APPENDIX I

2021 Aquatic Surveys, Summary of Fish and Fish Habitat Surveys

Touquoy Gold Modifications: 2021 Aquatic Surveys, Summary of Fish and Fish Habitat Surveys to Support the Touquoy Gold Modification

Final Report

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1.0 INTRODUCTION

Atlantic Mining NS Inc. (AMNS) currently operates the Touquoy Gold Mine, located in Moose River Gold Mines, approximately 100 km northeast of Halifax, Nova Scotia (NS), in a historical gold mining district.

AMNS is proposing modifications to the Approved Project to support the ongoing operation. These modifications include: use of the exhausted Open Pit for tailings disposal once the existing approved Tailings Management Facility (TMF) reaches ultimate capacity; expansion of the Waste Rock Storage Area (WRSA); expansion of the Clay Borrow Area; and realignment of the Plant Access Road used to access the Plant Site. These proposed modifications will increase the current approved development area, or, in the case of the in-pit tailings disposal, present a new activity not previously assessed in the original Environmental Assessment (EA) process for the Touquoy Gold Project conducted in 2007 (CRA 2007a, 2007b).

The modifications to the Approved Project are currently undergoing a provincial environmental assessment under the *Environment Act*. This report has been prepared in response to requests for additional information on fish and fish habitat from Fisheries and Oceans Canada (DFO) regarding existing conditions, to satisfy requirements of a Registration of a Class I Undertaking under the *Environmental Assessment Regulations* and support related permitting. This report summarizes fish and fish habitat work conducted in 2021 for the Touquoy Mine on behalf of AMNS. Surveys were conducted for Watercourses #3, #4, and #13, Square Lake, and Moose River.

2.0 WATERCOURSE FISH AND FISH HABITAT ASSESSMENTS FOR WATERCOURSE #3, #13 AND #4

2.1 OBJECTIVES

The objectives of the watercourse assessments were to:

- Delineate and describe the fish habitat present within each watercourse
- Determine if the watercourses were fish habitat
- Determine which fish species were present
- Make observations of potential effects of the existing mine (i.e., indirect)

2.2 METHODS

Watercourse assessments were completed on Watercourse #3 and Watercourse #13 on May 27, 2021 and Watercourse #4 on July 8, 2021. The fish habitat survey on Watercourses #3 and #13 began at the confluence with Watercourse #4 and moved upstream to where a defined channel was no longer visible. The fish habitat survey on Watercourse #4 began at the crossing point with the old forestry access road and proceeded downstream to the still-water wetland approximately 500 m upstream of the confluence

with Otter Dam Flowage (i.e., the fish habitat survey was conducted on Reach 4). These locations are shown on Figure 2.1. Fish habitat information was collected on a habitat type scale and included: habitat type (riffle, run, pool), substrate composition, bank stability, riparian vegetation, overhead and instream cover, wetted and channel width and depth. Data were collected using a proprietary Electronic Aquatic Utility (EAU) which included georeferenced data collection and photos of habitat.

The in-situ water quality parameters measured included: water temperature, dissolved oxygen, conductivity, and pH (all measured using a YSI meter). Water quality meters were calibrated monthly as recommended by the manufacturer. In situ water quality results were compared to the Canadian Water Quality Guidelines for Protection of Aquatic Life Freshwater (CWQG PAL) (CCME 2021). An analytical water sample was also collected in Watercourse #3 to characterize existing water quality and analyzed for general chemistry, total and dissolved metals including mercury and total suspended solids. No samples were collected in Watercourse #13 or Watercourse #4 because water quality has been previously characterized and reported (Stantec 2019a).

The fish community in Watercourse #3 was assessed using minnow traps baited with small quantities of cat food and set overnight. A fish community survey with minnow traps was not conducted in Watercourse #13 as it was too shallow and small. A fish community survey was not conducted in Watercourse #4 as it was previously characterized and is assumed to be similar (Stantec 2019b).

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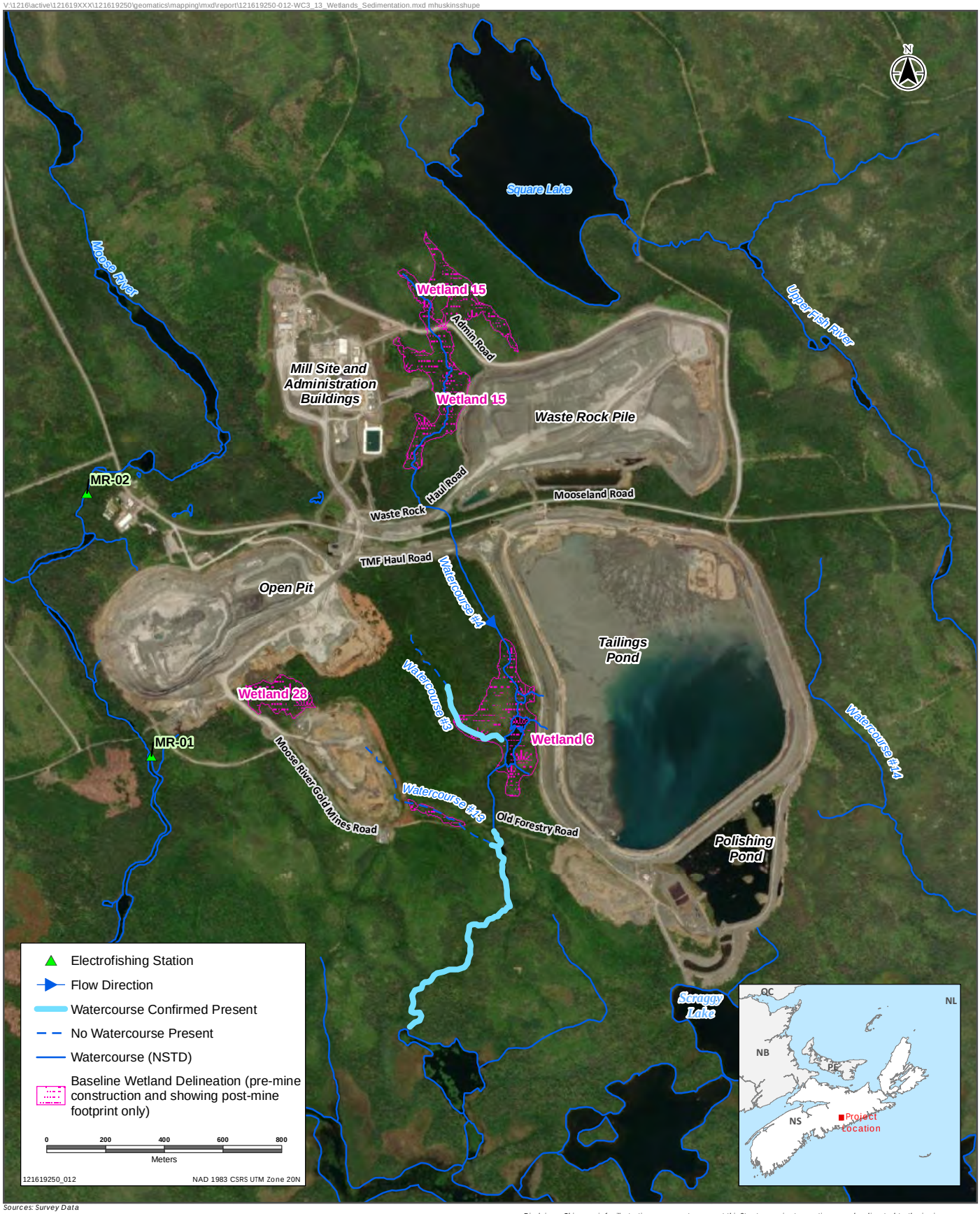

