)	~14.3	YOY - 60	N/M

Fish Habitat Potential

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

Comments & Summary

Stream dries up half way between big lake and ST-086.

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Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-003b
UTM Coordinates: 17 W 595647 7804645
Date/Time Surveyed: August 9, 2010 @ 10:19

Photographs

A

B

C

Figure 1. (A) view upstream of habitat assessment; (B) view downstream of habitat assessment; and (C) view across habitat assessment of SPS-003b.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-090	**UTM:**	17 W 597829 7803135
Site:	ST-090	**Date/Time Surveyed:**	August 8, 2010 @ 8:35

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 20% boulders, 20% large cobble, 5% small cobble, 5% gravel, 50% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	6.8
TDS (g/L):	0.04
DO (mg/L):	11.58
Turbidity (NTU):	2.2
pH:	4.25
Water Temp (˚C):	12.6

Fish Habitat Use

Spawning:	ARCH - H NNST - H
Rearing:	ARCH - H NNST - H
Wintering:	ARCH - H NNST - H
Migration Corridor:	ARCH - N NNST - N

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Photographs

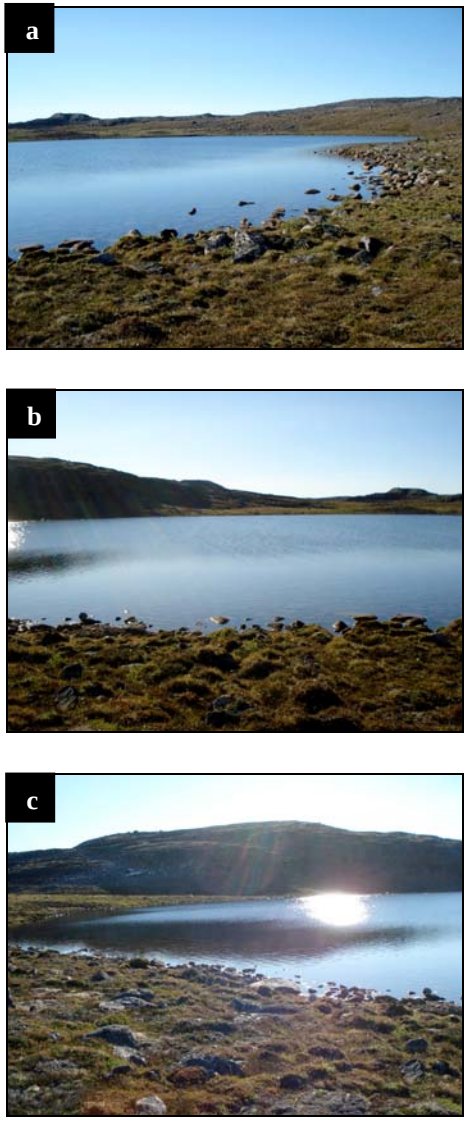

Figure 1. View from the shoreline of ST-090 (a,b,c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 597829 7803135
End UTM:	17 W 597811 7803099
Electrofisher Settings (v/Hz/duty cycle):	700/60/12
Effort (dec.min):	5.5

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	7	1.3	60-120	N/M
NNST	6	1.1	40-65	N/M

Comments

Deep enough for over-wintering and provides suitable spawning habitat for both species.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-092	**UTM:**	17 W 597272 7803425
Site:	ST-092	**Dates Surveyed:**	30-Jul-08, 08:01

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Sum
Bankfull Width (m):	N/A
Wetted Width (m):	N/A
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max D (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Riparian Habitat

Substrate Composition: **SE:** 30% boulders, 30% 1g cobble, 30% sand/silt, 10% sm cobble
S: 70% sand, 30% boulder

Aquatic Vegetation: macrophytes

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Water Quality

	Sum
Specific Conductance (µS/cm):	N/M
TDS (g/l):	N/M
DO (mg/l)	N/M
%DO:	N/M
Water Temp (˚C):	N/M

Fish Habitat Use

Spawning:	ARCH - H NNST - H
Feeding:	ARCH - H NNST - H
Migration:	ARCH - L NNST - L

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Steensby Port Site Aquatic Habitat Assessment

Figure 1. Pan view from SE shore of ST-092 during summer (a and b) 2008.

Figure 2. View of substrate along SE shore (c) and of the south shore substrate and macrophytes (d) of ST-092 during summer 2008.

Figure 3. View of south shoreline (e) and south shoreline clay (f) of ST-092 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-092	**UTM:**	17 W 597628 7803035
Site:	ST-092	**Date/Time Surveyed:**	August 8, 2010 @ 9:32

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 5% boulders, 5% large cobble, 10% gravel, 80% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	9.0
TDS (g/L):	0.06
DO (mg/L):	11.86
Turbidity (NTU):	3.5
pH:	5.37
Water Temp (˚C):	13.2

Fish Habitat Use

Spawning:	ARCH - H NNST - H
Rearing:	ARCH - H NNST - H
Wintering:	ARCH - H NNST - H
Migration Corridor:	ARCH - L NNST - L

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Photographs

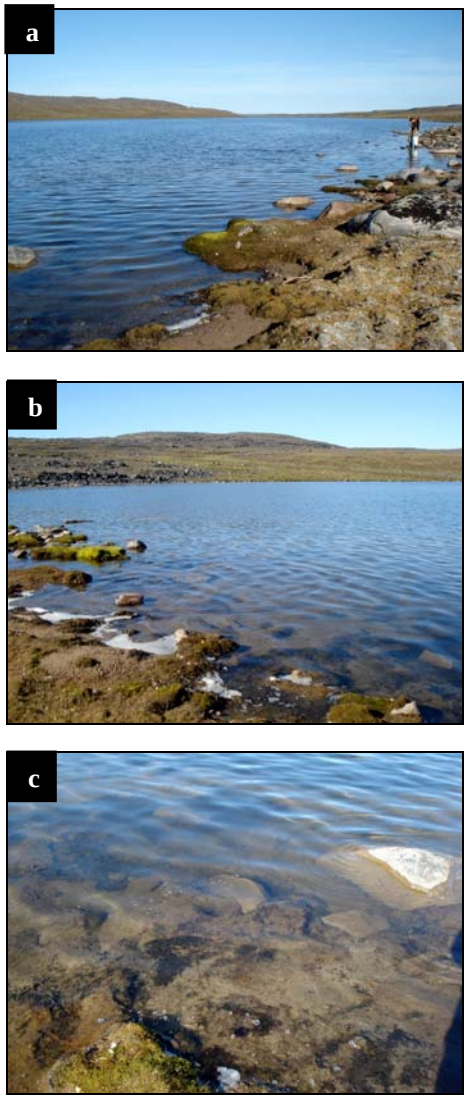

Figure 1. View from the shoreline of ST-092 (a,b) and substrate (c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 597628 7803035
End UTM:	17 W 597613 7803079
Electrofisher Settings (v/Hz/duty cycle):	700/60/12
Effort (dec.min):	5.5

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	12	2.2	30-45	N/M
NNST	4	0.7	30-40	N/M

Comments

Overwintering site; confirmed spawning for both species in this lake (presence of YOY ARCH and NNST).

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-093	**UTM:**	17 W 596856 7803902
Site:	ST-093	**Date/Time Surveyed:**	August 8, 2010 @ 10:16

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 5% boulders,
5% large cobble,
5% small cobble,
5% gravel,
80% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	9.5
TDS (g/L):	0.06
DO (mg/L):	11.80
Turbidity (NTU):	20.1
pH:	5.54
Water Temp (˚C):	14.1

Fish Habitat Use

Spawning:	ARCH - M NNST - H
Rearing:	ARCH - H NNST - H
Wintering:	ARCH - M NNST - M
Migration Corridor:	ARCH - L NNST - L

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Photographs

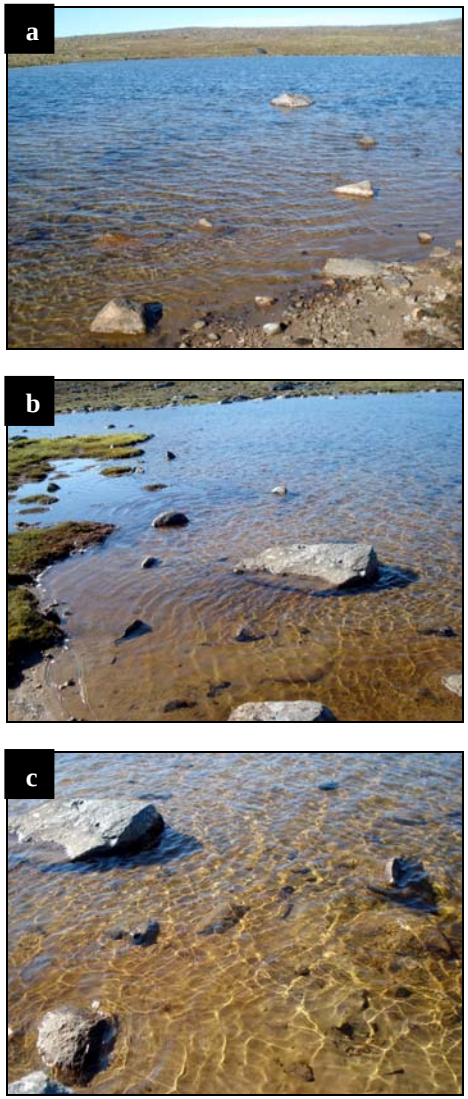


Figure 1. View from the shoreline of ST-093 (a,b) and substrate.

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 597856 7803902
End UTM:	17 W 596830 7803981
Electrofisher Settings (v/Hz/duty cycle):	700/60/12
Effort (dec.min):	7.0

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	5	0.7	N/M	N/M
NNST	1	0.1	N/M	N/M

Comments

This lake is connected to upstream lake ST-092 and provides abundant habitat for both species.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-004a
UTM Coordinates: 17 W 596789 7804142
Date/Time Surveyed: August 8, 2010 @ 10:37

General Physical Characteristics

Floodplain Width (m):	N/M	**Channel Pattern:**	Sinuous	**Stage:**	Low
Channel Confinement:	UC	**Channel Gradient (range):**	1-10^{o}	**Flow Regime:**	Permanent
Bank Height (range in m):	undefined	**Bank Shape:**	undefined		

In Situ Water Quality Data

Temperature (^{o}C):	13.8	**Specific Conductance (mS/m):**	9.6	**Turbidity (NTU):**	1.9
Dissolved Oxygen (mg/L):	11.10	**TDS (g/L):**	0.06	**pH:**	5.60

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)				
	Wetted	**High Water**	**25%**	**50%**	**75%**	**Max**	**25%**	**50%**	**75%**	**Max**	**Min**
0	50.6	4.3	0.11	0.10	0.09	N/M	0.17	0.17	0.00	N/M	N/M
20U	2.7	2.7	0.16	0.18	0.21	N/M	0.00	0.17	0.07	N/M	N/M

Distance and Direction from Assessment UTM (m)	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	**Pool (<0.2 m)**	**Pool (>0.2 m)**	**Run**	**Cascade**	**Other**	**Fines**	**Gravel**	**Small Cobble**	**Large Cobble**	**Boulders**
0	50	45	5					40	30	20	10
20U		15	60		25			5	70	20	5

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-004a
UTM Coordinates: 17 W 596789 7804142
Date/Time Surveyed: August 8, 2010 @ 10:37

Fisheries Data

Gear Used: Electrofishing
Electrofisher Settings: 700V, 60Hz, 12%

Effort 1 (min):	2.0	**Start UTM**:	17 W 596796 7804048	**End UTM:**	N/A
Effort 2 (min):	4.0	**Start UTM**:	17 W 596789 7804142	**End UTM:**	17W 596780 7804084
Effort 3 (min):	3.0	**Start UTM**:	N/A	**End UTM:**	N/A

1

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	17	8.5	70-250	N/M
NNST	0	0.0	N/M	N/M

2

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	53	13.3	60-200 (75%<100)	N/M
NNST	0	0.0	N/M	N/M

3

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	42	14.0	~50-100	N/M
NNST	1	0.3	N/M	N/M

Fish Habitat Potential

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

Comments & Summary

Potential waterfall barriers at 17 W 596791 7804077 and 17 W 596780 7804084. Fish definitely coming from upstream.

Subterranean flow at 17 W 596789 7804142 then resumes at surface at 17 W 596815 7804175, then is connected to d/s lake.

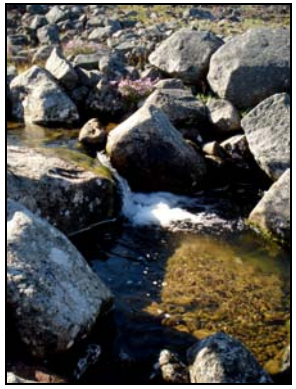
Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-004a
UTM Coordinates: 17 W 596789 7804142

Date/Time Surveyed: August 8, 2010 @ 10:37

Photographs



A

B

C

D

E

F

G

Figure 1. (A) view of potential barrier upstream of habitat assessment 1; (B) view upstream of habitat assessment 1; (C) view downstream of habitat assessment 1(including start of subterranean flow); (D) view across habitat assessment 1; (E) view upstream of habitat assessment 2 (and resumed surface flow); (F) view downstream of habitat assessment 2; (G) view across habitat assessment 2.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-004c
UTM Coordinates: half way between 17 W 597628 7803035 and 17 W 597613 7803079
Date/Time Surveyed: August 8, 2010 @ 8:54

General Physical Characteristics

Floodplain Width (m):	N/M	**Channel Pattern:**	Straight	**Stage:**	Low
Channel Confinement:	UC	**Channel Gradient (range):**	1°	**Flow Regime:**	Permanent
Bank Height (range in m):	undefined	**Bank Shape:**	undefined		

In Situ Water Quality Data

Temperature (°C):	12.5	**Specific Conductance (mS/m):**	6.6	**Turbidity (NTU):**	5.8
Dissolved Oxygen (mg/L):	12.22	**TDS (g/L):**	0.04	**pH:**	5.13

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)				
	Wetted	High Water	25%	50%	75%	Max	25%	50%	75%	Max	Min
20D	18.0	30.7	0.17	0.07	0.06	N/M	0.50	0.19	0.00	N/M	N/M
0	18.7	29.5	0.15	0.06	0.12	N/M	0.05	0.08	0.02	N/M	N/M
20U	30.2	34.4	0.20	0.12	0.06	N/M	0.00	0.13	0.00	N/M	N/M

Distance and Direction from Assessment UTM (m)	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
20D	50	45	5				30			60	10
0	30	70					30			50	20
20U	10	90					30			60	10

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-004c
Date/Time Surveyed: August 8, 2010 @ 8:54
UTM Coordinates: half way between 17 W 597628 7803035 and 17 W 597613 7803079

Fisheries Data

Gear Used: Electrofishing
Effort (min): 6.0
Electrofisher Settings: 700V, 60Hz, 12%

Start UTM: 17 W 596796 7804048
End UTM: N/A

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	18	3	63-106	N/M
NNST	3	0.5	52-79	N/M

Fish Habitat Potential

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

Comments & Summary

40m d/s is lake; ~40m u/s is lake - accessible to both u/s and d/s. Electrofished entire stream.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-004c
UTM Coordinates: half way between 17 W 597628 7803035 and 17 W 597613 7803079
Date/Time Surveyed: August 8, 2010 @ 8:54

Photographs

A

B

C

Figure 1. (A) view upstream from habitat assessment; (B) view downstream of habitat assessment; and (C) view across habitat assessment.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-353 (formerly 3km Lake)	**UTM:**	17W 596720 7800132
Site:	ST-353	**Dates Surveyed:**	6-Aug-08, 10:32

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Sum
Bankfull Width (m):	N/A
Wetted Width (m):	N/A
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	See bathymetry/substrate mapping results
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Shoreline Habitat

Substrate Composition: 30% sm cobble, 30% 1g cobble, 25% boulder, 15% gravel

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A

Location: N/A

Water Quality

	Sum
Specific Conductance (µS/cm):	N/M
TDS (g/l):	N/M
DO (mg/l)	N/M
%DO:	N/M
Water Temp (˚C):	N/M

Fish Habitat Use

Spawning:	ARCH - H NNST - M
Feeding:	ARCH - H NNST - M
Migration:	ARCH - N/A NNST - N/A

Steensby Port Site Aquatic Habitat Assessment

Figure 1. Aerial view of ST-353 during summer 2008.

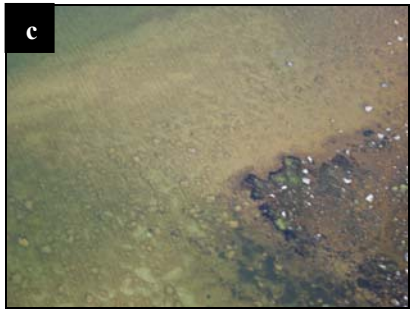


Figure 2. Aerial views (b and c) of ST-353 shoreline substrate during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-051	**UTM:**	17 W 597930 7800470
Site:	ST-051	**Date/Time Surveyed:**	August 8, 2010 @ 16:36

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 5% boulders, 5% large cobble, 5% small cobble, 85% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	17.6
TDS (g/L):	0.11
DO (mg/L):	10.93
Turbidity (NTU):	14.6
pH:	5.89
Water Temp (˚C):	15.5

Fish Habitat Use

Spawning:	ARCH - N NNST - H
Rearing:	ARCH - L NNST - H
Wintering:	ARCH - L NNST - L
Migration Corridor:	ARCH - L NNST - M

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Photographs

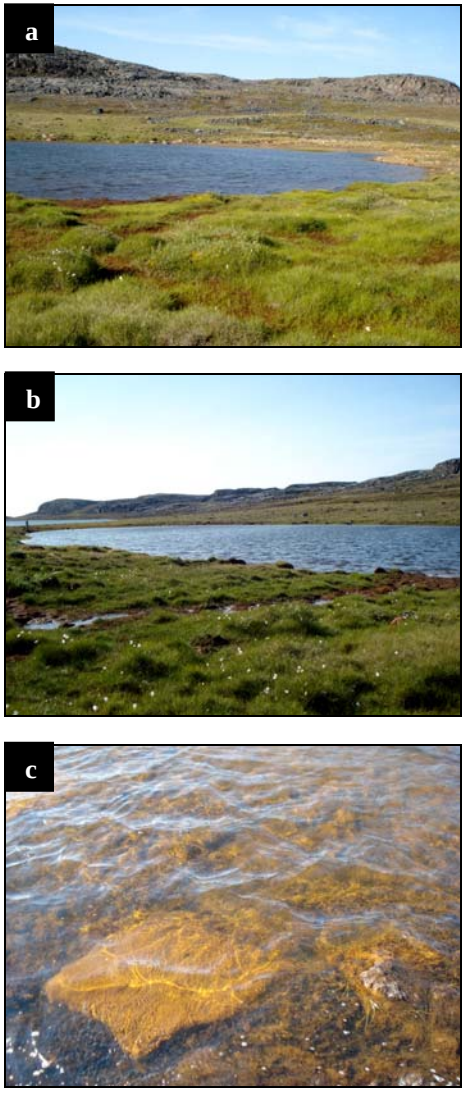

Figure 1. Aerial view of ST-051 (a), view from the shoreline (b), and substrate (c).

Fisheries Data

Gear Used:	Observation
Start UTM:	17 W 598004 7800487
End UTM:	17 W 597930 7800470
Electrofisher Settings (v/Hz/duty cycle):	N/A
Effort (dec.min):	N/A

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	N/A	N/A	N/M	N/M
NNST	~20	N/A	N/M	N/M

Comments

Overwintering potential low, but it may be connected to more ideal locations.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-052	**UTM:**	17 W 598190 7800274
Site:	ST-052	**Date/Time Surveyed:**	August 8, 2010 @ 16:18

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 1% boulders, 4% large cobble, 10% small cobble, 85% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	21.0
TDS (g/L):	0.14
DO (mg/L):	11.60
Turbidity (NTU):	2.4
pH:	6.68
Water Temp (˚C):	16.6

Fish Habitat Use

Spawning:	ARCH - M NNST - H
Rearing:	ARCH - H NNST - H
Wintering:	ARCH - L NNST - L
Migration Corridor:	ARCH - M NNST - M

Steensby Port Site Aquatic Habitat Assessment

Photographs

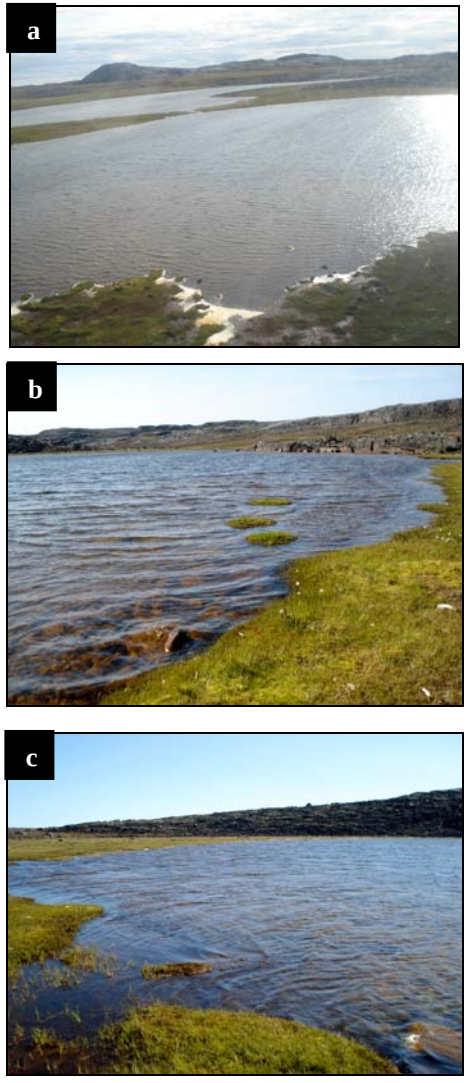

Figure 1. Aerial view of ST-052 (a), view from shoreline (b), and substrate (c).

Fisheries Data

Gear Used:	Observation
Start UTM:	17 W 598190 7800274
End UTM:	17 W 598104 7800372
Electrofisher Settings (v/Hz/duty cycle):	N/A
Effort (dec.min):	N/A

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	70	N/A	N/M	N/M
NNST	>30	N/A	N/M	N/M

Comments

Overwintering potential low, but connections to more ideal habitat likely.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-053	**UTM:**	17 W 598218 7800339
Site:	ST-053	**Date/Time Surveyed:**	August 8, 2010 @ 16:09

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 5% boulders, 15% small cobble, 80% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	22.1
TDS (g/L):	0.14
DO (mg/L):	11.27
Turbidity (NTU):	3.3
pH:	7.09
Water Temp (˚C):	16.8

Fish Habitat Use

Spawning:	ARCH - M NNST - H
Rearing:	ARCH - H NNST - H
Wintering:	ARCH - L NNST - L
Migration Corridor:	ARCH - M NNST - M

Baffinland Iron Mines
Mary River Project

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Photographs

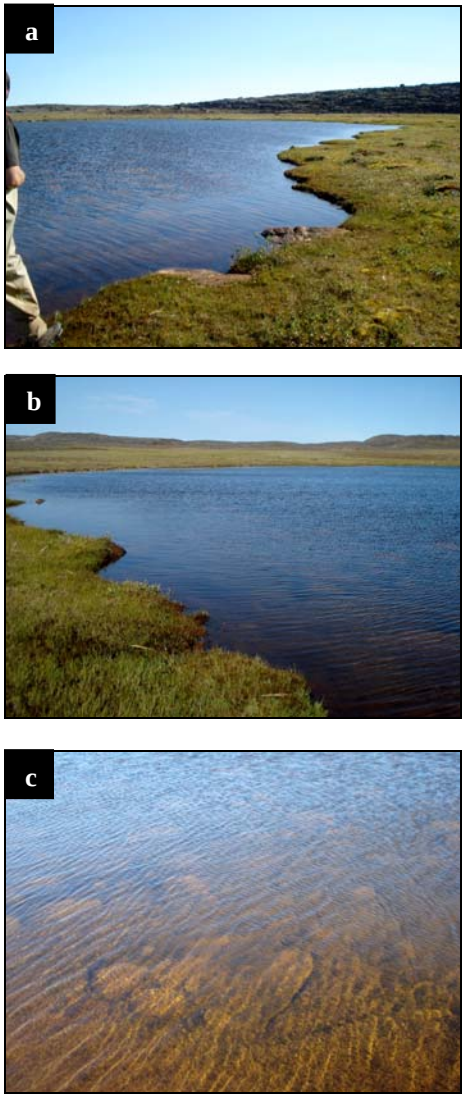

Figure 1. Aerial view of ST-053 (a), view from the shoreline (b), and substrate (c).

Fisheries Data

Gear Used:	Observation
Start UTM:	17 W 598218 7800339
End UTM:	17 W 598207 7800285
Electrofisher Settings (v/Hz/duty cycle):	N/A
Effort (dec.min):	N/A

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	2	N/A	65-90	N/M
NNST	>70	N/A	YOY-50	N/M

Comments

Appears to be mainly used for NNST spawning and rearing.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-055	**UTM:**	17 W 598200 7799659
Site:	ST-055	**Date/Time Surveyed:**	August 8, 2010 @ 15:52

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 5% boulders, 10% large cobble, 10% small cobble, 75% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	17.5
TDS (g/L):	0.11
DO (mg/L):	11.45
Turbidity (NTU):	3.2
pH:	6.95
Water Temp (˚C):	17.0

Fish Habitat Use

Spawning:	ARCH - M NNST - H
Rearing:	ARCH - H NNST - H
Wintering:	ARCH - N NNST - L
Migration Corridor:	ARCH - H NNST - H

Steensby Port Site Aquatic Habitat Assessment

Photographs

Figure 1. Aerial view of ST-055 (a).

Fisheries Data

Gear Used:	Observation
Start UTM:	17 W 598200 7799659
End UTM:	17 W 598095 7799702
Electrofisher Settings (v/Hz/duty cycle):	N/A
Effort (dec.min):	N/A

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	3	N/A	70-95	N/M
NNST	9	N/A	YOY-60	N/M

Comments

This lake is a probable migratory pathway in this catchment and appears to provide NNST spawning habitat.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-061 & 062	**UTM:**	17W 598027 7798204
Site:	ST-061 & 062	**Date/Time Surveyed:**	August 7, 2010 @ 14:17

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	(NE) ~0.20
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: (NE) 100% silt/organics;
(SW) 10% boulders,
20% large cobble,
20% gravel,
50% silt/organics.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	NE	SW
Specific Conductance (mS/m):	31.0	25.0
TDS (g/L):	0.20	0.16
DO (mg/L):	13.21	11.75
Turbidity (NTU):	5.5	2.4
pH:	6.33	6.46
Water Temp (˚C):	15.9	15.4

Fish Habitat Use

Spawning:	ARCH - N NNST - H
Rearing:	ARCH - H NNST - H
Wintering:	ARCH - N NNST - N
Migration Corridor:	ARCH - M NNST - H

Steensby Port Site Aquatic Habitat Assessment

Photographs

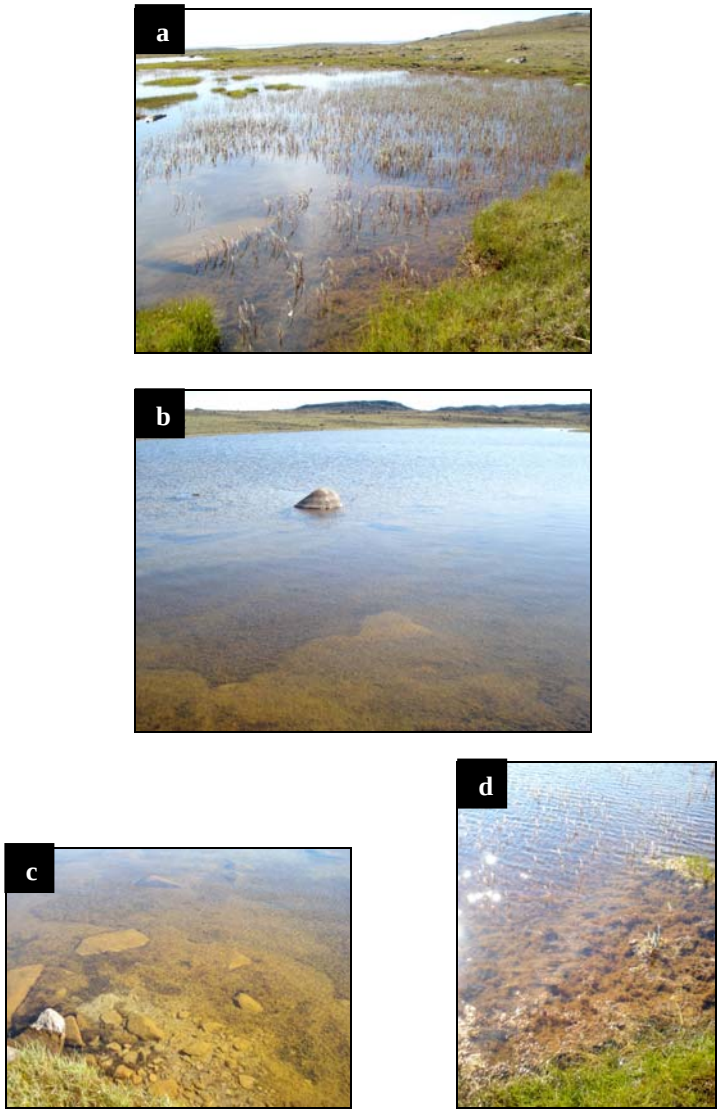

Figure 1. View from the shoreline of ST-061-062 (a,b), and substrate (c,d).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	N/A
End UTM:	N/A
Electrofisher Settings (v/Hz/duty cycle):	400/60/12
Effort (dec.min):	2.0

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	N/A	N/A	N/M	N/M
NNST	N/A	N/A	N/M	N/M

Comments

NE: abundant macrophytes, no over-wintering.

SW: no over-wintering.

No catch but observed NNST (juvenile + adult); some ARCH (all juvenile) while walking the perimeter.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-063	**UTM:**	17 W 597434 7797811
Site:	ST-063	**Dates Surveyed:**	28-Jul-08, 09:45

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Sum
Bankfull Width (m):	N/A
Wetted Width (m):	N/A
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Riparian Habitat

Substrate Composition:	**E:** 65% fines, 15% 1g cobble, 10% sm cobble, 10% boulder
Aquatic Vegetation:	N/A
Riparian Vegetation:	N/A
Barriers Present (Y/N):	N/A
Location:	N/A

Water Quality

	Sum
Specific Conductance (µS/cm):	N/M
TDS (g/l):	N/M
DO (mg/l)	N/M
%DO:	N/M
Water Temp (˚C):	9.5

Fish Habitat Use

Spawning:	ARCH - H NNST - H
Feeding:	ARCH - H NNST - H
Migration:	ARCH - N NNST - N

Figure 1. Pan view from SE shore of ST-063 during summer (a and b) 2008.

Figure 2. View of substrate along SE shore (c and d) of ST-063 during summer 2008.

Figure 3. View of SE shore bedrock (e) and SE shore macrophytes (f) of ST-063 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-063	**UTM:**	17 W 597869 7797910
Site:	ST-063	**Date/Time Surveyed:**	August 7, 2010 @ 15:25

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 5% boulders, 20% large cobble, 10% small cobble, 65% fines

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	36.6
TDS (g/L):	0.24
DO (mg/L):	12.06
Turbidity (NTU):	2.1
pH:	6.54
Water Temp (˚C):	17.4

Fish Habitat Use

Spawning:	ARCH - H NNST - H
Rearing:	ARCH - H NNST - H
Wintering:	ARCH - H NNST - H
Migration Corridor:	ARCH - N NNST - N

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Photographs

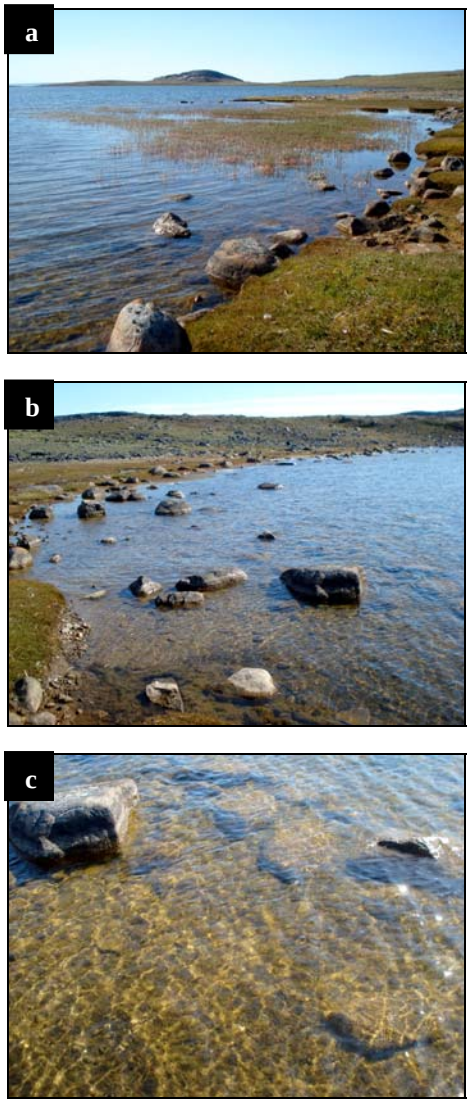

Figure 1. View from the shoreline of ST-063 (a,b) and substrate (c).

Fisheries Data

Gear Used:	Observation
Start UTM:	N/A
End UTM:	N/A
Electrofisher Settings (v/Hz/duty cycle):	N/A
Effort (dec.min):	N/A

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	Many	N/A	N/M	N/M
NNST	Many	N/A	N/M	N/M

Comments

No need to electrofish, many juvenile ARCH and NNST observed along the shore.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-064	**UTM:**	17W 598004 7797427
Site:	ST-064	**Date/Time Surveyed:**	August 7, 2010 @ 13:40

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 10% boulders, 40% large cobble, 40% small cobble, 10% gravel.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	26.5
TDS (g/L):	0.17
DO (mg/L):	11.76
Turbidity (NTU):	5.9
pH:	6.20
Water Temp (˚C):	15.3

Fish Habitat Use

Spawning:	ARCH - M NNST - M
Rearing:	ARCH - H NNST - H
Wintering:	ARCH - N NNST - N
Migration Corridor:	ARCH - M NNST - M

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Photographs

Figure 1. Aerial view of ST-064 (a).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	N/A
End UTM:	N/A
Electrofisher Settings (v/Hz/duty cycle):	400/60/12
Effort (dec.min):	6.0

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	22	3.7	N/M	N/M
NNST	4	0.7	60-70	N/M

Comments

Too shallow for overwintering, but provides suitable rearing habitat for both species and has probable connections with other systems.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-072	**UTM:**	17 W 598965 7796941
Site:	ST-072	**Dates Surveyed:**	28-Jul-08, 11:54

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Sum
Bankfull Width (m):	N/A
Wetted Width (m):	N/A
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Riparian Habitat

Substrate Composition:	30% 1g cobble, 30% boulder 20%clay/sand, 10% gravel, 10% sm cobble
Aquatic Vegetation:	N/A
Riparian Vegetation:	N/A
Barriers Present (Y/N):	N/A
Location:	N/A

Water Quality

	Sum
Specific Conductance (µS/cm):	N/M
TDS (g/l):	N/M
DO (mg/l)	N/M
%DO:	N/M
Water Temp (˚C):	N/M

Fish Habitat Use

Spawning:	ARCH - H NNST - M
Feeding:	ARCH - H NNST - H
Migration:	ARCH - N NNST - N

Steensby Port Site Aquatic Habitat Assessment

Figure 1. Pan view from west shore of ST-072 during summer (a and b) 2008.

Figure 2. View of substrate along west shore (c and d) of ST-072 during summer 2008.

Figure 3. View of substrate along NW shore (e and f) of ST-072 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-072	**UTM:**	17 W 598427 7797080 and 17 W 598429 7797098
Site:	ST-072	**Date/Time Surveyed:**	August 7, 2010 @ 13:21

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: N/A

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	15.9
TDS (g/L):	0.10
DO (mg/L):	10.92
Turbidity (NTU):	1.4
pH:	5.65
Water Temp (˚C):	12.3

Fish Habitat Use

Spawning:	ARCH - H NNST - M
Rearing:	ARCH - H NNST - H
Wintering:	ARCH - H NNST - M
Migration Corridor:	ARCH - N NNST - N

Exploration Property Aquatic Habitat Assessment

Photographs

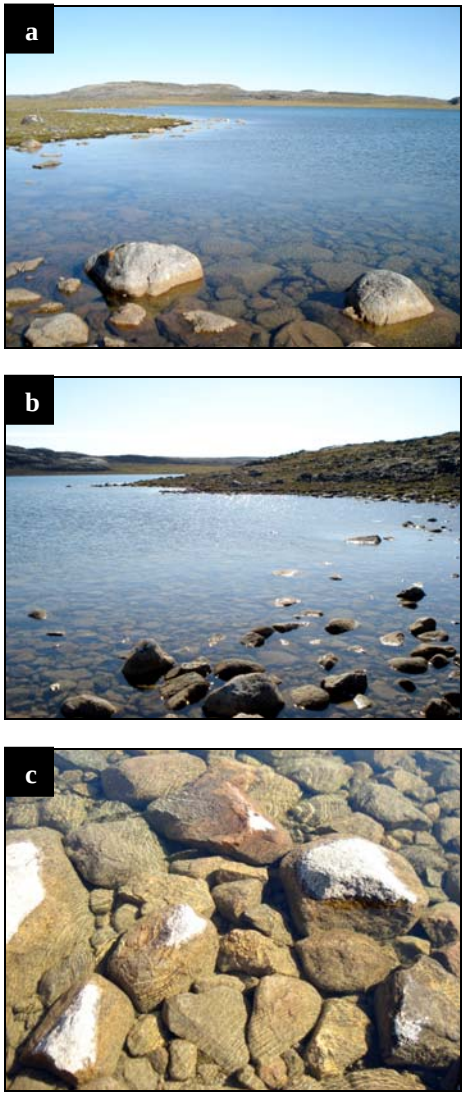

Figure 1. View from the shoreline of ST-072 (a,b) and substrate (c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17W 598427 7797080
End UTM:	17W 598429 7797098
Electrofisher Settings (v/Hz/duty cycle):	400/60/12
Effort (dec.min):	3.5

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	43	12.3	80-170	N/M
NNST	57	16.3	N/M	N/M

Comments

Lake provides abundant suitable habitat for both species.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-005b
UTM Coordinates: 17 W 597907 7798003
Date/Time Surveyed: August 7, 2010 @ 15:04

General Physical Characteristics

Floodplain Width (m):	N/M	**Channel Pattern:**	Straight	**Stage:**	Low
Channel Confinement:	N/A	**Channel Gradient (range):**	1-5^{o}	**Flow Regime:**	Permanent
Bank Height (range in m):	N/M	**Bank Shape:**	N/A		

In Situ Water Quality Data

Temperature (^{o}C):	16.2	**Specific Conductance (mS/m):**	25.5	**Turbidity (NTU):**	2.9
Dissolved Oxygen (mg/L):	11.06	**TDS (g/L):**	0.17	**pH:**	6.32

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)				
	Wetted	High Water	25%	50%	75%	Max	25%	50%	75%	Max	Min
20D	2.3	2.3	0.16	0.14	0.11	N/M	0.05	0.04	0.03	N/M	N/M
0	1.5	7.5	0.04	0.07	0.14	N/M	0.22	0.08	0.61	N/M	N/M
20U	1.0	2.8	0.11	0.10	0.11	N/M	0.26	0.60	0.11	N/M	N/M

Distance and Direction from Assessment UTM (m)	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
20D	50	40	10					5	40	50	5
0	25	40	10		25			5	40	50	5
20U	25	25	25	25				20	50	30	

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-005b
UTM Coordinates: 17 W 597907 7798003
Date/Time Surveyed: August 7, 2010 @ 15:04

Fisheries Data

Gear Used: Electrofishing
Effort (min): 4.0
Electrofisher Settings: N/M

Start UTM: N/A
End UTM: N/A

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	27	6.8	55-180	N/M
NNST	7	1.8	58-70	N/M

Fish Habitat Potential

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

Comments & Summary

High quality habitat for both species.