Sources: Survey Data

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Google Earth Image (July 27, 2019). Moose River Gold Mines, NS. CNES/Airbus [Obtained October 9, 2019]

Disclaimer: This map is for illustrative purposes to support this Stantec project; questions can be directed to the issuing agency.

Fish and Fish Habitat Assessment at the Touquoy Mine, NS, 2021

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Figure 2.1

2.3 RESULTS

2.3.1 Watercourse #3

Watercourse #3 is a small first order headwater stream within the Watercourse #4 catchment. The upper reaches are intermittent and flow underground in some sections. The perennial flow portion of the stream extends for approximately 315 m before discharging along the western side of Watercourse #4 within Wetland 6 (Figure 2.1). At the time of the survey on May 27, 2021, the average wetted/channel width was 1.29 m and ranged in width from ~1.5 to 2.0 m. Banks were moderately stable and riparian vegetation was dominated by wetland vegetation (85%). Substrates were predominantly organics and fines (86%) with smaller quantities of coarse substrates (14%). There was no apparent physical evidence of effects of the mine observed during the survey. Overhead cover was provided by trees/shrubs and instream cover by small and large woody debris. Representative photos are provided in Appendix A, Photos 1 to 9, and detailed fish habitat data are provided in Appendix B, Table B.1.

Water temperature at the time of the survey was 16.0ºC and conductivity was 192.8 µS/cm (Appendix B, Table B.2). Dissolved oxygen concentrations were 9.57 mg/L (92%) and were above the CWQG PAL recommended minimum value of 9.5 mg/L for early life stages of fish (CCME 2021). The pH ranged was 7.6 and within the CWQG PAL recommended range (6.5 – 9.0). There were no exceedances of the CWQG PAL for trace metals in surface water for Watercourse #3. The complete in situ and analytical results for the water sample collected in Watercourse #3 are provided in Appendix B, Table B.2 and B.3.

The two minnow traps set overnight in Watercourse #3 resulted in the catch of one stickleback (*Gasterosteidae* sp.) and one northern redbelly dace (*Chrosmus eos*) (Appendix C, Table C.1 and C.3).

2.3.2 Watercourse #13

Watercourse #13 is a small first order headwater stream within the Watercourse #4 catchment. The watercourse does not extend the length of what is shown on available mapping (Figure 2.1). A channel develops from groundwater upwelling approximately 15 m before discharging into the western side of Watercourse #4 (Appendix A, Photos 10 to 13). Banks were generally unstable to moderately stable and riparian vegetation was dominated by wetland plants. The watercourse substrate included organic (50%) and fine (50%) matter and was considered fish habitat as there was connectivity to Watercourse #4. Upstream of the defined channel, there were a series of poorly connected pools of wetland seepage which drains through Wetland 28; these are not considered fish habitat (Appendix A, Photos 14 to 15). There was no apparent physical evidence of effects of the mine observed during the survey. Detailed fish habitat data are provided in Appendix B, Table B.1.

2.3.3 Watercourse #4

Reach 4 of Watercourse #4 consists of both swift-moving and slow-moving sections of stream, ranging in bankfull width from 1.50 to 19.00 m. At the time of the fish habitat survey the average wetted width was 8.82 m and average bankfull width was 9.83 m. Banks were moderately stable and riparian vegetation was dominated by wetland (~48%) and shrubs (~31%). Substrate was dominated by small boulder (~45%) followed by organics (~33%). The majority of overhead cover was provided by trees/shrubs and instream cover by aquatic vegetation. Representative photos are provided in Appendix A, Photos 16-28.

Water temperature at the time of sampling ranged from 18.4 to 20.7ºC and conductivity ranged from 95 to 963 µS/cm (Appendix B, Table B.1). Dissolved oxygen concentrations ranged from 6.27 to 7.64 mg/L and were above the CWQG PAL recommended minimum value of 6.5 mg/L for all fish life stages, but below the minimum value of 9.5 mg/L for early life stages (CCME 2021). The pH ranged from 6.8 to 7.4 and was within the CWQG PAL recommended range (6.5 – 9.0).

Fish were observed throughout the surveyed section of Watercourse #4 and are assumed to be the same species as those observed in more upstream reaches (Stantec 2019b).