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-005b
UTM Coordinates: 17 W 597907 7798003
Date/Time Surveyed: August 7, 2010 @ 15:04

Photographs

A

B

C

Figure 1. (A) view upstream of habitat assessment; (B) view downstream of habitat assessment; and (C) view across habitat assessment.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-005f
UTM Coordinates: halfway between 17 W 598295 7798445 and 17 W 598156 7798364
Date/Time Surveyed: August 7, 2010 @ 14:00

General Physical Characteristics

Floodplain Width (m):	N/M	**Channel Pattern:**	Sinous	**Stage:**	Low
Channel Confinement:	PC	**Channel Gradient (range):**	1-3^{o}	**Flow Regime:**	Permanent
Bank Height (range in m):	Undefined	**Bank Shape:**	Undefined		

In Situ Water Quality Data

Temperature (^{o}C):	19.5	**Specific Conductance (mS/m):**	40.1	**Turbidity (NTU):**	1.6
Dissolved Oxygen (mg/L):	9.12	**TDS (g/L):**	0.26	**pH:**	5.92

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)				
	Wetted	**High Water**	**25%**	**50%**	**75%**	**Max**	**25%**	**50%**	**75%**	**Max**	**Min**
0	N/M	N/M	N/M	N/M	N/M	0.05	N/M	N/M	N/M	0.05	N/M

Distance and Direction from Assessment UTM (m)	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	**Pool (<0.2 m)**	**Pool (>0.2 m)**	**Run**	**Cascade**	**Other**	**Fines**	**Gravel**	**Small Cobble**	**Large Cobble**	**Boulders**
0		100					100				

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-005f
Date/Time Surveyed: August 7, 2010 @ 14:00
UTM Coordinates: halfway between 17 W 598295 7798445 and 17 W 598156 7798364

Fisheries Data

Gear Used: Electrofishing
Effort (min): 3.0
Electrofisher Settings: 400V, 60Hz, 12%

Start UTM: 17 W 598295 7798445
End UTM: 17 W 598156 7798364

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0	N/M	N/M
NNST	>100 (observed)	>33.3	N/M	N/M

Fish Habitat Potential

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

Comments & Summary

Habitat characteristics: 100% marshy flooded terrestrial throughout. No catch but saw >100 YOY NNST (too small to catch). No connection upstream, connected downstream to ST-061/062.

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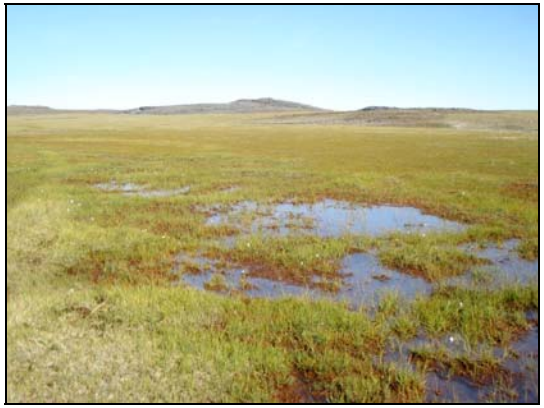
Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-005f
UTM Coordinates: halfway between 17 W 598295 7798445 and 17 W 598156 7798364

Date/Time Surveyed: August 7, 2010 @ 14:00

Photographs



A

B

C

Figure 1. (A) view upstream of habitat assessment; (B) view downstream of habitat assessment; and (C) view across habitat assessment.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-005j
UTM Coordinates: 17 W 597847 7800461
Date/Time Surveyed: August 8, 2010 @ 16:49

General Physical Characteristics

Floodplain Width (m):	>100	**Channel Pattern:**	Sinuous	**Stage:**	Low
Channel Confinement:	UC	**Channel Gradient (range):**	2-3^{o}	**Flow Regime:**	Permanent
Bank Height (range in m):	0.3-0.4	**Bank Shape:**	Vertical		

In Situ Water Quality Data

Temperature (^{o}C):	17.1	**Specific Conductance (mS/m):**	19.5	**Turbidity (NTU):**	3.5
Dissolved Oxygen (mg/L):	11.20	**TDS (g/L):**	0.13	**pH:**	6.26

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)				
	Wetted	High Water	25%	50%	75%	Max	25%	50%	75%	Max	Min
0	2.0	2.0	0.04	0.12	0.16	N/M	0.04	0.00	0.00	N/M	N/M

Distance and Direction from Assessment UTM (m)	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
0	10	45	45				20	20	30	29	1

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-005j
UTM Coordinates: 17 W 597847 7800461
Date/Time Surveyed: August 8, 2010 @ 16:49

Fisheries Data

Gear Used: Observation
Effort (min): N/M
Electrofisher Settings: N/A
Start UTM: N/A
End UTM: N/A

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	N/A	N/M	N/M
NNST	>100	N/A	YOY - 50	N/M

Fish Habitat Potential

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

Comments & Summary

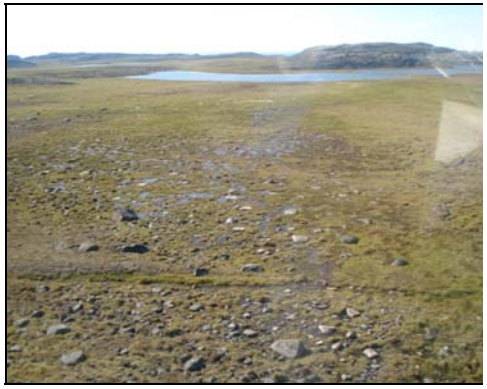
Visual observation of NNST >100 (YOY-50). Flows between two lakes (ST-051 and 3 km lakes). Does not appear to be suitable habitat for ARCH.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-005j
UTM Coordinates: 17 W 597847 7800461
Date/Time Surveyed: August 8, 2010 @ 16:49

Photographs



A

B

C

D

Figure 1. (A) Aerial view of stream SPS-005j; (B) view upstream of habitat assessment; (C) view downstream of habitat assessment; and (D) view across habitat assessment.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-005k
UTM Coordinates: 17 W 598046 7800482
Date/Time Surveyed: August 8, 2010 @ 16:28

General Physical Characteristics

Floodplain Width (m):	>100	**Channel Pattern:**	Sinuous/braided	**Stage:**	Low
Channel Confinement:	UC	**Channel Gradient (range):**	5°	**Flow Regime:**	Permanent
Bank Height (range in m):	undefined	**Bank Shape:**	Undefined		

In Situ Water Quality Data

Temperature (°C):	9.0	**Specific Conductance (mS/m):**	32.1	**Turbidity (NTU):**	9.1
Dissolved Oxygen (mg/L):	4.56	**TDS (g/L):**	0.21	**pH:**	6.27

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)				
	Wetted	High Water	25%	50%	75%	Max	25%	50%	75%	Max	Min
0	6.5	26.5	N/M	0.05	N/M	0.05	N/M	0.00	N/M	0.05	N/M

Distance and Direction from Assessment UTM (m)	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
0		100					100				

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-005k
UTM Coordinates: 17 W 598046 7800482
Date/Time Surveyed: August 8, 2010 @ 16:28

Fisheries Data

Gear Used: Observation
Effort (min): N/M
Electrofisher Settings: N/A
Start UTM: N/A
End UTM: N/A

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	N/A	N/A	N/M	N/M
NNST	YOY	N/A	N/M	N/M

Fish Habitat Potential

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

Comments & Summary

Similar to other streams in the area, it provides suitable NNST habitat, but not ARCH.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-005k
UTM Coordinates: 17 W 598046 7800482
Date/Time Surveyed: August 8, 2010 @ 16:28

Photographs

A

B

C

Figure 1. (A) view upstream of habitat assessment; (B) view downstream of habitat assessment; and (C) view across habitat assessment.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-005q
UTM Coordinates: 17 W 598106 7798437
Date/Time Surveyed: August 7, 2010 @ 14:26

General Physical Characteristics

Floodplain Width (m): N/M
Channel Pattern: Sinuous/braided
Stage: Low
Channel Confinement: UC
Channel Gradient (range): 1°
Flow Regime: Permanent
Bank Height (range in m): Undefined
Bank Shape: Undefined

In Situ Water Quality Data

Temperature (°C): 17.6
Specific Conductance (mS/m): 20.3
Turbidity (NTU): 6.8
Dissolved Oxygen (mg/L): 10.97
TDS (g/L): 0.13
pH: 6.34

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)				
	Wetted	High Water	25%	50%	75%	Max	25%	50%	75%	Max	Min
20U	N/M	N/M	0.13	0.30	0.10	N/M	0.01	0.10	0.00	N/M	N/M
20D	N/M	N/M	0.13	0.16	0.11	N/M	0.02	0.04	0.00	N/M	N/M
0	>20.0	>50.0	0.13	0.31	0.11	N/M	0.04	0.07	0.00	N/M	N/M

Distance and Direction from Assessment UTM (m)	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
0	25	40	35				85(silt/org)			10	5

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-005q
UTM Coordinates: 17 W 598106 7798437
Date/Time Surveyed: August 7, 2010 @ 14:26

Fisheries Data

Gear Used: Electrofishing
Effort (min): 4.0
Electrofisher Settings: 400V, 60Hz, 12%

Start UTM: 17 W 598108 7798430
End UTM: 17 W 598110 7798455

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	23	5.8	80-170	N/M
NNST	11	2.8	50-80	N/M

Fish Habitat Potential

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

Comments & Summary

Provides important habitat for both species and connects two lakes.

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-005q
UTM Coordinates: 17 W 598106 7798437
Date/Time Surveyed: August 7, 2010 @ 14:26

Photographs

A

B

C

D

Figure 1. (A) Aerial photo of SPS-005q; (B) view upstream from habitat assessment; (C) view downstream from habitat assessment; (D) view across the habitat assessment.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-176	**UTM:**	17 W 598837 7804979
Site:	ST-176	**Dates Surveyed:**	26-Jul-08, 11:55

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Sum
Bankfull Width (m):	N/A
Wetted Width (m):	N/A
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Riparian Habitat

Substrate Composition: **S:** 70% sand, 10% gravel, 10% 1g cobble, 10% boulder **W:** 70% boulder, 30% 1g cobble

Aquatic Vegetation: green and brown macrophytes

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A

Location: N/A

Water Quality

	Sum
Specific Conductance (µS/cm):	N/M
TDS (g/l):	N/M
DO (mg/l)	N/M
%DO:	N/M
Water Temp (˚C):	N/M

Fish Habitat Use

Spawning:	ARCH - M NNST - L
Feeding:	ARCH - H NNST - H
Migration:	ARCH - N NNST - N

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Steensby Port Site Aquatic Habitat Assessment

Figure 1.Aerial view (a) and view from shore (b) of ST-176 during summer 2008.

Figure 2. View of substrate from south shoreline (c and d) of ST-176 during summer 2008.

Figure 3. View of substrate from SW shoreline in ST-176 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-195	**UTM:**	17 W 600415 7800548
Site:	ST-195	**Dates Surveyed:**	30-Jul-08, 10:15

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Sum
Bankfull Width (m):	N/A
Wetted Width (m):	N/A
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max D (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Riparian Habitat

Substrate Composition:	**SE:** 50% sm cobble, 30% 1g cobble, 20% sand **S:** 40% 1g cobble, 20% sm cobble, 20% sand, 10% boulder, 10% gravel
Aquatic Vegetation:	N/A
Riparian Vegetation:	N/A
Barriers Present (Y/N):	N/A
Location:	N/A

Water Quality

	Sum
Specific Conductance (µS/cm):	N/M
TDS (g/l):	N/M
DO (mg/l)	N/M
%DO:	N/M
Water Temp (˚C):	N/M

Fish Habitat Use

Spawning:	ARCH - M NNST - L
Feeding:	ARCH - H NNST - M
Migration:	ARCH - N NNST - N

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Figure 1. Pan view of east shore of ST-195 during summer (a and b) 2008.

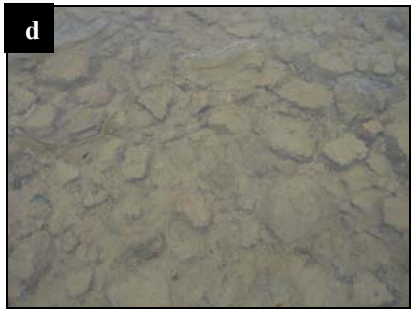

Figure 2. View of substrate along SE shore (c) and east shore (d) of ST-195 during summer 2008.

Figure 3. View of substrate along ESE shore (e and f) of ST-195 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-352 (formerly 10km Lake)	**UTM:**	17 W 600859 7808049
Site:	ST-352	**Dates Surveyed:**	6-Aug-08, 13:32

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Sum
Bankfull Width (m):	N/A
Wetted Width (m):	N/A
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max D (m):	> 5 m
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Riparian Habitat

Substrate Composition: 75% 1g cobble, 25% boulders

Aquatic Vegetation: NA

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A

Location: N/A

Water Quality

	Sum
Specific Conductance (µS/cm):	N/M
TDS (g/l):	N/M
DO (mg/l)	N/M
%DO:	N/M
Water Temp (˚C):	N/M

Fish Habitat Use

Spawning:	ARCH - H NNST - M
Feeding:	ARCH - H NNST - M
Migration:	ARCH - N NNST - N

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Steensby Port Site Aquatic Habitat Assessment

Figure 1.View of ST-352 from shore during summer (a) 2008.

Figure 2.View of substrate in ST-352 (b & c) 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-077	**UTM:**	17 W 596523 7798153
Site:	ST-077	**Date/Time Surveyed:**	August 7, 2010 @ 16:08

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 10% boulders, 20% large cobble, 20% small cobble, 50% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	0.099
TDS (g/L):	0.60
DO (mg/L):	12.25
Turbidity (NTU):	2.8
pH:	7.60
Water Temp (˚C):	14.8

Fish Habitat Use

Spawning:	ARCH - N NNST - H
Rearing:	ARCH - N NNST - H
Wintering:	ARCH - N NNST - H
Migration Corridor:	ARCH - N NNST - N

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Photographs

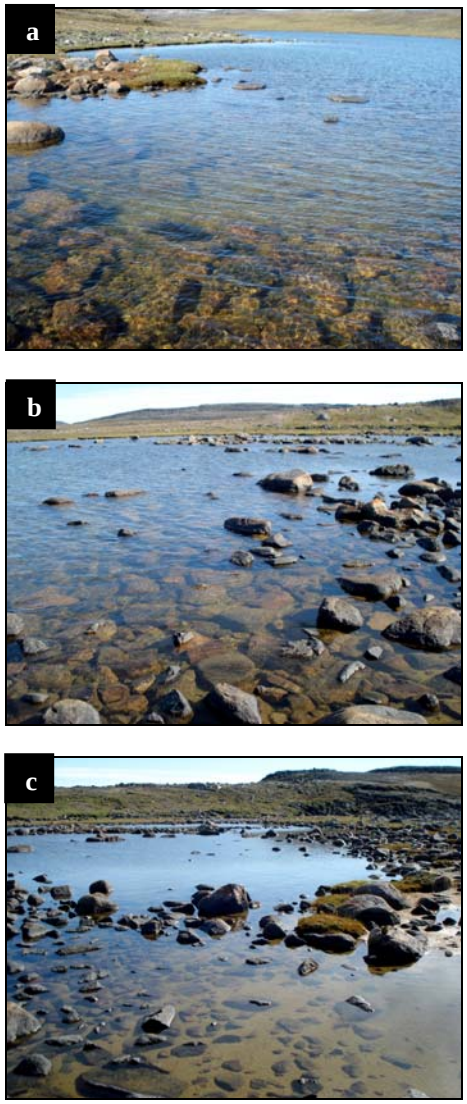

Figure 1. View from the shoreline of ST-077 (a,b) and substrate (c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 596523 7798153
End UTM:	17 W 596521 7798134
Electrofisher Settings (v/Hz/duty cycle):	200/30/10
Effort (dec.min):	N/M

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0.0	N/M	N/M
NNST	>100 (YOY)	N/A	N/M	N/M

Comments

Lots of clam shrimp observed, which seems to correlate with no ARCH in this area.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-081	**UTM:**	17 W 596840 7799650
Site:	ST-081	**Dates Surveyed:**	4-Aug-08, 11:41

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Sum
Bankfull Width (m):	N/A
Wetted Width (m):	N/A
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Riparian Habitat

Substrate Composition: **N:** 50% broken bedrock, 30% boulder, 10% lg cobble, 10% sm cobble. **E:** 45% lg cobble, 30% fines, 20% sm cobble, 5% boulder. **S:** 50% sm cobble, 30% fines, 15% lg cobble, 5% boulder. **W:** 40% sm cobble, 30% lg cobble, 20% boulder, 10% gravel.

Aquatic Vegetation: Macrophytes and thick, orange, clumpy algae

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A

Location: N/A

Water Quality

	Sum
Specific Conductance (µS/cm):	N/M
TDS (g/l):	N/M
DO (mg/l)	N/M
%DO:	N/M
Water Temp (˚C):	N/M

Fish Habitat Use

Spawning:	ARCH - N NNST - L
Feeding:	ARCH - N NNST - L
Migration:	ARCH - N NNST - N

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Steensby Port Site Aquatic Habitat Assessment

Figure 1. Pan views of ST-081 during summer (a and b) 2008.

Figure 2. Views of substrate along shore of ST-081 (a and b) during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-083	**UTM:**	17 W 596576 7799157
Site:	ST-083	**Dates Surveyed:**	26-Jul-08, 15:52

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Sum
Bankfull Width (m):	N/A
Wetted Width (m):	N/A
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	21.00
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Riparian Habitat

Substrate Composition: **W:** 50% boulder, 50% 1g cobble
E: 50% boulder, 50% cobble
SW: 40% sand, 20% boulder, 20% bedrock, 20% cobble

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Water Quality

	Sum
Specific Conductance (µS/cm):	N/M
TDS (g/l):	N/M
DO (mg/l)	N/M
%DO:	N/M
Water Temp (˚C):	9.0

Fish Habitat Use

Spawning:	ARCH - M NNST - L
Feeding:	ARCH - H NNST - L
Migration:	ARCH - L NNST - L

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Steensby Port Site Aquatic Habitat Assessment

Figure 1. Pan view from south shore of ST-083 during summer (a and b) 2008.

Figure 2. View of substrate along south shore (c) and east shore (d) of ST-083 during summer 2008.

Figure 3. View of substrate along west shore (e and f) of ST-083 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-083	**UTM:**	17 W 596499 7799013
Site:	ST-083	**Date/Time Surveyed:**	August 8, 2010 @ 11:30

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	>3.0
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 25% large cobble, 25% small cobble, 25% gravel, 25% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	6.2
TDS (g/L):	0.04
DO (mg/L):	11.61
Turbidity (NTU):	1.6
pH:	5.77
Water Temp (˚C):	13.2

Fish Habitat Use

Spawning:	ARCH - M NNST - L
Rearing:	ARCH - H NNST - L
Wintering:	ARCH - H NNST - L
Migration Corridor:	ARCH - L NNST - L

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Photographs

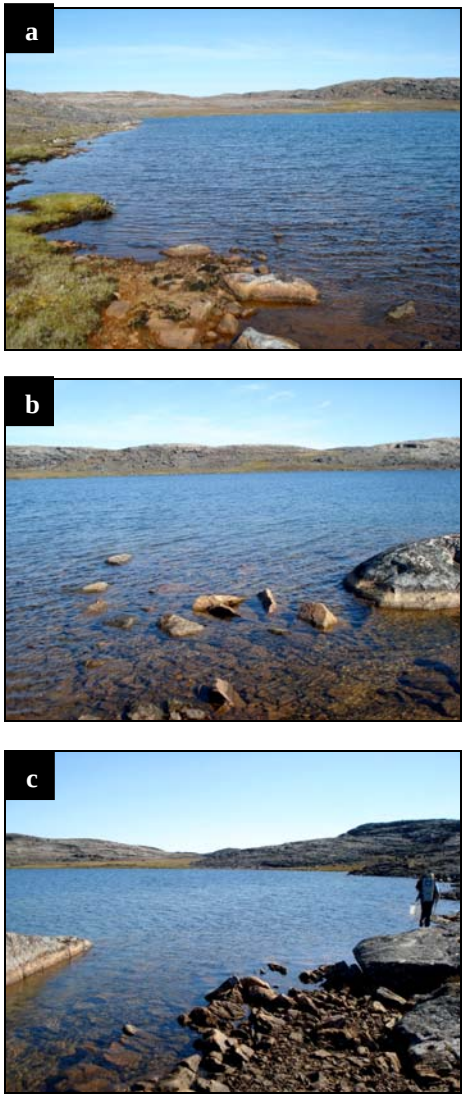


Figure 1. View from the shoreline of ST-083 (a,b,c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 596499 7799013
End UTM:	50m east of start
Electrofisher Settings (v/Hz/duty cycle):	700/60/12
Effort (dec.min):	5.0

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	3	0.6	79-91	N/M
NNST	0	N/M	N/M	N/M

Comments

Isolated lake but deep enough for over-wintering; fish present.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-011a
UTM Coordinates: 17 W 596420 7798030
Date/Time Surveyed: August 7, 2010 @ 15:52

General Physical Characteristics

Floodplain Width (m):	N/M	**Channel Pattern:**	Sinuous	**Stage:**	Low
Channel Confinement:	PC	**Channel Gradient (range):**	1-3^{o}	**Flow Regime:**	Permanent
Bank Height (range in m):	N/M	**Bank Shape:**	N/A		

In Situ Water Quality Data

Temperature (^{o}C):	18.3	**Specific Conductance (mS/m):**	0.140	**Turbidity (NTU):**	2.4
Dissolved Oxygen (mg/L):	12.08	**TDS (g/L):**	0.90	**pH:**	6.95

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	**Channel Width (m)**		**Water Depth (m)**				**Water Velocity (m/s)**				
	Wetted	**High Water**	**25%**	**50%**	**75%**	**Max**	**25%**	**50%**	**75%**	**Max**	**Min**
0	0.10-1.50	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M	N/M

Distance and Direction from Assessment UTM (m)	**Stream Morphology Composition (%)**						**Substrate Composition (%)**				
	Riffle	**Pool (<0.2 m)**	**Pool (>0.2 m)**	**Run**	**Cascade**	**Other**	**Fines**	**Gravel**	**Small Cobble**	**Large Cobble**	**Boulders**
0	5	95					30		30	30	10

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-011a
UTM Coordinates: 17 W 596420 7798030
Date/Time Surveyed: August 7, 2010 @ 15:52

Fisheries Data

Gear Used: Electrofishing
Effort (min): 2.0
Electrofisher Settings: 400V, 60Hz, 12%

Start UTM: N/A
End UTM: N/A

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0	N/M	N/M
NNST	~12 YOY (all observed)	~6.0	~10	N/M

Fish Habitat Potential

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

Comments & Summary

Habitat is the same upstream as it is downstream. Water velocity too shallow to measure. No catch but observed ~12 YOY NNST. Unlikely to be used by ARCH

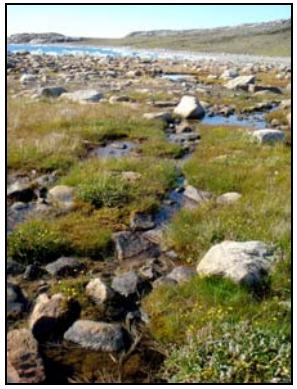
Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-011a
UTM Coordinates: 17 W 596420 7798030
Date/Time Surveyed: August 7, 2010 @ 15:52

Photographs

A



B

C

Figure 1. (A) view upstream of habitat assessment; (B) view downstream of habitat assessment; (C) view across habitat assessment.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	SPS-025	**UTM:**	17 W 596935 7799436
Site:	SPS-025	**Dates Surveyed:**	27-Jul-08, 14:05

Site Description/Physical Characteristics

Confinement: Unconfined

Channel Gradient: 3˚

Hydrology

	Sum
Bankfull Width (m):	45.72
Wetted Width (m):	2.27
Riffle-Crest Depth (m):	0.11
Pool Depth (m):	0.13
D (m):	NM
D_{95} (m):	1.35
Point Velocities (m/s)	
Riffle:	0.24
Pool:	0.06
Behind a rock:	NM

Stream/Riparian Habitat

Channel Morphology:	75% pool (shallow), 25% riffle
Substrate Composition:	48% FT, 35% sand, 10% silt, 5% boulder, 2% 1g cobble
Stream Cover:	~5% UC banks
Aquatic Vegetation:	thick periphyton in places
Riparian Vegetation:	Grasses, willow, moss, wildflowers
Barriers Present (Y/N):	Unknown
Location:	NA
Lakes Present (Y/N):	Y
Location:	US; DS

L/R Bank Characteristics

	Sum
Bank Height (L/R; m):	0.15
Bank Stability:	low-moderate (often UD flooded)
Erosion Potential:	high

Water Quality

	Sum
Specific Conductance (µS/cm):	3.00
TDS (g/l):	0.02
DO (mg/l)	9.94
%DO:	NM
Water Temp (˚C):	17.97

Fish Habitat Use

Spawning:	ARCH - N NNST - N
Feeding:	ARCH - N NNST - L
Migration:	ARCH - M NNST - N

Steensby Port Site Aquatic Habitat Assessment

Figure 1.View upstream (a) and downstream (b) from habitat assessment of SPS-025 during summer 2008.

Figure 2.View across (c) the habitat assessment site of SPS-025 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	SPS-024	**UTM:**	17 W 594807 7800428
Site:	SPS-024	**Dates Surveyed:**	01-Aug-08, 08:05

Site Description/Physical Characteristics

Confinement: Unconfined

Channel Gradient: 4˚

Hydrology

	Sum
Bankfull Width (m):	41.15
Wetted Width (m):	0.58
Riffle-Crest Depth (m):	0.02
Pool Depth (m):	0.13
D (m):	NM
D_{95} (m):	2.49
Point Velocities (m/s)	
Riffle:	0.31
Pool:	0.07
Behind a rock:	NM

Stream/Riparian Habitat

Channel Morphology:	65% riffle, 25% pool, 10% cascade
Substrate Composition:	40% gravel, 35% sand, 15% boulder, 5% 1g cobble, 5% sm cobble
Stream Cover:	15% boulder, 10% UC banks, 10% cobble
Aquatic Vegetation:	Reeds, periphyton
Riparian Vegetation:	Grasses, willow, moss
Barriers Present (Y/N):	Unknown
Location:	NA
Lakes Present (Y/N):	Y
Location:	DS – Steensby Inlet

L/R Bank Characteristics

	Sum
Bank Height (L/R; m):	0.12
Bank Stability:	Moderate-high
Erosion Potential:	Low-moderate

Water Quality

	Sum
Specific Conductance (µS/cm):	45.00
TDS (g/l):	0.30
DO (mg/l)	11.26
%DO:	NM
Water Temp (˚C):	5.79

Fish Habitat Use

Spawning:	ARCH - N NNST - L
Feeding:	ARCH - N NNST - L
Migration:	ARCH - N NNST - N

Steensby Port Site Aquatic Habitat Assessment

Figure 1.View upstream (a) and downstream (b) from habitat assessment of SPS-024 during summer 2008.

Figure 2.View across (c) the habitat assessment site of SPS-024 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-007	**UTM:**	17 W 592884 7802114
Site:	ST-007	**Date/Time Surveyed:**	August 8, 2010 @ 15:05

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 10% large cobble, 50% small cobble, 10% gravel, 30% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	15.6
TDS (g/L):	0.10
DO (mg/L):	12.05
Turbidity (NTU):	3.4
pH:	7.41
Water Temp (˚C):	14.5

Fish Habitat Use

Spawning:	ARCH - N NNST - N
Rearing:	ARCH - N NNST - N
Wintering:	ARCH - N NNST - N
Migration Corridor:	ARCH - N NNST - N

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Fish Habitat Quality – NOT FISH-BEARING

Steensby Port Site Aquatic Habitat Assessment

Photographs

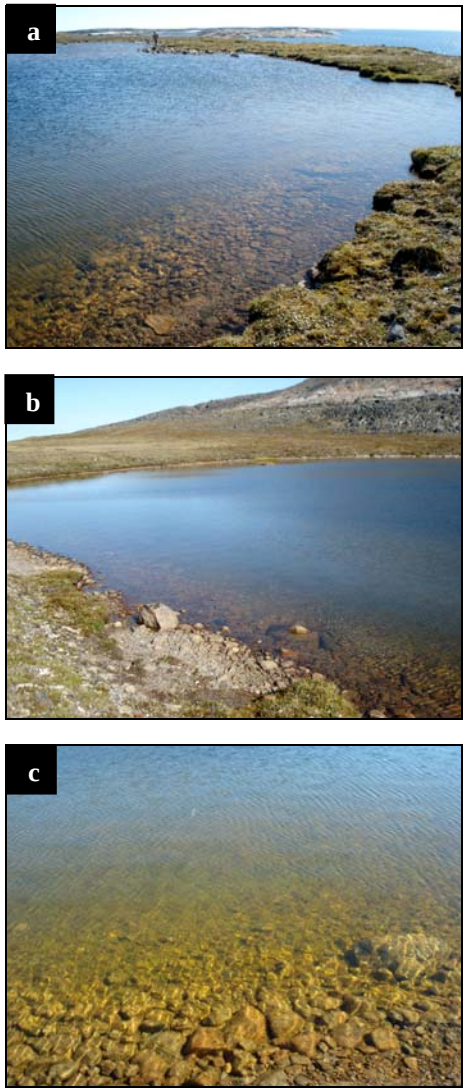

Figure 1. Aerial view of ST-007 (a), view from the shoreline (b), and substrate.

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	N/A
End UTM:	N/A
Electrofisher Settings (v/Hz/duty cycle):	400/50/12
Effort (dec.min):	N/M

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	N/A	N/A	N/M	N/M
NNST	N/A	N/A	N/M	N/M

Comments

Many mysid shrimp observed (walked entire perimeter and observed no fish).

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-005	**UTM:**	17 W 592785 7802431
Site:	ST-005	**Date/Time Surveyed:**	August 8, 2010 @ 14:43

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 5% boulders,
20% large cobble,
20% small cobble,
5% gravel,
50% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	75.7
TDS (g/L):	0.48
DO (mg/L):	12.38
Turbidity (NTU):	4.3
pH:	7.18
Water Temp (˚C):	14.5

Fish Habitat Use

Spawning:	ARCH - N NNST - H
Rearing:	ARCH - N NNST - H
Wintering:	ARCH - N NNST - H
Migration Corridor:	ARCH - N NNST - N

Steensby Port Site Aquatic Habitat Assessment

Photographs

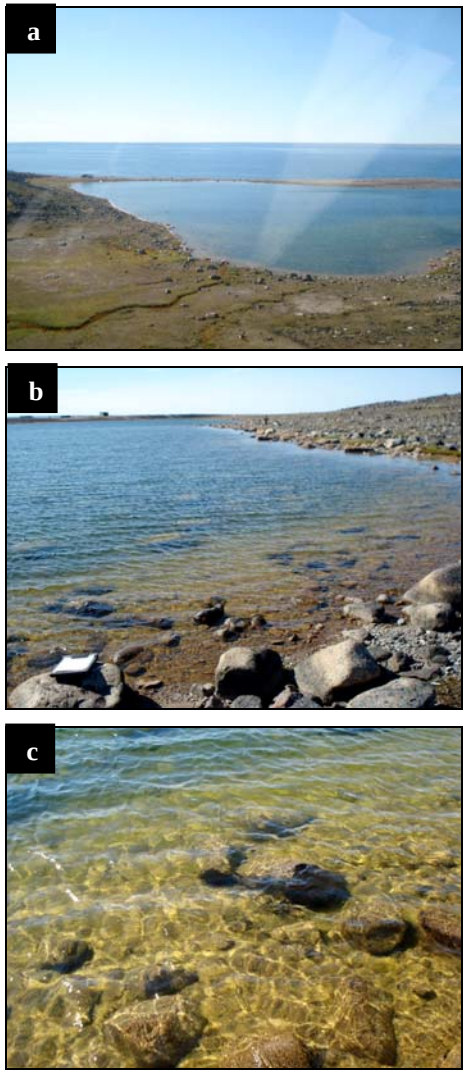

Figure 1. Aerial view of ST-005 (a), view from shoreline (b), and substrate (c).

Fisheries Data

Gear Used:	Observation
Start UTM:	17 W 592785 7802431
End UTM:	17 W 592711 7802435
Electrofisher Settings (v/Hz/duty cycle):	N/A
Effort (dec.min):	N/A

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	N/A	N/A	N/M	N/M
NNST	14 (observed)	N/A	40-65	N/M

Comments

Some potential for overwintering of ninespine stickleback.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-006	**UTM:**	17 W 593058 7802419
Site:	ST-006	**Dates Surveyed:**	29-Jul-08, 13:05

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Sum
Bankfull Width (m):	N/A
Wetted Width (m):	N/A
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max D (m):	4.00
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Riparian Habitat

Substrate Composition: 70% sand, 20% cobble, 10% boulder

Aquatic Vegetation: macrophytes

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A

Location: N/A

Water Quality

	Sum
Specific Conductance (µS/cm):	N/M
TDS (g/l):	N/M
DO (mg/l)	N/M
%DO:	N/M
Water Temp (˚C):	9.0

Fish Habitat Use

Spawning:	ARCH - N NNST - H
Feeding:	ARCH - N NNST - H
Migration:	ARCH - N NNST - N

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Steensby Port Site Aquatic Habitat Assessment

Figure 1. Pan view from NW corner shoreline (a) and west shore pan (b) of ST-006 during summer 2008.

Figure 2. View of substrate along west shore (c) and substrate near gill net set (d) of ST-006 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-006	**UTM:**	17 W 593020 7802481
Site:	ST-006	**Date/Time Surveyed:**	August 8, 2010 @ 14:30

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 45% fines, 5% gravel, 20% small cobble, 35% large cobble

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	13.9
TDS (g/L):	0.09
DO (mg/L):	11.41
Turbidity (NTU):	4.1
pH:	7.04
Water Temp (˚C):	15.8

Fish Habitat Use

Spawning:	ARCH - N NNST - H
Rearing:	ARCH - N NNST - H
Wintering:	ARCH - N NNST - H
Migration Corridor:	ARCH - N NNST - N

Steensby Port Site Aquatic Habitat Assessment

Photographs

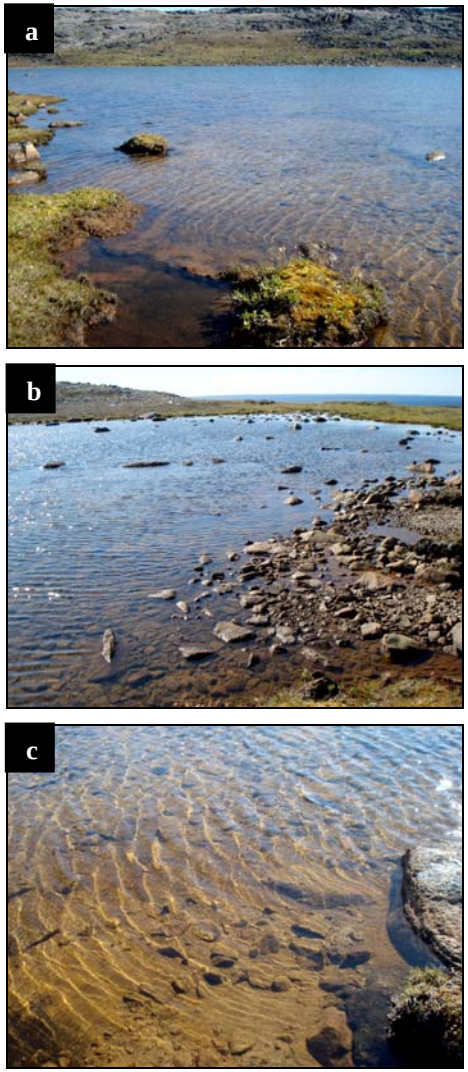

Figure 1. Aerial view of ST-006 (a), view from the shoreline (b), and substrate (c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 593020 7802481
End UTM:	17 W 592969 7802466
Electrofisher Settings (v/Hz/duty cycle):	400/50/12
Effort (dec.min):	5.0

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0.0	N/M	N/M
NNST	~54	~10.8	YOY-55	N/M

Comments

Does not appear to provide overwintering habitat, but does provide rearing and spawning habitat for ninespine stickleback.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-003	**UTM:**	17W 593101 7803122
Site:	ST-003	**Dates Surveyed:**	29-Jul-08, 9:49

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Sum
Bankfull Width (m):	N/A
Wetted Width (m):	N/A
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	6.6
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Riparian Habitat

Substrate Composition: 40% boulder, 40% 1g cobble, 20% sand

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A

Location: N/A

Water Quality

	Sum
Specific Conductance (µS/cm):	N/M
TDS (g/l):	N/M
DO (mg/l)	N/M
%DO:	N/M
Water Temp (˚C):	9.0

Fish Habitat Use

Spawning:	ARCH - N NNST - H
Feeding:	ARCH - N NNST - H
Migration:	ARCH - N NNST - N

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Steensby Port Site Aquatic Habitat Assessment

Figure 1. Pan view from NE shore (a and b) of ST-003 during summer 2008.

Figure 2. View of substrate (c and d) of ST-003 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-003	**UTM:**	17 W 593147 7802840
Site:	ST-003	**Date/Time Surveyed:**	August 8, 2010 @ 14:14

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 10% boulders, 25% large cobble, 20% small cobble, 5% gravel, 40% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	34.2
TDS (g/L):	0.22
DO (mg/L):	11.29
Turbidity (NTU):	3.2
pH:	6.37
Water Temp (˚C):	15.6

Fish Habitat Use

Spawning:	ARCH - N NNST - H
Rearing:	ARCH - N NNST - H
Wintering:	ARCH - N NNST - H
Migration Corridor:	ARCH - N NNST - N

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Photographs

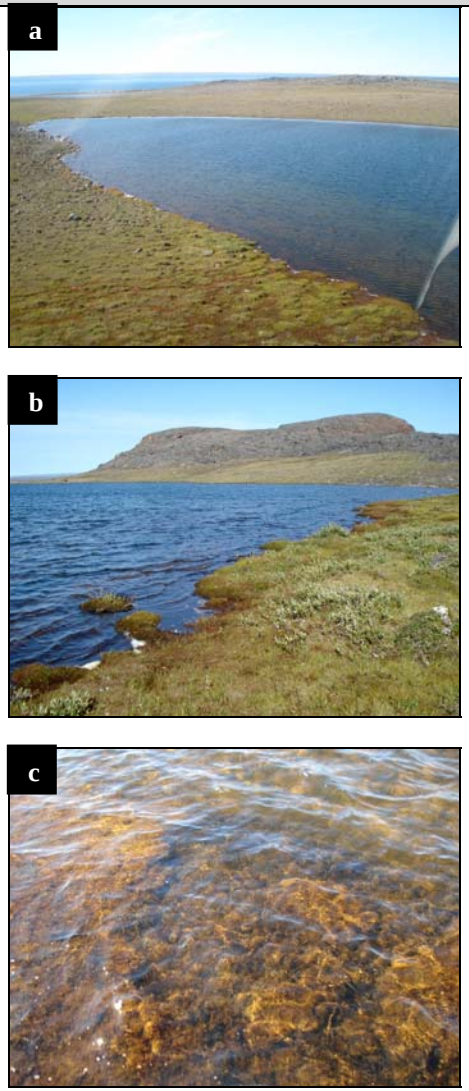

Figure 1. Aerial view of ST-003 (a), view from the shoreline (b), and substrate (c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 593147 7802840
End UTM:	17 W 593117 7802794
Electrofisher Settings (v/Hz/duty cycle):	300/30/10
Effort (dec.min):	4.0

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0.0	N/M	N/M
NNST	6	1.5	60-70	N/M

Comments

Suitable habitat for NNST, but ARCH do not appear to have access.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-004	**UTM:**	17 W 593346 7802773
Site:	ST-004	**Date/Time Surveyed:**	August 8, 2010 @ 13:55

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 15% large cobble, 15% small cobble, 70% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	48.2
TDS (g/L):	0.32
DO (mg/L):	5.38
Turbidity (NTU):	0.0
pH:	6.08
Water Temp (˚C):	11.3

Fish Habitat Use

Spawning:	ARCH - N NNST - H
Rearing:	ARCH - N NNST - H
Wintering:	ARCH - N NNST - H
Migration Corridor:	ARCH - N NNST - N

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Photographs

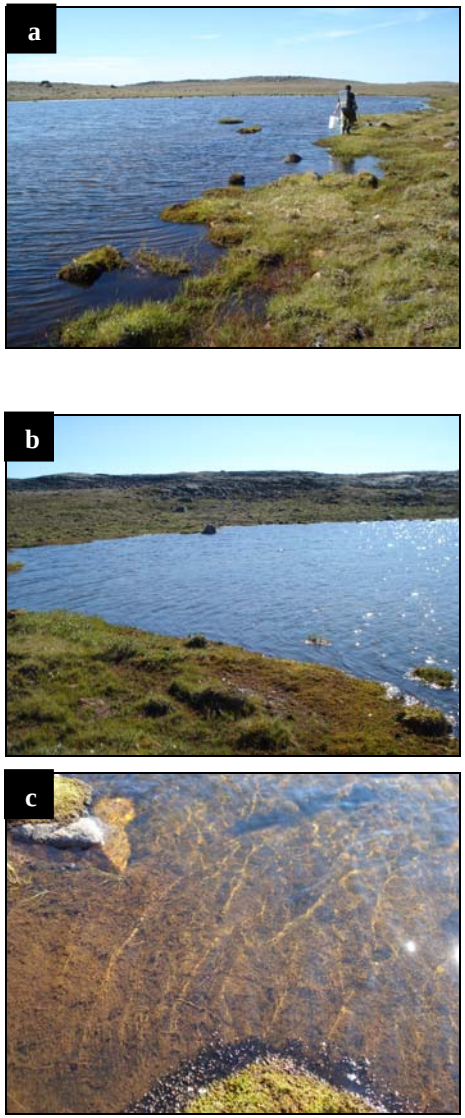

Figure 1. View of the shoreline (a & b), and substrate (c) of ST-004.