3.0 SQUARE LAKE FISH AND FISH HABITAT ASSESSMENT

3.1 OBJECTIVES

The objectives of the Square Lake Assessment were to:

- Describe the existing fish community
- Describe the existing fish habitat in Square Lake
- Make observations of potential effects of the mine (e.g., seepage into Square Lake)
- Inform a long-term monitoring program, if required

3.2 METHODS

A bathymetric survey and a fish and fish habitat survey were conducted in Square Lake on October 13 and 14, 2021.

For the bathymetric survey, a Garmin chart plotter (Garmin Model GPSMAP 531s) was used to collect georeferenced depths along 25 m intervals around the lake. Intervals were closer to define specific habitat features such as shoals and weed beds, as depth permitted. The locations and associated water depths were interpolated by GIS to create the bathymetric map.

A fish habitat survey of the littoral zone was conducted, including a description of riparian vegetation, substrate, and in-water and overhead cover. Data were collected using the proprietary EAU system which included georeferenced data collection and photos of habitat via iPhone.

An in situ profile of the water column was also collected at 0.5 m increments using a YSI 2030, measured parameters included dissolved oxygen, conductivity and temperature. The pH was taken at the water surface using a Hanna pH pen (Model #98127).

3.3 RESULTS

Water depths in Square Lake ranged from 0.5 m to 5.1 m. Water depths were shallowest around the edge of the lake and deepest in the middle of the lake (Figure 3.1). The shoreline was relatively rocky with larger beds of aquatic vegetation at the northern and southern ends of Square Lake. Banks were stable and riparian vegetation was dominated by shrubs and trees. Substrates were predominantly cobble, with smaller quantities of boulder and gravel. Overhead cover provided by trees/shrubs was low and instream cover was provided mainly by aquatic vegetation and coarse substrates. Representative photos are provided in Appendix A, Photos 29 to 42 and detailed fish habitat data is provided in Appendix B, Table B.1.

There was no apparent evidence of effects of the mine (e.g., seepage or siltation) observed during the survey.

Water temperature at the time of the survey was 15.0ºC and conductivity was 23.6 µS/cm (Appendix B, Table B.5). Dissolved oxygen concentrations were 9.10 mg/L (90%) and above the CWQG PAL recommended minimum value of 6.5 for all life stages of fish, but below the 9.5 mg/L for early life stages (CCME 2021). The pH ranged was 7.1 and was within the CWQG PAL recommended range (6.5 – 9.0).

Over the two-day period in October 2021, 188 fish were collected from Square Lake, representing twelve different species from six different families (Table 3.1). The dominant fish species by relative abundance was golden shiner (39%) and brown bullhead (30%). The highest catch of fish was in the trap/fyke net. The catch per unit effort (CPUE) is provided in Table 3.2. Figure 3.2 shows the sample locations in Square Lake.

Table 3.1 Total Number of Fish Captured by Capture Method from Square Lake, Touquoy Mine, NS, 2021

Species	Gill Net	Minnow Trap	Trap/Fyke Net	Total
Banded Killifish (*Fundulus diaphanus*)	0	16	4	20
Brook trout (*Salvelinus fontinalis*)	0	0	1	1
Brown Bullhead (*Ameiurus nebulosus*)	0	12	44	56
Golden shiner (*Notemigonus crysoleucas*)	0	1	72	73
Northern Redbelly Dace (*Chrosomus eos*)	0	23	3	26
Stickleback (Gasterosteidae)	0	1	1	2
White Sucker (*Catostomus commersonii*)	9	0	1	10
Grand Total	**9**	**53**	**126**	**188**

Table 3.2 Summary of Catch Per Unit Effort (CPUE) by Fishing Method in Square Lake, Touquoy Mine, NS, 2021

Waterbody Name	Gill Nets			Minnow Traps			Fyke Nets		
	Total Effort (net[a] hours)	Total Catch	CPUE (fish / net[a] / day)[b]	Total Effort (trap hours)	Total Catch	CPUE (fish / trap / day)[b]	Total Effort (trap hours)	Total Catch	CPUE (fish / trap / day)[b]
Square Lake	111.1	9	2	324.4	53	4	18	126	168

Note:
[a]1 net is equivalent to a 30.5 m (100 ft) gill net; [b] CPUE is based on average of net sets

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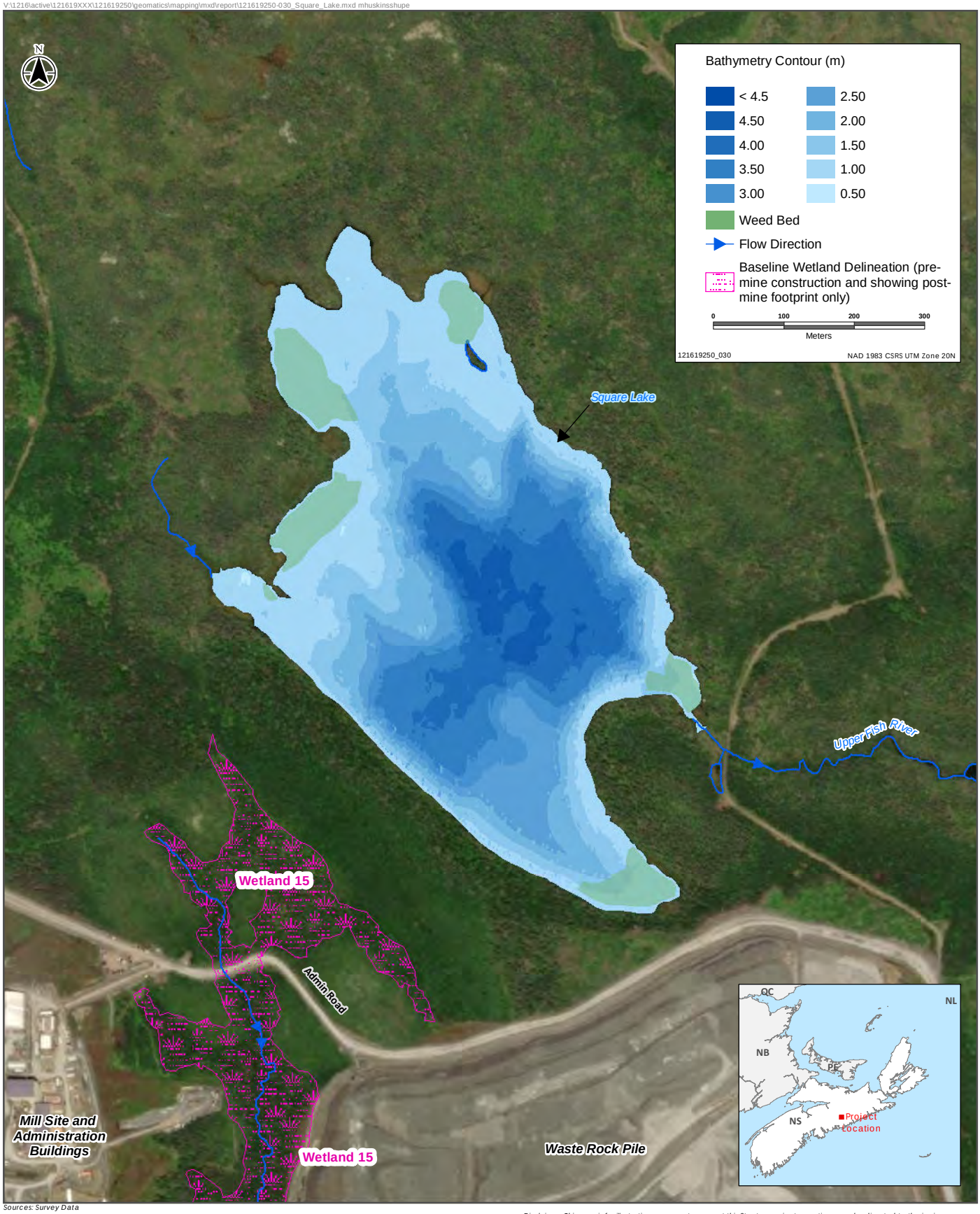

Sources: Survey Data

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Google Earth Image (July 27, 2019). Moose River Gold Mines, NS. CNES/Airbus [Obtained October 9, 2019]

Disclaimer: This map is for illustrative purposes to support this Stantec project; questions can be directed to the issuing agency.

Bathymetry of Square Lake, Touquoy Mine, NS, 2021

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Figure 3.1

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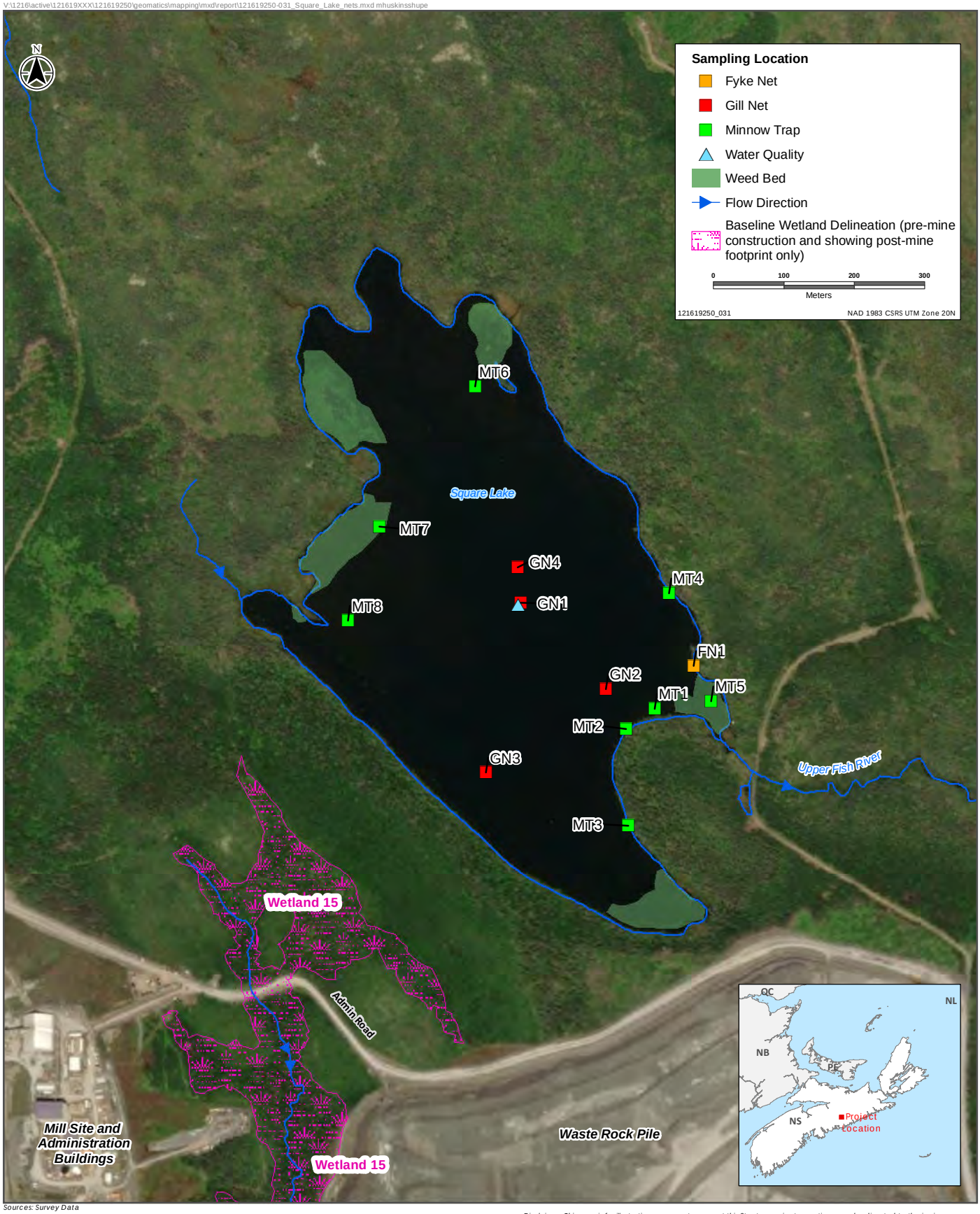