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 593346 7802773
End UTM:	17 W 593327 7802779
Electrofisher Settings (v/Hz/duty cycle):	300/30/10
Effort (dec.min):	2.0

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0.0	N/M	N/M
NNST	>20 (observed)	>10.0	N/M	N/M

Comments

Lots of clam shrimp and no Arctic char.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	SPS-021	**UTM:**	17W 593024 7803302
Site:	SPS-021	**Dates Surveyed:**	27-Jul-08, 08:49

Site Description/Physical Characteristics

Confinement: Unconfined

Channel Gradient: 10˚

Hydrology

	Sum
Bankfull Width (m):	> 0.91
Wetted Width (m):	1.27
Riffle-Crest Depth (m):	0.12
Pool Depth (m):	0.18
D (m):	NM
D_{95} (m):	US- ~ 0.35 DS- ~5.00
Point Velocities (m/s)	
Riffle:	0.25
Pool:	0.00
Behind a rock:	NM

Stream/Riparian Habitat

Channel Morphology:	85% riffle, 15% pool
Substrate Composition:	70% FT, 15% gravel, 10% sand, 5% sm cobble
Stream Cover:	none
Aquatic Vegetation:	Periphyton (green)
Riparian Vegetation:	Grasses, willow, moss, wildflowers
Barriers Present (Y/N):	Y
Location:	~ 100 m US
Lakes Present (Y/N):	Y
Location:	US (Steensby DS)

L/R Bank Characteristics

	Sum
Bank Height (L/R; m):	0.08
Bank Stability:	No bank
Erosion Potential:	NA

Water Quality

	Sum
Specific Conductance (µS/cm):	22.00
TDS (g/l):	0.14
DO (mg/l):	10.00
%DO:	NM
Water Temp (˚C):	11.53

Fish Habitat Use

Spawning:	ARCH - N NNST - N
Feeding:	ARCH - N NNST - L
Migration:	ARCH - N NNST - N

Steensby Port Site Aquatic Habitat Assessment

Figure 1.View upstream (a) and downstream (b) from habitat assessment of SPS-021 during summer 2008.

Figure 2.View across (c) the habitat assessment site of SPS-021 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	SPS-020	**UTM:**	17W 594665 7801213
Site:	SPS-020	**Dates Surveyed:**	27-Jul-08, 14:56

Site Description/Physical Characteristics

Confinement: Unconfined

Channel Gradient: 4˚

Hydrology

	Sum
Bankfull Width (m):	76.81
Wetted Width (m):	Flooded terrestrial w/ many isolated pools
Riffle-Crest Depth (m):	0.07
Pool Depth (m):	0.20
D (m):	NM
D_{95} (m):	6.25
Point Velocities (m/s)	
Riffle:	0.13
Pool:	0.01
Behind a rock:	NM

Stream/Riparian Habitat

Channel Morphology:	90% pool, 10% riffle
Substrate Composition:	85% fines/FT, 5% 1g cobble, 5% gravel, 5% sand
Stream Cover:	85% FT, 15% 1g cobble
Aquatic Vegetation:	None
Riparian Vegetation:	Grasse, willow, moss, wildflowers
Barriers Present (Y/N):	Unknown
Location:	NA
Lakes Present (Y/N):	Y
Location:	DS

L/R Bank Characteristics

	Sum
Bank Height (L/R; m):	none
Bank Stability:	No bank
Erosion Potential:	high

Water Quality

	Sum
Specific Conductance (µS/cm):	4.00
TDS (g/l):	0.03
DO (mg/l)	9.36
%DO:	NM
Water Temp (˚C):	15.50

Fish Habitat Use

Spawning:	ARCH - N NNST - H
Feeding:	ARCH - L NNST - H
Migration:	ARCH - N NNST - M

Steensby Port Site Aquatic Habitat Assessment

Figure 1.View upstream (a) and downstream (b) from habitat assessment of SPS-020 during summer 2008.

Figure 2.View across (c) the habitat assessment site of SPS-020 during summer 2008.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-087	**UTM:**	17 W 595766 7805305
Site:	ST-087	**Date/Time Surveyed:**	August 9, 2010 @ 9:44

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	N/M
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 1% boulders, 40% large cobble, 9% small cobble, 50% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	95.3
TDS (g/L):	0.61
DO (mg/L):	10.64
Turbidity (NTU):	3.4
pH:	5.60
Water Temp (˚C):	13.3

Fish Habitat Use

Spawning:	ARCH - N NNST - N
Rearing:	ARCH - N NNST - N
Wintering:	ARCH - N NNST - N
Migration Corridor:	ARCH - N NNST - N

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Fish Habitat Quality – NOT FISH-BEARING

Steensby Port Site Aquatic Habitat Assessment

Photographs

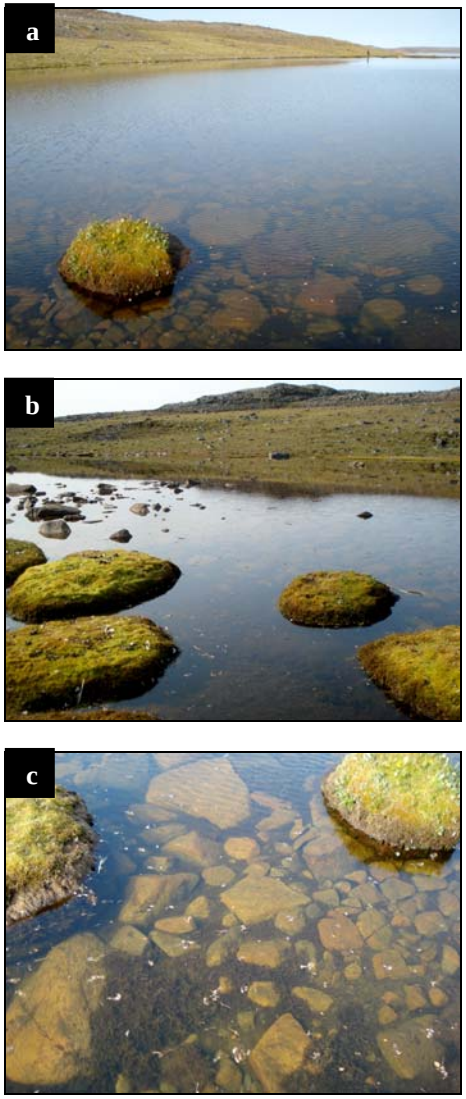

Figure 1. View from the shoreline of ST-087 (a,b) and substrate (c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 595766 7805305
End UTM:	17 W 595753 7805390
Electrofisher Settings (v/Hz/duty cycle):	200/20/10
Effort (dec.min):	6.0

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0.0	N/M	N/M
NNST	0	0.0	N/M	N/M

Comments

Lake is completely isolated. Observed some clam shrimp, which is usually associated with at least not ARCH in a lake.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name:	ST-036	**UTM:**	17 W 595813 7800206
Site:	ST-036	**Date/Time Surveyed:**	August 8, 2010 @ 12:25

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/A
Pool Depth (m):	N/A
Max Depth (m):	>3.0
D_{95} (m):	N/A
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 10% boulders, 45% large cobble, 45% small cobble.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	12.6
TDS (g/L):	0.08
DO (mg/L):	11.03
Turbidity (NTU):	2.8
pH:	6.21
Water Temp (˚C):	13.0

Fish Habitat Use

Spawning:	ARCH - M NNST - H
Rearing:	ARCH - H NNST - H
Wintering:	ARCH - H NNST - H
Migration Corridor:	ARCH - N NNST - N

Steensby Port Site Aquatic Habitat Assessment

Photographs

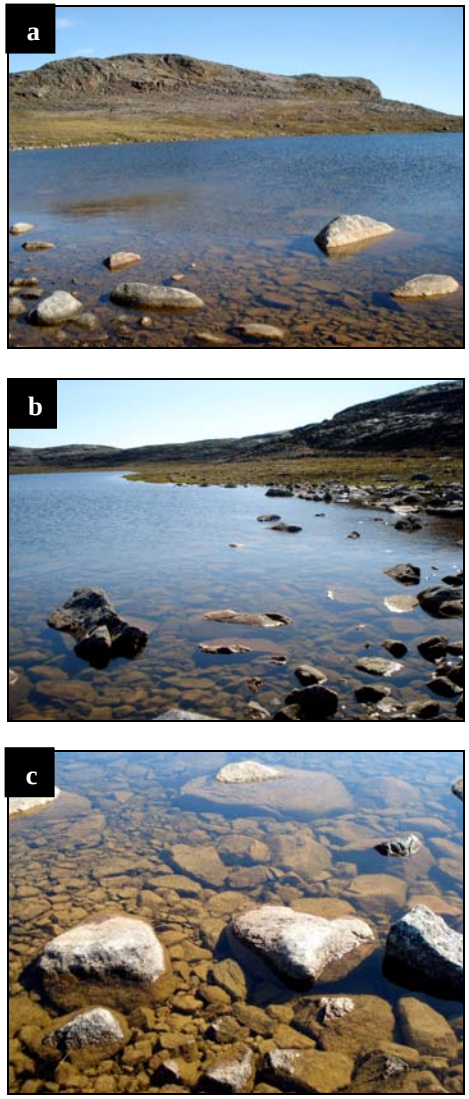

Figure 1. Aerial view of ST-036 (a), view from the shoreline (b), and substrate (c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 595818 7800226
End UTM:	17 W 595813 7800206
Electrofisher Settings (v/Hz/duty cycle):	350/60/12
Effort (dec.min):	5.0

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	7	1.4	90-200	N/M
NNST	4	0.8	40-60	N/M

Comments

Lake provides probable overwintering and spawning habitat for both species.

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-029
UTM Coordinates: 17 W 595637 7800239
Date/Time Surveyed: August 8, 2010 @ 12:00

General Physical Characteristics

Floodplain Width (m):	>100	**Channel Pattern:**	Sinuous	**Stage:**	Low
Channel Confinement:	UC	**Channel Gradient (range):**	1°	**Flow Regime:**	Permanent
Bank Height (range in m):	0-0.20	**Bank Shape:**	Sloped		

In Situ Water Quality Data

Temperature (°C):	15.8	**Specific Conductance (mS/m):**	16.4	**Turbidity (NTU):**	1.9
Dissolved Oxygen (mg/L):	11.90	**TDS (g/L):**	0.11	**pH:**	6.08

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)				
	Wetted	High Water	25%	50%	75%	Max	25%	50%	75%	Max	Min
20D	25.5	50.0	0.08	0.02	0.06	0.10	0.00	0.01	0.16	0.16	0.00
0	21.6	45.0	0.14	0.22	0.10	0.30	0.00	0.00	0.00	0.00	N/M
20U	15.0	30.0	0.10	0.18	0.05	0.20	0.00	0.00	0.00	0.00	N/M

Distance and Direction from Assessment UTM (m)	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
20D	5	95					50	25	15	5	5
0		100					50	25	15	5	5
20U		100					50	25	15	5	5

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-029
UTM Coordinates: 17 W 595637 7800239
Date/Time Surveyed: August 8, 2010 @ 12:00

Fisheries Data

Gear Used: Electrofishing
Effort (min): 2.0
Electrofisher Settings: 700V, 60Hz, 12%

Start UTM: 17 W 595626 7800237
End UTM: 17 W 595637 7800239

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	4	2	~100	N/M
NNST	1	0.5	49	N/M

Fish Habitat Potential

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

Comments & Summary

Many YOY NNST also observed.

Baffinland Iron Mines
Mary River Project

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Fish Habitat Quality – IMPORTANT

Steensby Port Site Aquatic Habitat Assessment

Location

Watercourse Name: SPS-029
UTM Coordinates: 17 W 595637 7800239
Date/Time Surveyed: August 8, 2010 @ 12:00

Photographs

A

B

C

Figure 1. (A) view upstream of habitat assessment; (B) view downstream of habitat assessment; (C) view across habitat assessment.

Steensby Port Site Habitat Assessment

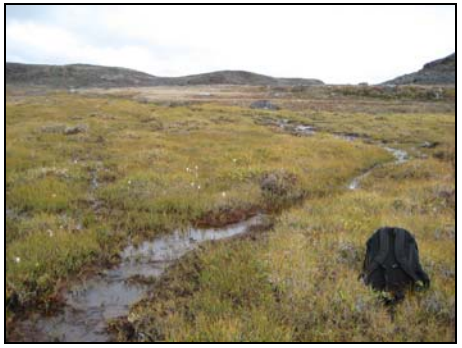

Figure 1: View upstream of crossing SPS-029.

Figure 2: View across crossing SPS-029 from right bank.

Figure 3: View downstream of crossing SPS-029.

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Location

Crossing ID: SPS-029 (formerly AR-1)
Date/Time Surveyed: 29-Aug-07 / 16:15
UTM: 17W 595383 / 7800119

Site Description/Physical Characteristics

Floodplain Width (m): > 200.00

Channel Pattern: braided

Channel Confinement: NC

Channel Gradient: N/M

Hydrology

Bankfull Width (m): N/M (many small channels)

Wetted Width (m): N/M (many small channels)

Depth Profile (25%, 50%, 75%; m): N/M

Max Depth (m): 0.20

Flow Regime: per

Bank Characteristics

Bank Height (L/R; m): 0.13/0.16

Bank Shape (L/R): UC / UC

Bank Stability: moderate

Stream/Riparian Habitat

Channel Morphology: 70% Po, 25% Ri, 5% Ca

Substrate Composition: 70% Fi, 20% Co, 10% Gr

Stream Cover: 60% UC

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): Y
Description/Location: US ~ 100 m, DS – Steensby I.

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): Y
Effort: 300 s
Settings: 500V 60Hz

Fish Observed (Y/N): Y
Species/Totals: NNST - 10 (YOY), ARCH - 1 (Juv)
Length Range: N/M

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** M
Overwintering: N **Migration:** L

Ninespine stickleback (NNST)
Spawning: H **Rearing:** H
Overwintering: N **Migration:** M

Habitat Assessment Summary & Potential Habitat Compensation Notes

This stream provides suitable habitat during the entire open water season for ARCH and, in particular, NNST. There may also be some movement between Steensby Inlet and a small upstream lake, though these movements would likely be restricted to small fish.

Diverting all flow from the multiple channels through a single culvert may increase available habitat for ARCH but may also decrease available refuge habitat for YOY NNST.

Fish Habitat Quality

Important

Steensby Port Site Habitat Assessment

Figure 1: View of lake near site SPS-011k.

Figure 2: Another view of lake near site SPS-011k.

Figure 3: View of shoreline habitat near site SPS-011k.

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Mary River Project

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Aquatic Environment Specialists

Location

Crossing ID: SPS-011k (formerly AR-2)
Date/Time Surveyed: 29-Aug-07 / 16:31
UTM: 17W 596319 / 7798910

Site Description/Physical Characteristics

Floodplain Width (m): N/A

Channel Pattern: N/A

Channel Confinement: N/A

Channel Gradient: N/A

Hydrology

Bankfull Width (m): N/A

Wetted Width (m): N/A

Depth Profile (25%, 50%, 75%; m): N/A

Max Depth (m): 1.0 (lake)

Flow Regime: per

Bank Characteristics

Bank Height (L/R; m): N/M

Bank Shape (L/R): N/A

Bank Stability: moderate

Stream/Riparian Habitat

Channel Morphology: Lake

Substrate Composition: 90% Fi, 5% Co, 5% Gr

Stream Cover: N/A

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): Y
Description/Location: DS ~ 100-200 m

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): Y
Effort: 300 s
Settings: 500V 60Hz

Fish Observed (Y/N): Y
Species/Totals: a few ARCH
Length Range: N/M

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** L
Overwintering: N **Migration:** N

Ninespine stickleback (NNST)
Spawning: N **Rearing:** M
Overwintering: N **Migration:** N

Habitat Assessment Summary & Potential Habitat Compensation Notes

This site impinges on shoreline habitat of a nearby lake in addition to stream SPS-011k. The lake is not suitable for overwintering but does have an existing connection with a DS lake that may be deep enough. This lake provides only marginal, open water season habitat for small fish

Mitigation requirements can be met by creating cobble/boulder habitat either in other littoral areas of this small lake or in the larger, DS lake.

Fish Habitat Quality

Marginal

Steensby Port Site Habitat Assessment

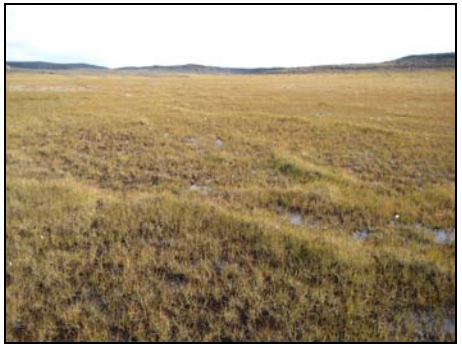

Figure 1: View upstream of crossing SPS-005c.

Figure 2: View across crossing SPS-005c from left bank.

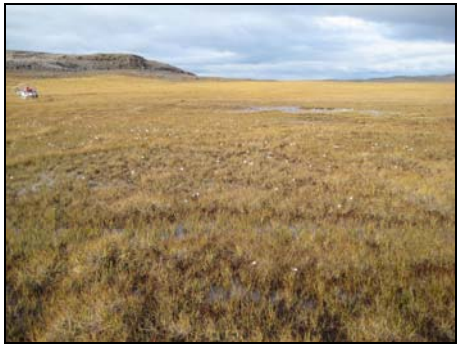

Figure 3: View downstream of crossing SPS-005c.

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Location

Crossing ID: SPS-005c (formerly AR-3)
Date/Time Surveyed: 29-Aug-07 / 16:43
UTM: 17W 597563 / 7798697

Site Description/Physical Characteristics

Floodplain Width (m): > 200.0

Channel Pattern: flooded terrestrial

Channel Confinement: NC

Channel Gradient: N/M

Hydrology

Bankfull Width (m): UD

Wetted Width (m): N/M

Depth Profile (25%, 50%, 75%; m): N/A

Max Depth (m): < 0.10

Flow Regime: eph

Bank Characteristics

Bank Height (L/R; m): no banks

Bank Shape (L/R): N/A

Bank Stability: N/A

Stream/Riparian Habitat

Channel Morphology: 100% Po

Substrate Composition: 100% FT

Stream Cover: N/A

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): N
Description/Location: N/A

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): Y
Effort: 60 s
Settings: 500V 60Hz

Fish Observed (Y/N): N
Species/Totals: N/A
Length Range: N/A

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Ninespine stickleback (NNST)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Habitat Assessment Summary & Potential Habitat Compensation Notes

Habitat at this crossing is entirely flooded terrestrial vegetation and it is too far from any overwintering habitat to be suitable for fish.

Fish Habitat Quality

No Fish Habitat

Steensby Port Site Habitat Assessment

Figure 1: Aerial view upstream of crossing SPS-005q.