Sources: Survey Data

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Sample Locations in Square Lake, Touquoy Mine, NS, 2021

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4.0 MOOSE RIVER FISH ASSESSMENT

4.1 OBJECTIVES

The objectives of the Moose River fish community assessment were to document the existing fish community, including the potential presence and abundance of species at risk and species of conservation concern. Species at risk are defined as species that are listed as extirpated, endangered, threatened, or special concern under the federal Species at Risk Act (SARA), the Nova Scotia Species at Risk Act (NS SARA), or by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Species of conversation concern are not species at risk, but are ranked *S1* (critically imperiled), *S2* (imperiled), or *S3* (vulnerable) in Nova Scotia by the Atlantic Canada Conservation Data Centre.

Fish habitat information was not collected as it was documented previously under separate cover (Stantec 2020a,b).

4.2 METHODS

Qualitative backpack electrofishing was conducted at two sites on Moose River using a Smith Root LR24 backpack electrofisher on September 14, 2021. Two sites were surveyed in riffle habitats and ranged in length from 30 to 50 m (Figure 2.1). Approximately 500 seconds of shocking time was completed at each site. At the time of the survey water conditions were at bankfull.

The field crew attempted to set a 30 m long by 1.6 m wide gill net with 1.5” mesh in Moose River to target the fish community in slower flowing deeper areas of the river, however the current was too swift on the day of the survey and there was too much debris fouling the net.

Fish were identified to species, counted, and measured. Catch per unit effort (CPUE) was determined for each site and capture method.

4.3 RESULTS

Two fish were captured in Moose River by electrofishing. One juvenile white sucker was captured at MR-01 and one American eel (*Anguilla rostrata*) was captured at MR-02. One unidentified fish was missed at MR-01 and one additional American eel was missed at MR-02. American eel is a species at risk which is listed as threatened under COSEWIC. Raw data is provided in Appendix C, Table C.2.

Table 4.1 Catch Per Unit Effort for Fish Sampling on Moose River, 2021

Area	Number of fish caught	Effort (seconds)	CPUE (#fish/10,000 seconds)
MR-01	1	529	19
MR-02	1	558	18

5.0 SUMMARY

Fish habitat was confirmed present in Watercourse #3, Watercourse #13, and the lower reach of Watercourse #4. Both Watercourse #3 and #13 were shorter than the mapped watercourse layer indicated. The perennial portion of Watercourse #3 flows for approximately 315 m before discharging along the western side of Watercourse #4 within Wetland 6. Watercourse #13 upwells from the ground and forms a single defined channel for approximately 15 m before discharging into the western side of Watercourse #4. Both are considered fish habitat. There was no apparent evidence of effects of the mine observed in watercourses during the survey.

Water depths in Square Lake ranged from 0.5 m to 5.1 m. Water depths were shallowest around the edge of the lake and deepest in the middle of the lake. Substrates were predominantly cobble, with smaller quantities of boulder and gravel. Seven fish species consisting of six different families were confirmed present. There was no apparent evidence of effects of the mine (e.g., seepage or siltation) observed during the survey.

Two species of fish (i.e., American eel and white sucker) were confirmed to be present based on the fish survey at two locations in Moose River.

6.0 CLOSURE

This document titled Touquoy Gold Modifications: 2021 Aquatic Surveys, Summary of Fish and Fish Habitat Surveys to Support the Touquoy Gold Modification was prepared by Stantec Consulting Ltd. (“Stantec”) for the account of Atlantic Mining NS Inc. (the “Client”). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec’s professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

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Stantec. 2020a. Fish Habitat Assessment Survey in Moose River in the Vicinity of the Proposed Pit Expansion. Prepared for Jim Millard, AMNS. August 31, 2020.

Stantec. 2020b. Fish Habitat Assessment Survey in Moose River in the Vicinity of the Proposed Pit Expansion. Prepared for Jim Millard, AMNS. December 11, 2020.

APPENDIX A

Photos

Fish Habitat Surveys – Watercourse #3, #13 (May 27, 2021) and #4 (July 8, 2021)	
	
Photo 1 Representative Habitat in Watercourse #3 near Confluence with Watercourse #4 (HU 58745)	**Photo 2** Stream Channel Disappears Under Floating Bog in Watercourse #3 (HU 58745)
	
Photo 3 Poorly Defined Channel Through Bog in Watercourse #3 (HU 58745)	**Photo 4** Defined Channel Through Bog in Watercourse #3 (HU 58745)

Fish Habitat Surveys – Watercourse #3, #13 (May 27, 2021) and #4 (July 8, 2021)	
	
Photo 5 Fine and Organic Substrates in Watercourse #3 (HU 58745)	**Photo 6** Representative Habitat in Watercourse #3 (HU 58745)
	
Photo 7 Representative Habitat in Watercourse #3 (HU 58744)	**Photo 8** Subsurface Flow in Upper Reach of Watercourse #3 (HU 58744)

Fish Habitat Surveys – Watercourse #3, #13 (May 27, 2021) and #4 (July 8, 2021)	
	
Photo 9 Upstream Extent of Survey Where Stream Channel No Longer Present (HU 58744)	**Photo 10** Representative Habitat in Watercourse #13 at Confluence with Watercourse #4
	
Photo 11 Representative Habitat in Defined Channel of Watercourse #13	**Photo 12** Subterranean Flow Surfacing in Watercourse #13 25 m Upstream of the Confluence with Watercourse #4

Fish Habitat Surveys – Watercourse #3, #13 (May 27, 2021) and #4 (July 8, 2021)	
	
Photo 13 Poorly Defined Drainage Channel in Wetland 28 In Mapped Stream Channel	**Photo 14** Drainage in Wetland 28 In Mapped Stream Channel
	
Photo 15 No Visible Channel in Wetland 28	**Photo 16** Representative Habitat in Watercourse #4 (HU59574) Facing Upstream

Fish Habitat Surveys – Watercourse #3, #13 (May 27, 2021) and #4 (July 8, 2021)	
	
Photo 17 Representative Habitat in Watercourse #4 (HU59573) Facing Upstream	**Photo 18** Representative Habitat in Watercourse #4 (HU59573) Facing Downstream
	
Photo 19 Representative Habitat in Watercourse #4 (HU59570) Facing Upstream	**Photo 20** Representative Habitat in Watercourse #4 (HU59578) Facing Upstream

Fish Habitat Surveys – Watercourse #3, #13 (May 27, 2021) and #4 (July 8, 2021)	
	
Photo 21 Representative Habitat in Watercourse #4 (HU59572) Facing Upstream	**Photo 22** Representative Habitat in Watercourse #4 (HU59576) Facing Upstream
	
Photo 23 Representative Habitat in Watercourse #4 (HU59576) Facing Downstream	**Photo 24** Representative Habitat in Watercourse #4 (HU59577) Facing Downstream

Fish Habitat Surveys – Watercourse #3, #13 (May 27, 2021) and #4 (July 8, 2021)	
	
Photo 25 Representative Habitat in Watercourse #4 (HU59569) Facing Upstream	**Photo 26** Representative Side Channel Habitat in Watercourse #4 (HU59569) Facing Upstream
	
Photo 27 Representative Habitat in Watercourse #4 (HU59571) Facing Upstream	**Photo 28** Representative Habitat in Watercourse #4 At Downstream Extent of Survey

Square Lake Fish Habitat Assessment (October 13 and 14, 2021)	
	
Photo 29 Representative Habitat Along Southeastern Shore of Square Lake (HU1)	**Photo 30** Representative Habitat along Eastern Shore of Square Lake (HU2)
	
Photo 31 Representative Habitat along Northern Shore of Square Lake (HU3)	**Photo 32** Representative Habitat along Northern Shore of Square Lake (HU4)

Photo 33 Representative Habitat along Northern Shore of Square Lake (HU5)

Photo 34 Representative Habitat along Northwestern Shore of Square Lake (HU6)

Photo 35 Representative Habitat along Western Shore of Square Lake (HU7)

Photo 36 Representative Habitat along Western Shore of Square Lake (HU8)

Square Lake Fish Habitat Assessment (October 13 and 14, 2021)	
	
Photo 37 Representative Habitat along Western Shore of Square Lake (HU9)	**Photo 38** Representative Habitat along Southwestern Shore of Square Lake (HU10)
	
Photo 39 Representative Habitat along Southern Shore of Square Lake (HU11)	**Photo 40** Representative Habitat along Southern Shore of Square Lake (HU12)

Square Lake Fish Habitat Assessment (October 13 and 14, 2021)	
	
Photo 41 Representative Habitat along Southern Shore of Square Lake (HU13)	**Photo 42** Emergent Vegetation along Western Shore of Square Lake

Moose River Fish Survey (September 14, 2021)	
	
Photo 43 Representative Habitat In Moose River (MR-1)	**Photo 44** Representative Habitat In Moose River (MR-2)
Note: Habitat Unit (HU) number corresponds to Appendix B, Table B.1 and B.4.	

APPENDIX B

Fish Habitat Data

Table B.1 - Raw Fish Habitat Information, Touquoy Mine, NS

							Left Bank Stability (%)			Right Bank Stability (%)			Left Stream Bank Riparian Composition (%)						Right Stream Bank Riparian Composition (%)					
Watercourse	Latitude	Longitude	Survey Date	Habitat Unit Number	Dominant Habitat Unit Type	Length (m)	Unstable	Moderately Stable	Stable	Unstable	Moderately Stable	Stable	Bare	Grass	Shrub	Conifer	Deciduous	Wetland	Bare	Grass	Shrub	Conifer	Deciduous	Wetland
Watercourse #3	44.980376	-62.93079	2021-05-27	58743	Run (Unclassified)	43	12.5	37.5	0	12.5	37.5	0	0	0	10	10	0	30	0	10	10	10	5	15
Watercourse #3	44.981233	-62.93111	2021-05-27	58744	Run (Unclassified)	56	2.5	25	22.5	25	0	25	0	10	15	15	0	10	0	0	20	20	10	0
Watercourse #3	44.979601	-62.92879	2021-05-27	58745	Run (Unclassified)	201	25	25	0	25	25	0	0	0	0	0	0	50	0	0	0	0	0	50
Watercourse #13	44.97638	-62.92923	2021-05-27	58757	Run (Unclassified)	21	30	20	0	30	20	0	0	0	0	0	0	50	0	0	0	0	0	50
Watercourse #4	44.972182	-62.93198	2021-07-08	59569	Run (Unclassified)	100	10	30	10	10	30	10	0	2.5	37.5	5	5	0	0	2.5	35	5	5	2.5
Watercourse #4	44.974372	-62.92874	2021-07-08	59570	Riffle	62	10	10	30	10	10	30	0	5	25	10	10	0	0	5	25	10	7.5	2.5
Watercourse #4	44.971531	-62.93261	2021-07-08	59571	Run (Unclassified)	129	10	20	20	10	20	20	0	5	5	2.5	2.5	35	0	5	5	2.5	2.5	35
Watercourse #4	44.973686	-62.93023	2021-07-08	59572	Run (Unclassified)	75	10	40	0	10	40	0	0	0	0	0	0	50	0	0	0	0	0	50
Watercourse #4	44.976515	-62.92885	2021-07-08	59573	Run (Unclassified)	270	12.5	25	12.5	12.5	25	12.5	0	0	0	0	0	50	0	0	0	0	0	50
Watercourse #4	44.976802	-62.92912	2021-07-08	59574	Run 1 (>1.0 m)	40	0	10	40	0	10	40	0	10	20	10	10	0	0	10	20	10	10	0
Watercourse #4	44.972564	-62.93077	2021-07-08	59575	Run (Unclassified)	65	10	30	10	10	30	10	0	2.5	35	5	7.5	0	0	2.5	35	2.5	10	0
Watercourse #4	44.973025	-62.93016	2021-07-08	59576	Riffle	73	10	30	10	10	30	10	0	5	30	5	10	0	0	5	30	10	5	0
Watercourse #4	44.97245	-62.93158	2021-07-08	59577	Riffle	42	10	20	20	10	30	10	0	5	40	2.5	2.5	0	0	5	40	2.5	2.5	0
Watercourse #4	44.973917	-62.92956	2021-07-08	59578	Run (Unclassified)	70	10	40	0	10	40	0	0	10	25	5	5	5	0	10	25	5	5	5