Figure 2: Aerial view across crossing SPS-005q.

Figure 3: Aerial view downstream of crossing SPS-005q.

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Location

Crossing ID: SPS-005q (formerly AR-3b)
Date/Time Surveyed: 29-Aug-07 / 16:51
UTM: 17W 598129 / 7799215

Site Description/Physical Characteristics

Floodplain Width (m): > 200.0

Channel Pattern: straight, braided

Channel Confinement: NC

Channel Gradient: N/M

Hydrology

Bankfull Width (m): N/M

Wetted Width (m): N/M

Depth Profile (25%, 50%, 75%; m): N/A

Max Depth (m): ~ 0.30

Flow Regime: per

Bank Characteristics

Bank Height (L/R; m): N/M

Bank Shape (L/R): N/M

Bank Stability: N/M

Stream/Riparian Habitat

Channel Morphology: 75% Po, 25% Ri

Substrate Composition: 75% Co, 25% Fi

Stream Cover: Large cobble

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): Y
Description/Location: US & DS - < 500 m each

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): N
Effort: N/A
Settings: N/A

Fish Observed (Y/N): N
Species/Totals: N/A
Length Range: N/A

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** H
Overwintering: N **Migration:** M

Ninespine stickleback (NNST)
Spawning: M **Rearing:** H
Overwintering: N **Migration:** M

Habitat Assessment Summary & Potential Habitat Compensation Notes

Habitat at this crossing is suitable for feeding and rearing of both species, and there may also be NNST spawning in the pools during summer. Fish could also use this area as a migratory corridor between the US and DS lakes.

Fish Habitat Quality

Important

Steensby Port Site Habitat Assessment

Figure 1: Aerial view upstream of crossing SPS-005e.

Figure 2: Aerial view across crossing SPS-005e.

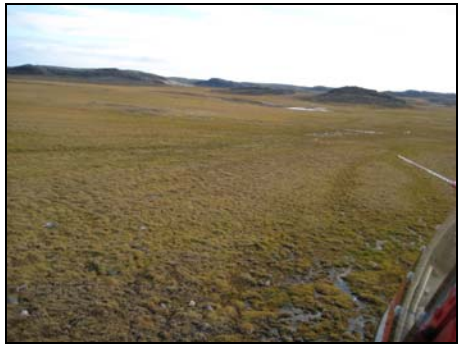

Figure 3: Aerial view downstream of crossing SPS-005e.

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Location

Crossing ID: SPS-005e (formerly AR-5)
Date/Time Surveyed: 29-Aug-07 / 16:50
UTM: 17W 598570 / 7799072

Site Description/Physical Characteristics

Floodplain Width (m): > 200.0

Channel Pattern: flooded terrestrial

Channel Confinement: NC

Channel Gradient: N/M

Hydrology

Bankfull Width (m): N/A

Wetted Width (m): N/A

Depth Profile (25%, 50%, 75%; m): N/A

Max Depth (m): N/M

Flow Regime: eph

Bank Characteristics

Bank Height (L/R; m): no banks

Bank Shape (L/R): N/A

Bank Stability: N/A

Stream/Riparian Habitat

Channel Morphology: 100% Po

Substrate Composition: 100% FT

Stream Cover: None

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): N
Description/Location: N/A

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): N
Effort: N/A
Settings: N/A

Fish Observed (Y/N): N
Species/Totals: N/A
Length Range: N/A

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Ninespine stickleback (NNST)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Habitat Assessment Summary & Potential Habitat Compensation Notes

Even during high water it is unlikely that there is suitable fish habitat at either of these crossings.

Fish Habitat Quality

No Fish Habitat

Steensby Port Site Habitat Assessment

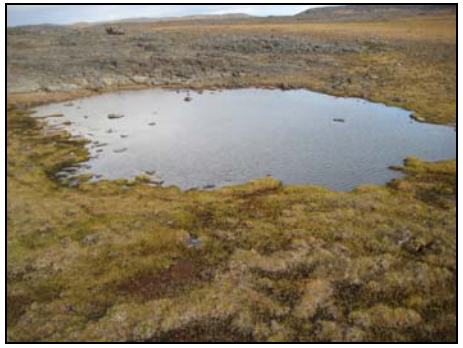

Figure 1: Aerial view of lake near crossing SPS-005v.

Figure 2: View of substrate in lake near crossing SPS-005v.

Location

Crossing ID: SPS-005v (formerly AR-6)
Date/Time Surveyed: 29-Aug-07 / 16:55
UTM: 17W 599217 / 7798908

Site Description/Physical Characteristics

Floodplain Width (m): N/A

Channel Pattern: N/A

Channel Confinement: N/A

Channel Gradient: N/A

Hydrology

Bankfull Width (m): N/A

Wetted Width (m): N/A

Depth Profile (25%, 50%, 75%; m): N/A

Max Depth (m): ~ 0.20

Flow Regime: per

Bank Characteristics

Bank Height (L/R; m): N/M

Bank Shape (L/R): N/M

Bank Stability: N/M

Stream/Riparian Habitat

Channel Morphology: Lake/pond

Substrate Composition: 95% Fi, 5% Co

Stream Cover: None

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): N
Description/Location: N/A

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): N
Effort: N/A
Settings: N/A

Fish Observed (Y/N): N
Species/Totals: N/A
Length Range: N/A

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Ninespine stickleback (NNST)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Habitat Assessment Summary & Potential Habitat Compensation Notes

This crossing also impinges on the shoreline of a small lake/pond (ST-074). This lake is unsuitable for overwintering and does not appear to have existing connections with overwintering sites. The stream bed connected to this pond is currently dry and does not provide fish habitat or access to habitat elsewhere.

Fish Habitat Quality

No Fish Habitat

Baffinland Iron Mines
Mary River Project

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Steensby Port Site Habitat Assessment

Figure 1: View across ST-019.

Figure 2: View along shoreline of ST-019.

Figure 3: View of substrate in ST-019.

Baffinland Iron Mines
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Aquatic Environment Specialists

Location

Crossing ID: ST-019 (formerly IP-1)
Date/Time Surveyed: 29-Aug-07 / 14:25
UTM: 17W 594117 / 7800129

Site Description/Physical Characteristics

Floodplain Width (m): N/A

Channel Pattern: N/A

Channel Confinement: N/A

Channel Gradient: N/A

Hydrology

Bankfull Width (m): N/M

Wetted Width x Length (m): ~ 50 x 40

Depth Profile (25%, 50%, 75%; m): N/M

Max Depth (m): ~ 0.40

Flow Regime: per

Bank Characteristics

Bank Height (L/R; m): N/M

Bank Shape (L/R): N/M

Bank Stability: N/M

Stream/Riparian Habitat

Channel Morphology: Pond

Substrate Composition: 90% Fi, 9% Co, 1% Bo

Stream Cover: 1% Bo

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): N
Description/Location: N/A

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): Y
Effort: 300 s
Settings: 400V 30Hz

Fish Observed (Y/N): N
Species/Totals: N/A
Length Range: N/A

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Ninespine stickleback (NNST)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Habitat Assessment Summary & Potential Habitat Compensation Notes

Surface area = ~3000m^2

This pond does not provide overwintering habitat, nor is it connected to any waterbody that does. The substrate is comprised of soft, organic fines; not preferred substrate for local freshwater fish species.

Fish Habitat Quality

No Fish Habitat

Steensby Port Site Habitat Assessment

Figure 1: View across ST-018.

Figure 2: View along shoreline of ST-018.

Figure 3: View of substrate in ST-018.

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Aquatic Environment Specialists

Location

Crossing ID: ST-018 (formerly IP-2)
Date/Time Surveyed: 29-Aug-07 / 14:26
UTM: 17W 593930 / 7800061

Site Description/Physical Characteristics

Floodplain Width (m): N/A

Channel Pattern: N/A

Channel Confinement: N/A

Channel Gradient: N/A

Hydrology

Bankfull Width (m): N/M

Wetted Width x Length (m): ~ 40 x 25

Depth Profile (25%, 50%, 75%; m): N/M

Max Depth (m): ~ 0.25

Flow Regime: per

Bank Characteristics

Bank Height (L/R; m): N/M

Bank Shape (L/R): N/M

Bank Stability: N/M

Stream/Riparian Habitat

Channel Morphology: Pond

Substrate Composition: 90% Fi, 10% Co

Stream Cover: None

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): N
Description/Location: N/A

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): Y
Effort: 300 s
Settings: 400V 30Hz

Fish Observed (Y/N): N
Species/Totals: N/A
Length Range: N/A

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Ninespine stickleback (NNST)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Habitat Assessment Summary & Potential Habitat Compensation Notes

This pond does not provide overwintering habitat, nor is it connected to any waterbody that does. The substrate is comprised of soft, organic fines; not preferred substrate for local freshwater fish species.

Fish Habitat Quality

No Fish Habitat

Steensby Port Site Habitat Assessment

Figure 1: View across ST-017.

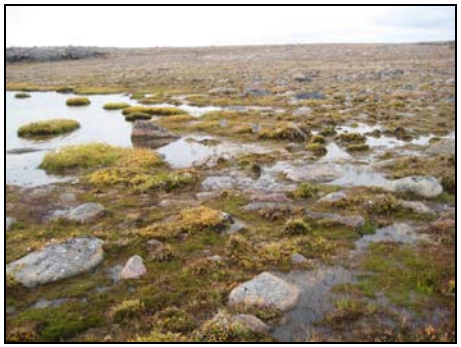

Figure 2: View along shoreline of ST-017.

Figure 3: View of substrate in ST-017.

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Aquatic Environment Specialists

Location

Crossing ID: ST-017 (formerly IP-3)
Date/Time Surveyed: 29-Aug-07 / 14:38
UTM: 17W 593780 / 7799933

Site Description/Physical Characteristics

Floodplain Width (m): N/A

Channel Pattern: N/A

Channel Confinement: N/A

Channel Gradient: N/A

Hydrology

Bankfull Width (m): N/M

Wetted Width x Length (m): ~ 150 x 60

Depth Profile (25%, 50%, 75%; m): N/M

Max Depth (m): ~ 1.00

Flow Regime: per

Bank Characteristics

Bank Height (L/R; m): N/M

Bank Shape (L/R): N/M

Bank Stability: N/M

Stream/Riparian Habitat

Channel Morphology: Pond

Substrate Composition: 70% Fi, 20% Co, 10% Bo

Stream Cover: 10% Bo

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): N
Description/Location: N/A

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): Y
Effort: 120 s
Settings: 400V 30Hz

Fish Observed (Y/N): N
Species/Totals: N/A
Length Range: N/A

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Ninespine stickleback (NNST)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Habitat Assessment Summary & Potential Habitat Compensation Notes

Although the substrate in this pond would be suitable for local freshwater fish species, the pond does not provide overwintering habitat, nor is it connected to any waterbody that does.

Fish Habitat Quality

No Fish Habitat

Steensby Port Site Habitat Assessment

Figure 1: View across ST-012.

Figure 2: View along shoreline of ST-012.

Figure 3: View of substrate in ST-012.

Baffinland Iron Mines
Mary River Project

North/South Consultants Inc.
Aquatic Environment Specialists

Location

Crossing ID: ST-012 (formerly IP-4)
Date/Time Surveyed: 29-Aug-07 / 14:50
UTM: 17W 593604 / 7800078

Site Description/Physical Characteristics

Floodplain Width (m): N/A

Channel Pattern: N/A

Channel Confinement: N/A

Channel Gradient: N/A

Hydrology

Bankfull Width (m): N/M

Wetted Width x Length (m): ~ 50 x 50

Depth Profile (25%, 50%, 75%; m): N/M

Max Depth (m): ~ 0.50

Flow Regime: per

Bank Characteristics

Bank Height (L/R; m): N/M

Bank Shape (L/R): N/M

Bank Stability: N/M

Stream/Riparian Habitat

Channel Morphology: Pond

Substrate Composition: 85% Fi, 14% Co, 1% Bo

Stream Cover: 1% Bo

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): N
Description/Location: N/A

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): Y
Effort: 180 s
Settings: 400V 30Hz

Fish Observed (Y/N): N
Species/Totals: N/A
Length Range: N/A

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Ninespine stickleback (NNST)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Habitat Assessment Summary & Potential Habitat Compensation Notes

This pond does not provide overwintering habitat, nor is it connected to any waterbody that does. The substrate is comprised of soft, organic fines; not preferred substrate for local freshwater fish species.

Fish Habitat Quality

No Fish Habitat

Steensby Port Site Habitat Assessment

Figure 1: View across ST-010.

Figure 2: View along shoreline of ST-10.

Figure 3: View of substrate in ST-010.

Baffinland Iron Mines
Mary River Project

North/South Consultants Inc.
Aquatic Environment Specialists

Location

Crossing ID: ST-010 (formerly IP-5)
Date/Time Surveyed: 29-Aug-07 / 14:55
UTM: 17W 593553 / 7799992

Site Description/Physical Characteristics

Floodplain Width (m): N/A

Channel Pattern: N/A

Channel Confinement: N/A

Channel Gradient: N/A

Hydrology

Bankfull Width (m): N/M

Wetted Width x Length (m): ~ 150 x 100

Depth Profile (25%, 50%, 75%; m): N/M

Max Depth (m): ~ 1.00

Flow Regime: per

Bank Characteristics

Bank Height (L/R; m): N/M

Bank Shape (L/R): N/M

Bank Stability: N/M

Stream/Riparian Habitat

Channel Morphology: Pond

Substrate Composition: 30% Fi, 69% Co, 1% Bo

Stream Cover: 1% Bo, some large cobble

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): N
Description/Location: N/A

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): Y
Effort: 120 s
Settings: 400V 30Hz

Fish Observed (Y/N): N
Species/Totals: N/A
Length Range: N/A

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Ninespine stickleback (NNST)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Habitat Assessment Summary & Potential Habitat Compensation Notes

Although this is one of the larger ponds on the island, it does not provide overwintering habitat, nor is it connected to any waterbody that does. The substrate is suitable but inaccessible.

Fish Habitat Quality

No Fish Habitat

Steensby Port Site Habitat Assessment

Figure 1: View across ST-010a.

Figure 2: View along shoreline of ST-010a.

Figure 3: View of substrate in ST-010a.

Baffinland Iron Mines
Mary River Project

North/South Consultants Inc.
Aquatic Environment Specialists

Location

Crossing ID: ST-010a (formerly IP-6)
Date/Time Surveyed: 29-Aug-07 / 15:03
UTM: 17W 593349 / 7799929

Site Description/Physical Characteristics

Floodplain Width (m): N/A

Channel Pattern: N/A

Channel Confinement: N/A

Channel Gradient: N/A

Hydrology

Bankfull Width (m): N/M

Wetted Width x Length (m): ~ 35 x 40

Depth Profile (25%, 50%, 75%; m): N/M

Max Depth (m): ~ 0.35

Flow Regime: per

Bank Characteristics

Bank Height (L/R; m): N/M

Bank Shape (L/R): N/M

Bank Stability: N/M

Stream/Riparian Habitat

Channel Morphology: Pond

Substrate Composition: 95% Fi, 4% Co, 1% Bo

Stream Cover: 1% Bo

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): N
Description/Location: N/A

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): Y
Effort: 120 s
Settings: 400V 30Hz

Fish Observed (Y/N): N
Species/Totals: N/A
Length Range: N/A

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Ninespine stickleback (NNST)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Habitat Assessment Summary & Potential Habitat Compensation Notes

This pond does not provide overwintering habitat, nor is it connected to any waterbody that does. The substrate is comprised of soft, organic fines; not preferred substrate for local freshwater fish species.

Fish Habitat Quality

No Fish Habitat

Steensby Port Site Habitat Assessment

Figure 1: View across ST-009.

Figure 2: View along shoreline of ST-009.

Figure 3: View of substrate in ST-009.

Baffinland Iron Mines
Mary River Project

North/South Consultants Inc.
Aquatic Environment Specialists

Location

Crossing ID: ST-009 (formerly IP-7)
Date/Time Surveyed: 29-Aug-07 / 15:06
UTM: 17W 593254 / 7800022

Site Description/Physical Characteristics

Floodplain Width (m): N/A

Channel Pattern: N/A

Channel Confinement: N/A

Channel Gradient: N/A

Hydrology

Bankfull Width (m): N/M

Wetted Width x Length (m): ~ 75 x 50

Depth Profile (25%, 50%, 75%; m): N/M

Max Depth (m): ~ 0.90

Flow Regime: per

Bank Characteristics

Bank Height (L/R; m): N/M

Bank Shape (L/R): N/M

Bank Stability: N/M

Stream/Riparian Habitat

Channel Morphology: Pond

Substrate Composition: 94% Fi, 5% Co, 1% Bo

Stream Cover: 1% Bo

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): N
Description/Location: N/A

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): Y
Effort: 120 s
Settings: 400V 30Hz

Fish Observed (Y/N): N
Species/Totals: N/A
Length Range: N/A

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Ninespine stickleback (NNST)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Habitat Assessment Summary & Potential Habitat Compensation Notes

This pond does not provide overwintering habitat, nor is it connected to any waterbody that does. The substrate is comprised of soft, organic fines; not preferred substrate for local freshwater fish species.

Fish Habitat Quality

No Fish Habitat

Steensby Port Site Habitat Assessment

Figure 1: View of substrate in ST-016.

Location

Crossing ID: ST-016 (formerly IP-8)
Date/Time Surveyed: 29-Aug-07 / 15:18
UTM: 17W 593596 / 7799703

Site Description/Physical Characteristics

Floodplain Width (m): N/A

Channel Pattern: N/A

Channel Confinement: N/A

Channel Gradient: N/A

Hydrology

Bankfull Width (m): N/M

Wetted Width x Length (m): ~ 80 x 80

Depth Profile (25%, 50%, 75%; m): N/M

Max Depth (m): ~ 0.75

Flow Regime: per

Bank Characteristics

Bank Height (L/R; m): N/M

Bank Shape (L/R): N/M

Bank Stability: N/M

Stream/Riparian Habitat

Channel Morphology: Pond

Substrate Composition: 65% Gr, 30% Fi, 5% Co

Stream Cover: None

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): N
Description/Location: N/A

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): Y
Effort: 180 s
Settings: 400V 30Hz

Fish Observed (Y/N): N
Species/Totals: N/A
Length Range: N/A

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Ninespine stickleback (NNST)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Habitat Assessment Summary & Potential Habitat Compensation Notes

This pond does not provide overwintering habitat, nor is it connected to any waterbody that does. The substrate is comprised of soft, organic fines; not preferred substrate for local freshwater fish species.

Fish Habitat Quality

No Fish Habitat

Baffinland Iron Mines
Mary River Project

North/South Consultants Inc.
Aquatic Environment Specialists

Steensby Port Site Habitat Assessment

Figure 1: View across ST-013.

Figure 2: View along shoreline of ST-013.

Figure 3: View of substrate in ST-013.

Baffinland Iron Mines
Mary River Project

North/South Consultants Inc.
Aquatic Environment Specialists

Location

Crossing ID: ST-013 (formerly IP-9)
Date/Time Surveyed: 29-Aug-07 / 15:06
UTM: 17W 593336 / 7799540

Site Description/Physical Characteristics

Floodplain Width (m): N/A

Channel Pattern: N/A

Channel Confinement: N/A

Channel Gradient: N/A

Hydrology

Bankfull Width (m): N/M

Wetted Width x Length (m): ~ 75 x 50

Depth Profile (25%, 50%, 75%; m): N/M

Max Depth (m): ~ 0.15

Flow Regime: per

Bank Characteristics

Bank Height (L/R; m): N/M

Bank Shape (L/R): N/M

Bank Stability: N/M

Stream/Riparian Habitat

Channel Morphology: Pond

Substrate Composition: 89% Fi, 10% Co, 1% Bo

Stream Cover: 1% Bo

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): N
Description/Location: N/A

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): Y
Effort: 60 s
Settings: 400V 30Hz

Fish Observed (Y/N): N
Species/Totals: N/A
Length Range: N/A

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Ninespine stickleback (NNST)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Habitat Assessment Summary & Potential Habitat Compensation Notes

This pond does not provide overwintering habitat, nor is it connected to any waterbody that does. The substrate is comprised of soft, organic fines; not preferred substrate for local freshwater fish species.

Fish Habitat Quality

No Fish Habitat

Steensby Port Site Habitat Assessment

Figure 1: View across ST-014.

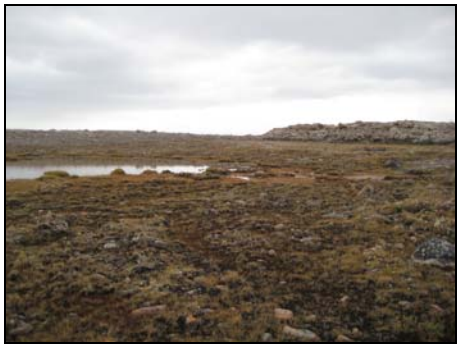

Figure 2: View along shoreline of ST-014.

Figure 3: View of substrate in ST-014.

Baffinland Iron Mines
Mary River Project

North/South Consultants Inc.
Aquatic Environment Specialists

Location

Crossing ID: ST-014 (formerly IP-10)
Date/Time Surveyed: 29-Aug-07 / 15:30
UTM: 17W 593295 / 7799451

Site Description/Physical Characteristics

Floodplain Width (m): N/A

Channel Pattern: N/A

Channel Confinement: N/A

Channel Gradient: N/A

Hydrology

Bankfull Width (m): N/M

Wetted Width x Length (m): ~ 80 x 60

Depth Profile (25%, 50%, 75%; m): N/M

Max Depth (m): ~ 0.40

Flow Regime: per

Bank Characteristics

Bank Height (L/R; m): N/M

Bank Shape (L/R): N/M

Bank Stability: N/M

Stream/Riparian Habitat

Channel Morphology: Pond

Substrate Composition: 98% Fi, 1% Co, 1% Bo

Stream Cover: 1% Bo

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): N
Description/Location: N/A

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): Y
Effort: 120 s
Settings: 400V 30Hz

Fish Observed (Y/N): N
Species/Totals: N/A
Length Range: N/A

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Ninespine stickleback (NNST)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Habitat Assessment Summary & Potential Habitat Compensation Notes

This pond does not provide overwintering habitat, nor is it connected to any waterbody that does. The substrate is comprised of soft, organic fines; not preferred substrate for local freshwater fish species.

Fish Habitat Quality

No Fish Habitat

Steensby Port Site Habitat Assessment

Figure 1: View across ST-015.

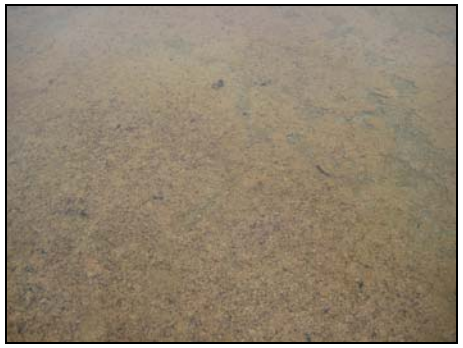

Figure 2: View of substrate in ST-015.

Baffinland Iron Mines
Mary River Project

North/South Consultants Inc.
Aquatic Environment Specialists

Location

Crossing ID: ST-015 (formerly IP-11)
Date/Time Surveyed: 29-Aug-07 / 15:46
UTM: 17W 593315 / 7799411

Site Description/Physical Characteristics

Floodplain Width (m): N/A

Channel Pattern: N/A

Channel Confinement: N/A

Channel Gradient: N/A

Hydrology

Bankfull Width (m): N/M

Wetted Width x Length (m): ~ 30 x 30

Depth Profile (25%, 50%, 75%; m): N/M

Max Depth (m): ~ 0.15

Flow Regime: per

Bank Characteristics

Bank Height (L/R; m): N/M

Bank Shape (L/R): N/M

Bank Stability: N/M

Stream/Riparian Habitat

Channel Morphology: Pond

Substrate Composition: 100% Fi

Stream Cover: None

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): N
Description/Location: N/A

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): Y
Effort: 60 s
Settings: 400V 30Hz

Fish Observed (Y/N): N
Species/Totals: N/A
Length Range: N/A

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Ninespine stickleback (NNST)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Habitat Assessment Summary & Potential Habitat Compensation Notes

This pond does not provide overwintering habitat, nor is it connected to any waterbody that does. The substrate is comprised of soft, organic fines; not preferred substrate for local freshwater fish species.

Fish Habitat Quality

No Fish Habitat

Steensby Port Site Habitat Assessment

Figure 1: View across ST-015a.

Figure 2: View along shoreline of ST-015a.

Figure 3: View of substrate in ST-015a.

Baffinland Iron Mines
Mary River Project

North/South Consultants Inc.
Aquatic Environment Specialists

Location

Crossing ID: ST-015a (formerly IP-12)
Date/Time Surveyed: 29-Aug-07 / 15:38
UTM: 17W 593222 / 7799203

Site Description/Physical Characteristics

Floodplain Width (m): N/A

Channel Pattern: N/A

Channel Confinement: N/A

Channel Gradient: N/A

Hydrology

Bankfull Width (m): N/M

Wetted Width x Length (m): ~ 200 x 200

Depth Profile (25%, 50%, 75%; m): N/M

Max Depth (m): > 1.00

Flow Regime: tidal

Bank Characteristics

Bank Height (L/R; m): N/M

Bank Shape (L/R): N/M

Bank Stability: N/M

Stream/Riparian Habitat

Channel Morphology: Tidal pool

Substrate Composition: 80% Fi, 10% Co, 9% Gr, 1% Bo

Stream Cover: 1% Bo, deep Po

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): N
Description/Location: N/A

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): Y
Effort: 600 s
Settings: 100V 30Hz

Fish Observed (Y/N): N
Species/Totals: N/A
Length Range: N/A

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** M
Overwintering: M **Migration:** N

Ninespine stickleback (NNST)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Habitat Assessment Summary & Potential Habitat Compensation Notes

This is a marine tidal pool with periodic connections to Steensby Inlet. This pool can provide habitat for several species of nearshore marine fish, including adult anadromous ARCH. Although no fish were captured during electrofishing surveys, several large fish were observed from the air. This pool should be revisited and extensively characterized.

Fish Habitat Quality

Important

Steensby Port Site Habitat Assessment

Figure 1: Aerial view across ST-015b.

Figure 2: Another aerial view of ST-015b.

Location

Crossing ID: ST-015b (formerly IP-13)
Date/Time Surveyed: 29-Aug-07 / 15:56
UTM: 17W 593085 / 7798516

Site Description/Physical Characteristics

Floodplain Width (m): N/A

Channel Pattern: N/A

Channel Confinement: N/A

Channel Gradient: N/A

Hydrology

Bankfull Width (m): N/M

Wetted Width x Length (m): N/M

Depth Profile (25%, 50%, 75%; m): N/M

Max Depth (m): ~ 0.40

Flow Regime: per

Bank Characteristics

Bank Height (L/R; m): N/M

Bank Shape (L/R): N/M

Bank Stability: N/M

Stream/Riparian Habitat

Channel Morphology: Pond

Substrate Composition: 95% Fi, 4% Co, 1% Bo

Stream Cover: 1% Bo

Barriers Present (Y/N): N
Description/Location: N/A

Lakes Present (Y/N): N
Description/Location: N/A

Biotic Characteristics

Fisheries

Electrofishing Conducted (Y/N): N
Effort: N/A
Settings: N/A

Fish Observed (Y/N): N
Species/Totals: N/A
Length Range: N/A

Potential Fish Utilization

Arctic char (ARCH)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Ninespine stickleback (NNST)
Spawning: N **Rearing:** N
Overwintering: N **Migration:** N

Habitat Assessment Summary & Potential Habitat Compensation Notes

Assessment of this pond was limited to aerial observations.

This pond does not provide overwintering habitat, nor is it connected to any waterbody that does. The substrate is comprised of soft, organic fines; not preferred substrate for local freshwater fish species.

Fish Habitat Quality

No Fish Habitat

Baffinland Iron Mines
Mary River Project

North/South Consultants Inc.
Aquatic Environment Specialists

APPENDIX 7-1.

DETAILED AQUATIC HABITAT ASSESSMENTS FOR WATERBODIES IN THE MILNE PORT AREA.

Exploration Property Aquatic Habitat Assessment

Location

Watercourse Name:	**UTM:**
Site:	**Dates Surveyed:**

Site Description/Physical Characteristics

Confinement:

Channel Gradient:

Hydrology

	Spr	Sum
Bankfull Width (m):		
Wetted Width (m):		
Riffle-Crest Depth (m):		
Pool Depth (m):		
D (m):		
D_{95} (m):		
Point Velocities (m/s)		
Riffle:		
Pool:		
Behind a rock:		

Stream/Riparian Habitat

Channel Morphology:

Substrate Composition:

Stream Cover:

Aquatic Vegetation:

Riparian Vegetation:

Barriers Present (Y/N):
Location:

Lakes Present (Y/N):
Location:

L/R Bank Characteristics

	Spr	Sum
Bank Height (L/R; m):		
Bank Stability:		
Erosion Potential:		

Water Quality

	Spr	Sum
Specific Conductance (µS/cm):		
TDS (g/l):		
DO (mg/l)		
%DO:		
Water Temp (˚C):		

Fish Habitat

	Spr	Sum
Spawning:	ARCH - NNST -	ARCH - NNST -
Feeding:	ARCH - NNST -	ARCH - NNST -
Migration:	ARCH - NNST -	ARCH - NNST -

Baffinland Iron Mines
Mary River Project

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Aquatic Environment Specialists

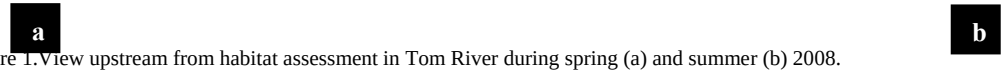

Figure 1.View upstream from habitat assessment in Tom River during spring (a) and summer (b) 2008.

Figure 2.View downstream from habitat assessment in Tom River during spring (a) and summer (b) 2008.

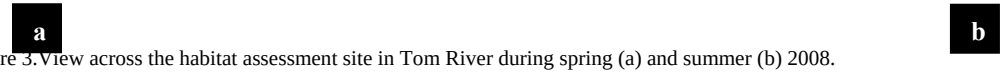

Figure 3.View across the habitat assessment site in Tom River during spring (a) and summer (b) 2008.

501,200
503,200
505,200
507,200
509,200
7,975,700
7,973,700

MILNE INLET

M1-1
M2-1
M3-1
M3-2
M3-3
M5-1
M6-1
M11-1
M13-1
M18-1
ML-15
ML-16
ML-17
ML-18
ML-19
ML-20
Phillips Creek

SCALE 250 125 0 250 500 750 1,000 1,250 Meters

LEGEND:

Status of Arctic Char
- Present
- Potential
- Not Present
- Unknown

- MILNE INLET TOTE ROAD
- WATER
- INFRASTRUCTURE (PROPOSED FOR OPERATIONS PERIOD)
- FISH BARRIER (CONFIRMED)

-	DDMMM'10	ISSUED FOR ---	-	-	-	-
REV	01/09/2010	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D

NOTES:

1. BASE MAP 1:50,000: © HER MAJESTY THE QUEEN IN RIGHTS OF CANADA DEPARTMENT OF NATURAL RESOURCES (2009.) ALL RIGHTS RESERVED.
2. TOPOGRAPHY PROVIDED BY EAGLE MAPPING (2005).
3. PROPOSED RAILWAY ALIGNMENT PROVIDED BY CANRAIL CONSULTANTS INC.
4. PROPOSED RAILWAY CONSTRUCTION ACCESS ROAD ALIGNMENT PROVIDED BY CANRAIL CONSULTANTS INC. DRAWING NO.: RAILWAY ALIGNMENT AND CONST ACCESS RD - MARY RIVER STEENSBY 2010 -12AUG2010.dwg
5. MINE SITE INFRASTRUCTURE PROVIDED BY AMEC DRAWING NO.: MINE SITE - CONSTRUCTION PHASE - 01 - MAR 09 2009.dwg
6. CONTOUR INTERVAL IS 50 M AND IS IN METRES.

BAFFINLAND IRON MINES CORPORATION

MARY RIVER PROJECT

PRESENCE AND ABSENCE OF ARCTIC CHAR IN MILNE INLET TRIBUTARIES

North/South Consultants Inc.
Aquatic Environment Specialists

P/A NO.	REF NO.
-	-
DATE: 01/09/2010	REV -

Path: G:\MARYRIV_GDB\EIS_GDB\EIS_Figures_2010EIS_Figures\MXD\MR_Stream Habitat\MR_Stream_Habitat_Milne2.mxd

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name:	ML-03	**UTM:**	17 W 503095 7975200
Site:	ML-03	**Date/Time Surveyed:**	August 11, 2010 @ 11:12

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Pool Depth (m):	N/A
Max Depth (m):	0.2
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 100% fines

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	N/M
TDS (g/L):	N/M
DO (mg/L):	N/M
Turbidity (NTU):	N/M
pH:	N/M
Water Temp (˚C):	N/M

Fish Habitat Quality

	Summer
Spawning:	ARCH – N NNST – N
Rearing:	ARCH – N NNST – N
Wintering:	ARCH – N NNST – N
Migration Corridor:	ARCH – N NNST – N

Baffinland Iron Mines
Mary River Project

North/South Consultants Inc.
Aquatic Environment Specialists

Fish Habitat Quality – NOT FISH-BEARING

Milne Inlet Site Aquatic Habitat Assessment

Photographs

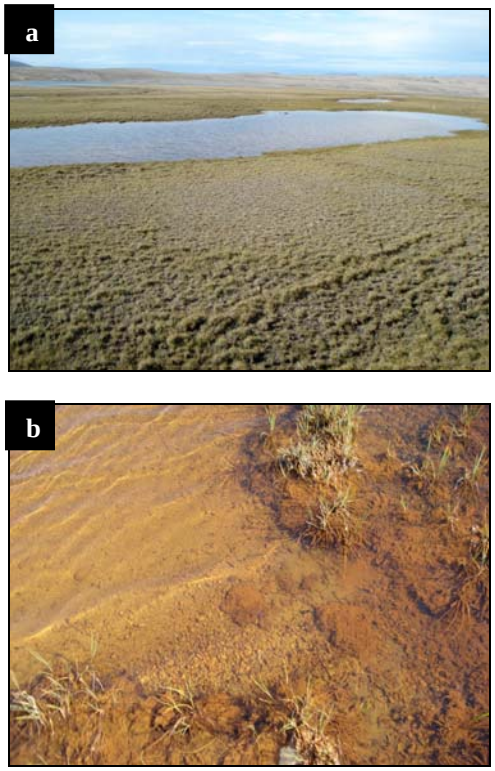

Figure 1. Aerial view of ML-03 (a) and substrate (b).

Fisheries Data

Gear Used:	Observation
Start UTM:	N/A
End UTM:	N/A
Electrofisher Settings (v/Hz/duty cycle):	N/A
Effort (dec.min):	N/A

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	N/A	N/M	N/M
NNST	0	N/A	N/M	N/M

Comments

Made observations of ML-04; no habitat – no fish (same as ML-03).

Electrofishing not necessary due to shallow water depth and zero cover for fish (i.e., they would easily be spotted if present.)

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: ML-15
Site: ML-15

UTM: 17 W 505741 7974008
Date/Time Surveyed: August 10, 2010 @ 15:05

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Pool Depth (m):	N/A
Max Depth (m):	N/M
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 10% large cobble, 50% small cobble, 40% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	N/M
TDS (g/L):	N/M
DO (mg/L):	N/M
Turbidity (NTU):	N/M
pH:	N/M
Water Temp (˚C):	N/M

Fish Habitat Quality

	Summer
Spawning:	ARCH – N NNST – N
Rearing:	ARCH - N NNST – N
Wintering:	ARCH - N NNST – N
Migration Corridor:	ARCH - N NNST – N

Baffinland Iron Mines
Mary River Project

North/South Consultants Inc.
Aquatic Environment Specialists

Fish Habitat Quality – NOT FISH-BEARING

Milne Inlet Site Aquatic Habitat Assessment

Photographs

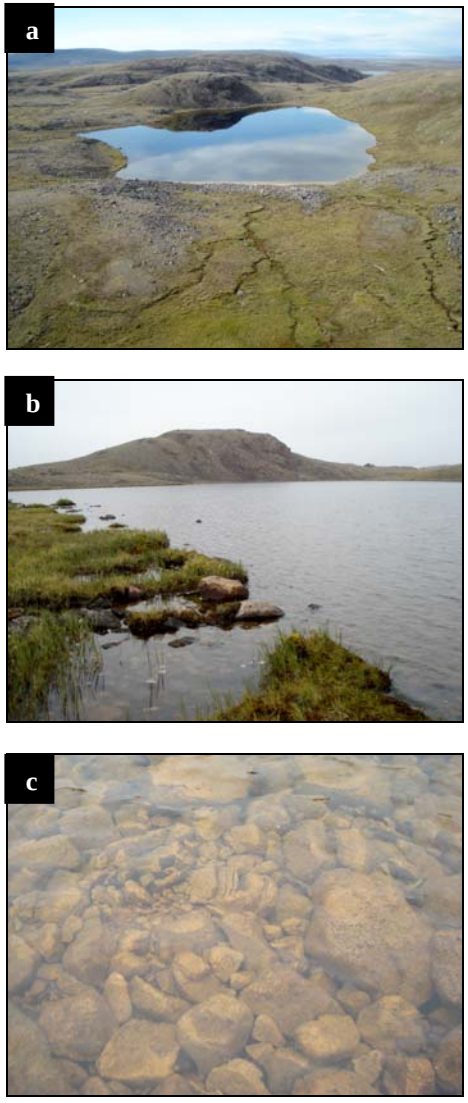

Figure 1. Aerial view of ML-15 (a), view from the shoreline (b), and substrate (c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 505741 7974008
End UTM:	17 W 505779 7973996
Electrofisher Settings (v/Hz/duty cycle):	600/50/12
Effort (dec.min):	3.5

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0.0	N/M	N/M
NNST	0	0.0	N/M	N/M

Comments

Excellent habitat but no fish caught or observed. No access to other waterbodies. No *in situ* water quality recorded.

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: ML-16
Site: ML-16

UTM: 17 W 506007 7974795
Date/Time Surveyed: August 10, 2010 @ 15:20

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Pool Depth (m):	N/A
Max Depth (m):	N/M
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 10% large cobble, 10% small cobble, 5% gravel, 75% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	N/M
TDS (g/L):	N/M
DO (mg/L):	N/M
Turbidity (NTU):	N/M
pH:	N/M
Water Temp (˚C):	N/M

Fish Habitat Quality

	Summer
Spawning:	ARCH – N NNST – N
Rearing:	ARCH - N NNST – N
Wintering:	ARCH - N NNST – N
Migration Corridor:	ARCH - N NNST – N

Baffinland Iron Mines
Mary River Project

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Fish Habitat Quality – NOT FISH-BEARING

Milne Inlet Site Aquatic Habitat Assessment

Photographs

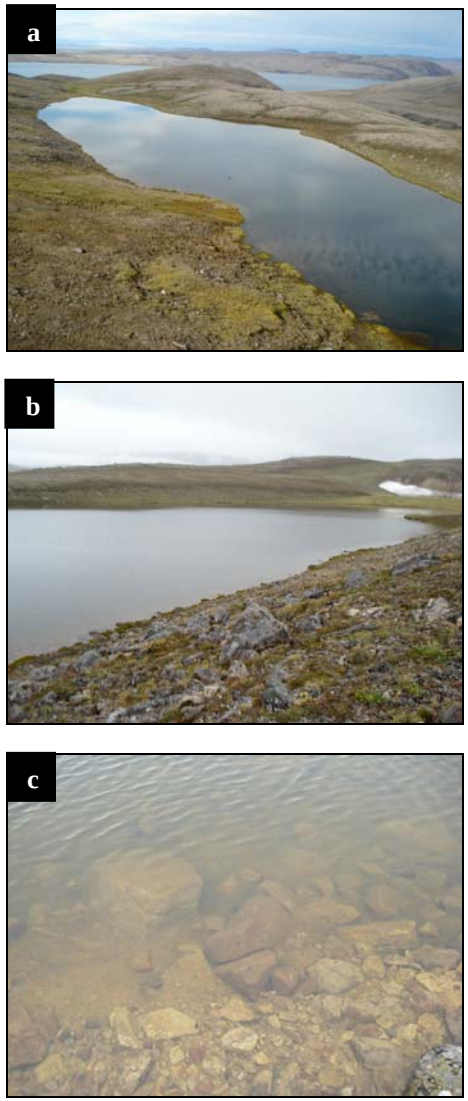

Figure 1. Aerial view of ML-16 (a), view from the shoreline (b), and substrate (c).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 506007 7974795
End UTM:	17 W 506071 7974759
Electrofisher Settings (v/Hz/duty cycle):	600/50/12
Effort (dec.min):	3.5

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0.0	N/M	N/M
NNST	0	0.0	N/M	N/M

Comments

High quality habitat but no fish caught or observed. No connections with other waterbodies. No *in situ* water quality recorded.