Table B.1 - Raw Fish Habitat Information, Touquoy Mine, NS

							Substrate (%)											Overhead Cover (%)				Instream Cover (%)				
Watercourse	Latitude	Longitude	Survey Date	Habitat Unit Number	Dominant Habitat Unit Type	Length (m)	Organics	Fines (<0.06mm)	Sand (0.06-2 mm)	Small Gravel (2-16 mm)	Large Gravel (17-64 mm)	Cobble (65-256 mm)	Small Boulder (257-1000mm)	Large Boulder (>1000mm)	Bedrock	Embeddedness	Total Cover (% survey area)	Undercut Bank	Grass/Forbe	Tree/Shrub	Large Woody Debris	Large Woody Debris	Small Woody Debris	Boulders	Water Visibility	Aquatic Vegetation
Watercourse #3	44.980376	-62.93079	2021-05-27	58743	Run (Unclassified)	43	80	20	0	0	0	0	0	0	0	Very high embeddedness: >75% embedded	40	0	20	80	0	0	10	0	0	10
Watercourse #3	44.981233	-62.93111	2021-05-27	58744	Run (Unclassified)	56	15	10	0	0	0	20	55	0	0	Non-embedded - All rock substrates (i.e., gravel, cobble, boulders)	80	0	5	80	15	20	5	30	0	0
Watercourse #3	44.979601	-62.92879	2021-05-27	58745	Run (Unclassified)	201	100	0	0	0	0	0	0	0	0	Very high embeddedness: >75% embedded	20	0	0	20	0	0	0	0	0	0
Watercourse #13	44.97638	-62.92923	2021-05-27	58757	Run (Unclassified)	21	50	50	0	0	0	0	0	0	0	Very high embeddedness: >75% embedded	0	0	0	0	0	0	0	0	0	0
Watercourse #4	44.972182	-62.93198	2021-07-08	59569	Run (Unclassified)	100	5	5	5	0	0	5	60	20	0	Non-embedded - All rock substrates (i.e., gravel, cobble, boulders)	0	0	5	45	0	0	0	15	0	10
Watercourse #4	44.974372	-62.92874	2021-07-08	59570	Riffle	62	5	5	0	0	0	20	60	10	0	Non-embedded - All rock substrates (i.e., gravel, cobble, boulders)	70	0	5	55	10	5	5	5	0	10
Watercourse #4	44.971531	-62.93261	2021-07-08	59571	Run (Unclassified)	129	30	5	5	0	0	5	25	30	0	Low embeddedness : <25% embedded	10	0	0	10	0	0	0	5	0	20
Watercourse #4	44.973686	-62.93023	2021-07-08	59572	Run (Unclassified)	75	100	0	0	0	0	0	0	0	0	Very high embeddedness: >75% embedded	0	0	5	10	0	0	0	0	0	15
Watercourse #4	44.976515	-62.92885	2021-07-08	59573	Run (Unclassified)	270	40	10	0	0	0	0	45	5	0	Medium embeddedness : 25-50% embedded	2	5	5	10	0	0	10	5	0	30
Watercourse #4	44.976802	-62.92912	2021-07-08	59574	Run 1 (>1.0 m)	40	5	5	0	0	0	5	75	10	0	Low embeddedness : <25% embedded	35	5	10	10	10	0	0	5	0	10
Watercourse #4	44.972564	-62.93077	2021-07-08	59575	Run (Unclassified)	65	5	0	0	0	0	5	85	5	0	Non-embedded - All rock substrates (i.e., gravel, cobble, boulders)	0	0	0	75	0	0	0	5	0	5
Watercourse #4	44.973025	-62.93016	2021-07-08	59576	Riffle	73	5	5	5	0	0	10	65	10	0	Non-embedded - All rock substrates (i.e., gravel, cobble, boulders)	80	0	10	70	0	2	2	5	0	10
Watercourse #4	44.97245	-62.93158	2021-07-08	59577	Riffle	42	5	0	0	0	0	5	75	10	5	Non-embedded - All rock substrates (i.e., gravel, cobble, boulders)	60	0	5	50	5	0	0	10	0	0
Watercourse #4	44.973917	-62.92956	2021-07-08	59578	Run (Unclassified)	70	100	0	0	0	0	0	0	0	0	Very high embeddedness: >75% embedded	30	0	10	15	5	5	5	0	0	10