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: ML-18
Site: ML-18

UTM: 17 W 507504 7972911
Date/Time Surveyed: August 10, 2010 @ 14:51

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Pool Depth (m):	N/A
Max Depth (m):	N/M
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 5% small cobble, 95% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	33.5
TDS (g/L):	0.23
DO (mg/L):	8.23
Turbidity (NTU):	7.3
pH:	6.77
Water Temp (˚C):	10.9

Fish Habitat Quality

	Summer
Spawning:	ARCH – N NNST – N
Rearing:	ARCH - N NNST – N
Wintering:	ARCH - N NNST – N
Migration Corridor:	ARCH - N NNST – N

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Fish Habitat Quality – NOT FISH-BEARING

Milne Inlet Site Aquatic Habitat Assessment

Photographs

Figure 1. Aerial view of ML-18 and Lake ML-19 in the background (a).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 507504 7972911
End UTM:	17 W 507515 7972952
Electrofisher Settings (v/Hz/duty cycle):	600/50/12
Effort (dec.min):	2.5

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0.0	N/M	N/M
NNST	0	0.0	N/M	N/M

Comments

No fish caught or observed. Connected to ML-19, but nothing else.

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name:	ML-19	**UTM:**	17 W 507526 7972904
Site:	ML-19	**Date/Time Surveyed:**	August 10, 2010 @ 14:58

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Riffle-Crest Depth (m):	N/M
Pool Depth (m):	N/M
Max Depth (m):	N/M
D_{95} (m):	N/M
Point Velocities (m/s)	
Riffle:	N/M
Pool:	N/M
Behind a rock:	N/M

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 5% small cobble, 95% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

Specific Conductance (mS/m):	N/M
TDS (g/L):	N/M
DO (mg/L):	N/M
Turbidity (NTU):	N/M
pH:	N/M
Water Temp (˚C):	N/M

Fish Habitat Quality

	Summer
Spawning:	ARCH – N NNST – N
Rearing:	ARCH - N NNST – N
Wintering:	ARCH - N NNST – N
Migration Corridor:	ARCH - N NNST - N

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Fish Habitat Quality – NOT FISH-BEARING

Milne Inlet Site Aquatic Habitat Assessment

Photographs

Figure 1. Aerial view of ML-19 in the background and ML-18 in the forefront (a).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 507526 7972904
End UTM:	17 W 507540 7972864
Electrofisher Settings (v/Hz/duty cycle):	600/50/12
Effort (dec.min):	2.5

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0.0	N/M	N/M
NNST	0	0.0	N/M	N/M

Comments

No water quality data recorded. No fish caught or observed. Connected to ML-18, but nothing else.

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: ML-20
Site: ML-20

UTM: 17 W 509096 7972581
Date/Time Surveyed: August 18, 2010 @ 14:23

Site Description/Physical Characteristics

Confinement: N/A

Channel Gradient: N/A

Hydrology

	Summer
Bankfull Width (m):	N/M
Wetted Width (m):	N/M
Pool Depth (m):	N/A
Max Depth (m):	> 10.0
Point Velocities (m/s)	N/A

Lake/Stream Habitat

Channel Morphology: N/A

Substrate Composition: 10% large cobble, 5% small cobble, 5% gravel, 80% fines.

Stream Cover: N/A

Aquatic Vegetation: N/A

Riparian Vegetation: N/A

Barriers Present (Y/N): N/A
Location: N/A

Lakes Present (Y/N): N/A
Location: N/A

Water Quality

	Summer
Specific Conductance (mS/m):	22.8
TDS (g/L):	0.15
DO (mg/L):	11.59
Turbidity (NTU):	3.4
pH:	6.80
Water Temp (˚C):	11.8

Fish Habitat Quality

	Summer
Spawning:	ARCH - M NNST - L
Rearing:	ARCH - H NNST - L
Wintering:	ARCH – H NNST - L
Migration Corridor:	ARCH – N NNST - N

Milne Inlet Site Aquatic Habitat Assessment

Photographs

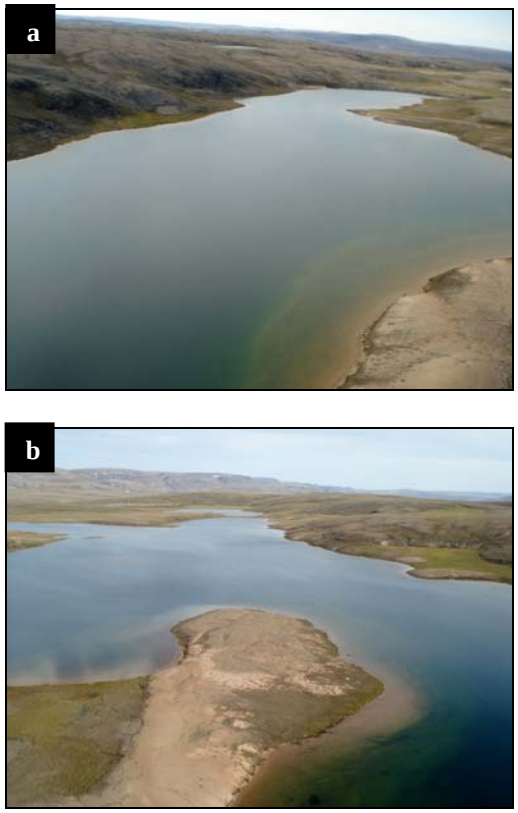

Figure 1. Aerial view of ML-20 (a, b).

Fisheries Data

Gear Used:	Electrofishing
Start UTM:	17 W 509096 7972581
End UTM:	17 W 509176 7972580
Electrofisher Settings (v/Hz/duty cycle):	600/50/12
Effort (dec.min):	5.0

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	43	8.6	50-90	N/M
NNST	0	0.0	N/A	N/A

Comments

A few hundred meters of M13-9 accessible from lake, but significant barriers prevent access further downstream. Probably an isolated population of char in this lake. Surface water sample collected, ID= ML-20-S.

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: M02-1
UTM Coordinates: 17 W 501469 7975542
Date/Time Surveyed: August 10, 2010 @ 16:30

General Physical Characteristics

Floodplain Width (m):	N/M	**Channel Pattern:**	N/M	**Stage:**	N/M
Channel Confinement:	N/M	**Channel Gradient (range):**	N/M	**Flow Regime:**	N/M
Bank Height (range in m):	N/M	**Bank Shape:**	N/M		

In Situ Water Quality Data

Temperature (^{o}C):	1143	**Specific Conductance (mS/m):**	35.5	**Turbidity (NTU):**	4.7
Dissolved Oxygen (mg/L):	11.44	**TDS (g/L):**	0.23	**pH:**	7.45

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	**Channel Width (m)**		**Water Depth (m)**				**Water Velocity (m/s)**				
	Wetted	**High Water**	**25%**	**50%**	**75%**	**Max**	**25%**	**50%**	**75%**	**Max**	**Min**
0	3.5	60.0	0.06	0.21	0.08	0.30	0.08	0.11	0.02	0.15	N/M

Distance and Direction from Assessment UTM (m)	**Stream Morphology Composition (%)**						**Substrate Composition (%)**				
	Riffle	**Pool (<0.2 m)**	**Pool (>0.2 m)**	**Run**	**Cascade**	**Other**	**Fines**	**Gravel**	**Small Cobble**	**Large Cobble**	**Boulders**
0	25	70	5				10	90			

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Fish Habitat Quality – MARGINAL

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: M02-1
UTM Coordinates: 17 W 501469 7975542
Date/Time Surveyed: August 10, 2010 @ 16:30

Fisheries Data

Gear Used: Electrofishing
Effort (min): 4.5
Electrofisher Settings: N/M
Start UTM: N/M
End UTM: N/M

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0.0	N/A	N/A
NNST	0	0.0	N/A	N/A

Fish Habitat Potential

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

Comments & Summary

No fish observed but potential for sea run visitors.

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Fish Habitat Quality – MARGINAL

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: M02-1
UTM Coordinates: 17 W 501469 7975542
Date/Time Surveyed: August 10, 2010 @ 16:30

Photographs

A

B

C

Figure 1. (A) View upstream of habitat assessment; (B) view downstream of habitat assessment; and (C) view across habitat assessment.

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: M03-1
UTM Coordinates: 17 W 502694 7974845
Date/Time Surveyed: August 11, 2010 @ 10:08

General Physical Characteristics

Floodplain Width (m):	>100	**Channel Pattern:**	Sinuous	**Stage:**	Low
Channel Confinement:	PC	**Channel Gradient (range):**	1°	**Flow Regime:**	Permanent
Bank Height (range in m):	0-10	**Bank Shape:**	Sloped		

In Situ Water Quality Data

Temperature (°C):	10.5	**Specific Conductance (mS/m):**	20.8	**Turbidity (NTU):**	3.0
Dissolved Oxygen (mg/L):	11.93	**TDS (g/L):**	0.14	**pH:**	6.57

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)				
	Wetted	**High Water**	**25%**	**50%**	**75%**	**Max**	**25%**	**50%**	**75%**	**Max**	**Min**
0	54.86	>100	0.53	0.68	0.34	0.80	0.78	0.87	0.70	1.00	N/M

Distance and Direction from Assessment UTM (m)	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	**Pool (<0.2 m)**	**Pool (>0.2 m)**	**Run**	**Cascade**	**Other**	**Fines**	**Gravel**	**Small Cobble**	**Large Cobble**	**Boulders**
0	10			90			10	45	45		

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: M03-1
UTM Coordinates: 17 W 502694 7974845
Date/Time Surveyed: August 11, 2010 @ 10:08

Fisheries Data

Gear Used: Electrofishing
Effort (min): 5.0
Electrofisher Settings(v/Hz/duty cycle): 600/50/12

Start UTM: 17 W 502816 7975349
End UTM: ~50 m upstream of start UTM

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0	N/M	N/M
NNST	0	0	N/M	N/M

Fish Habitat Potential

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

Comments & Summary

No fish, but potential is there because searun char were observed in the lower reaches of M13-1 and M18-1.
Water quality sample collected, ID= M3-1 at 10:15 @ 0.60m depth.

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: M03-1
UTM Coordinates: 17 W 502694 7974845
Date/Time Surveyed: August 11, 2010 @ 10:08

Photographs


A


B


C


D


E

Figure 1. (A) Aerial view of stream M03-1; (B) view upstream of habitat assessment; (C) view downstream of habitat assessment; (D) view across habitat assessment; and (E) view of substrate along bank of habitat assessment.

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: M03-3
UTM Coordinates: 17 W 502694 7974845
Date/Time Surveyed: August 11, 2010 @ 10:44

General Physical Characteristics

Floodplain Width (m):	>100	**Channel Pattern:**	Meandering/braided	**Stage:**	Low
Channel Confinement:	UC	**Channel Gradient (range):**	1°	**Flow Regime:**	Permanent
Bank Height (range in m):	0-1.2	**Bank Shape:**	Sloped		

In Situ Water Quality Data

Temperature (°C):	11.0	**Specific Conductance (mS/m):**	76.8	**Turbidity (NTU):**	0.3
Dissolved Oxygen (mg/L):	11.46	**TDS (g/L):**	0.49	**pH:**	6.37

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)				
	Wetted	High Water	25%	50%	75%	Max	25%	50%	75%	Max	Min
0	0.80	45.72	N/M	N/M	N/M	0.02	N/M	N/M	N/M	0.20	N/M

Distance and Direction from Assessment UTM (m)	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
0	80	20					10	90			

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Fish Habitat Quality – MARGINAL

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: M03-3
UTM Coordinates: 17 W 502694 7974845
Date/Time Surveyed: August 11, 2010 @ 10:44

Fisheries Data

Gear Used: Electrofishing
Effort (min): 4.0
Electrofisher Settings(v/Hz/duty cycle): 600/50/12

Start UTM: 17 W 502694 7974845
End UTM: ~50 m upstream of start UTM

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0	N/A	N/A
NNST	0	0	N/A	N/A

Fish Habitat Potential

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

Comments & Summary

No fish, but there are at least intermittent connections with M03-1, which has the potential to support sea run char during the open water season.

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Fish Habitat Quality – MARGINAL

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: M03-3
UTM Coordinates: 17 W 502694 7974845
Date/Time Surveyed: August 11, 2010 @ 10:44

Photographs


A


B


C


D


E

Figure 1. (A) Aerial view of stream M03-3; (B) view upstream of habitat assessment; (C) view downstream of habitat assessment; (D) view across habitat assessment; and (E) view of substrate along the bank of habitat assessment.

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: M11-1
UTM Coordinates: 17 W 504137 7976415
Date/Time Surveyed: August 10, 2010 @ 16:15

General Physical Characteristics

Floodplain Width (m):	N/M	**Channel Pattern:**	Sinuous/braided	**Stage:**	Low
Channel Confinement:	PC	**Channel Gradient (range):**	1-3^{o}	**Flow Regime:**	Permanent
Bank Height (range in m):	N/M	**Bank Shape:**	N/A		

In Situ Water Quality Data

Temperature (^{o}C):	11.1	**Specific Conductance (mS/m):**	42.5	**Turbidity (NTU):**	2.1
Dissolved Oxygen (mg/L):	11.50	**TDS (g/L):**	0.28	**pH:**	7.45

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	**Channel Width (m)**		**Water Depth (m)**				**Water Velocity (m/s)**				
	Wetted	**High Water**	**25%**	**50%**	**75%**	**Max**	**25%**	**50%**	**75%**	**Max**	**Min**
0	0.80	15.00	N/M	0.12	N/M	0.15	N/M	0.44	N/M	0.50	N/M

Distance and Direction from Assessment UTM (m)	**Stream Morphology Composition (%)**						**Substrate Composition (%)**				
	Riffle	**Pool (<0.2 m)**	**Pool (>0.2 m)**	**Run**	**Cascade**	**Other**	**Fines**	**Gravel**	**Small Cobble**	**Large Cobble**	**Boulders**
0	90	10						75	25		

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Fish Habitat Quality – MARGINAL

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: M11-1
UTM Coordinates: 17 W 504137 7976415
Date/Time Surveyed: August 10, 2010 @ 16:15

Fisheries Data

Gear Used: Electrofishing
Effort (min): 5.5
Electrofisher Settings(v/Hz/duty cycle): 600/50/12

Start UTM: 50m u/s of site
End UTM: 50m d/s of site

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	0	0	N/A	N/A
NNST	0	0	N/A	N/A

Fish Habitat Potential

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

Comments & Summary

No fish, but searun potential based on results from M18-1 and M13-1.

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Fish Habitat Quality – MARGINAL

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: M11-1
UTM Coordinates: 17 W 504137 7976415
Date/Time Surveyed: August 10, 2010 @ 16:15

Photographs

A

B

C

D

Figure 1. (A) Aerial view of stream M11-1; (B) view upstream of habitat assessment; (C) view downstream of habitat assessment; and (D) view across habitat assessment.

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: M13-1
UTM Coordinates: 17 W 504653 7976492
Date/Time Surveyed: August 10, 2010 @ 15:33

General Physical Characteristics

Floodplain Width (m):	N/M	**Channel Pattern:**	Sinuous	**Stage:**	Low
Channel Confinement:	PC	**Channel Gradient (range):**	1-5^{o}	**Flow Regime:**	Permanent
Bank Height (range in m):	N/M	**Bank Shape:**	N/A		

In Situ Water Quality Data

Temperature (^{o}C):	11.3	**Specific Conductance (mS/m):**	27.9	**Turbidity (NTU):**	4.5
Dissolved Oxygen (mg/L):	11.18	**TDS (g/L):**	0.18	**pH:**	7.17

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	**Channel Width (m)**		**Water Depth (m)**				**Water Velocity (m/s)**				
	Wetted	**High Water**	**25%**	**50%**	**75%**	**Max**	**25%**	**50%**	**75%**	**Max**	**Min**
0	6.5	N/M	0.17	0.20	0.20	0.25	0.27	0.67	0.03	1.00	N/M

Distance and Direction from Assessment UTM (m)	**Stream Morphology Composition (%)**						**Substrate Composition (%)**				
	Riffle	**Pool (<0.2 m)**	**Pool (>0.2 m)**	**Run**	**Cascade**	**Other**	**Fines**	**Gravel**	**Small Cobble**	**Large Cobble**	**Boulders**
0	80	15	5				10		90		

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: M13-1
UTM Coordinates: 17 W 504653 7976492
Date/Time Surveyed: August 10, 2010 @ 15:33

Fisheries Data

Gear Used: Electrofishing
Effort (min): 7.5
Electrofisher Settings(v/Hz/duty cycle): 600/50/12

Start UTM: 17 W 504653 7976492
End UTM: 17 W 504679 7976446

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	4	0.5	140-170	N/A
NNST	0	0	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

Water quality triplicate sample collected: M13-1-A / B / C.

Arctic char caught - very silver in color; suspected from Milne - lack of access to upstream lakes would also suggest this.

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: M13-1
UTM Coordinates: 17 W 504653 7976492
Date/Time Surveyed: August 10, 2010 @ 15:33

Photographs

A

B

C

D

Figure 1. (A) View upstream of habitat assessment; (B) view downstream of habitat assessment; (C) view across habitat assessment; and (D) photo of arctic char caught during habitat assessment (~150 mm).

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: M18-1
UTM Coordinates: 17 W 505207 7976744
Date/Time Surveyed: August 10, 2010 @ 16:05

General Physical Characteristics

Floodplain Width (m):	N/M	**Channel Pattern:**	Sinuous	**Stage:**	Low
Channel Confinement:	PC	**Channel Gradient (range):**	1-5^{o}	**Flow Regime:**	Permanent
Bank Height (range in m):	N/M	**Bank Shape:**	N/A		

In Situ Water Quality Data

Temperature (^{o}C):	11.3	**Specific Conductance (mS/m):**	66.2	**Turbidity (NTU):**	29.1
Dissolved Oxygen (mg/L):	10.82	**TDS (g/L):**	0.42	**pH:**	7.46

Hydrology & Habitat Characteristics

Distance and Direction from Assessment UTM (m)	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)				
	Wetted	High Water	25%	50%	75%	Max	25%	50%	75%	Max	Min
0	0.50	7.50	N/M	N/M	N/M	0.10	N/M	N/M	N/M	0.50	N/M

Distance and Direction from Assessment UTM (m)	Stream Morphology Composition (%)						Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Other	Fines	Gravel	Small Cobble	Large Cobble	Boulders
0	90	10						20	70	10	

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Fish Habitat Quality – MARGINAL

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: M18-1
UTM Coordinates: 17 W 505207 7976744
Date/Time Surveyed: August 10, 2010 @ 16:05

Fisheries Data

Gear Used: Electrofishing
Effort (min): 6.5
Electrofisher Settings(v/Hz/duty cycle): 600/50/12

Start UTM: 17 W 505207 7976744
End UTM: 17 W 505248 7976719

Species	Total Caught/Observed	CPUE	Length Range (mm)	Weight Range (g)
ARCH	1	0.2	~100	N/M
NNST	0	0.0	N/A	N/A

Fish Habitat Potential

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

Comments & Summary

Arctic char caught appears to be sea-run. No connections with headwater, overwintering lakes.

Baffinland Iron Mines
Mary River Project

North/South Consultants Inc.
Aquatic Environment Specialists

Fish Habitat Quality – MARGINAL

Milne Inlet Site Aquatic Habitat Assessment

Location

Watercourse Name: M18-1
UTM Coordinates: 17 W 505207 7976744
Date/Time Surveyed: August 10, 2010 @ 16:05

Photographs

A

B

C

D

Figure 1. (A) Aerial view of stream M18-1; (B) view upstream of habitat assessment; (C) view downstream of habitat assessment; and (D) view across habitat assessment.