Table B.1 - Raw Fish Habitat Information, Touquoy Mine, NS

							Aquatic Vegetation Composition (%)						Width (m)		Wet Depth from Left Bank (m)				
Watercourse	Latitude	Longitude	Survey Date	Habitat Unit Number	Dominant Habitat Unit Type	Length (m)	Emergent	Floating Leafed	Free Floating	Submerged	Filamentous Algae	Macrophytic Algae	Wet Width (m)	Channel Width (m)	25%	50%	75%	Bankfull Maximum Depth (m)	Comments
Watercourse #3	44.980376	-62.93079	2021-05-27	58743	Run (Unclassified)	43	0	0	0	0	0	0	2	2	0.2	0.2	0.2		Low area of tall shrub swamp wetland. Fairly shallow water depths, little to no flow observed.
Watercourse #3	44.981233	-62.93111	2021-05-27	58744	Run (Unclassified)	56	0	0	0	0	0	0							Upgradient from channelized portion elevation begins to increase. Little flow. Appears groundwater discharge may be feeding this watercourse.
Watercourse #3	44.979601	-62.92879	2021-05-27	58745	Run (Unclassified)	201	0	0	0	0	0	0	1.5	1.5	0.3	0.5	0.5	0.5	Channelized through floating bog. Channel at one point disappears and only pockets of water are visible.
Watercourse #13	44.97638	-62.92923	2021-05-27	58757	Run (Unclassified)	21	0	0	0	0	0	0							-
Watercourse #4	44.972182	-62.93198	2021-07-08	59569	Run (Unclassified)	100	0	0	0	100	0	0	4.5	5.2	0.11	0.21	0.28	0.34	-
Watercourse #4	44.974372	-62.92874	2021-07-08	59570	Riffle	62	5	0	0	5	0	0	3	3.5	0.12	0.16	0.15	0.23	-
Watercourse #4	44.971531	-62.93261	2021-07-08	59571	Run (Unclassified)	129	50	30	0	20	0	0	18	19	0.4	0.7	0.55	1	-
Watercourse #4	44.973686	-62.93023	2021-07-08	59572	Run (Unclassified)	75	10	0	0	5	0	0	12	12	0.3	0.4	0.3		-
Watercourse #4	44.976515	-62.92885	2021-07-08	59573	Run (Unclassified)	270	65	30	0	5	0	0	12	14	0.15	0.1	0.06	0.3	Beaver activity noted. Fish (minnows) observed throughout extent
Watercourse #4	44.976802	-62.92912	2021-07-08	59574	Run 1 (>1.0 m)	40	50	0	0	50	0	0	2.5	3.2	0.12	0.43	0.21		-
Watercourse #4	44.972564	-62.93077	2021-07-08	59575	Run (Unclassified)	65	0	0	0	100	0	0	2	2.7	0.12	0.13	0.13	0.15	-
Watercourse #4	44.973025	-62.93016	2021-07-08	59576	Riffle	73	50	0	0	50	0	0	5	5.5	0.1	0.13	0.24	0.27	Area with braided channels.
Watercourse #4	44.97245	-62.93158	2021-07-08	59577	Riffle	42	0	0	0	0	0	0	3	3.5	0.42	0.15	0.15	0.52	-
Watercourse #4	44.973917	-62.92956	2021-07-08	59578	Run (Unclassified)	70	55	5	0	40	0	0	5	5.5	0.25	0.5	0.3	0.65	-

Table B.2 - In Situ Water Quality Data, Touqouy Mine, NS, 2021

Watercourse ID	Latitude	Longitude	Survey Date	Survey Time	Water Clarity	Water Temperature (oC)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	Specific Conductivity (µs/cm)	pH	Comment
Watercourse #3	44.980314	-62.930805	2021-05-27	16:30:19	Clear	16.0	9.57	92.0	192.8	7.6	Analytical sample collected
Watercourse #4	44.971506	-62.932649	2021-07-08	14:37:45	Clear	18.4	7.64	80.8	758.0	7.1	-
Watercourse #4	44.972853	-62.930242	2021-07-08	13:10:25	Clear	20.7	7.33	81.2	963.0	6.8	Pollen and gunk on top of water
Watercourse #4	44.975018	-62.928497	2021-07-08	11:13:06	Clear	20.6	6.27	69.7	95.0	7.4	Slow moving water

Table B.3 - General Chemistry for Surface Water Samples Taken in Watercourse #3 at Touquoy Mine, NS, 2021

BV Labs ID	UNITS	CWQG PAL*	PRW745	Reportable Detection Limit
Sampling Date			2021/05/27 16:30	
COC Number			D50589	
			AMNS-WC3-SW1	
Calculated Parameters				
Anion Sum	me/L	-	0.87	N/A
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	16	1
Calculated TDS	mg/L	-	51	1
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	<1.0	1
Cation Sum	me/L	-	0.79	N/A
Hardness (CaCO3)	mg/L	-	28	1
Ion Balance (% Difference)	%	-	4.82	N/A
Langelier Index (@ 20C)	N/A	-	-2.23	N/A
Langelier Index (@ 4C)	N/A	-	-2.48	N/A
Nitrate (N)	mg/L	-	<0.050	0.05
Saturation pH (@ 20C)	N/A	-	9.22	N/A
Saturation pH (@ 4C)	N/A	-	9.47	N/A
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L	-	16	5
Dissolved Chloride (Cl-)	mg/L	-	12	1
Colour	TCU	-	15	5
Nitrate + Nitrite (N)	mg/L	2.9	<0.050	0.05
Nitrite (N)	mg/L	0.06	<0.010	0.01
Nitrogen (Ammonia Nitrogen)	mg/L	4	<0.050	0.05
Total Organic Carbon (C)	mg/L	-	2.3	0.5
Orthophosphate (P)	mg/L	-	<0.010	0.01
pH	pH	6.5-9.0	6.99	N/A
Reactive Silica (SiO2)	mg/L	-	2.8	0.5
Dissolved Sulphate (SO4)	mg/L	-	10	2
Turbidity	NTU	-	1	0.1
Conductivity	uS/cm	-	90	1
Total Suspended Solids	mg/L	1	1	1
Metals				
Total Aluminum (Al)	ug/L	5-100	27	5
Total Antimony (Sb)	ug/L	-	<1.0	1
Total Arsenic (As)	ug/L	5	<1.0	1
Total Barium (Ba)	ug/L	-	4.8	1
Total Beryllium (Be)	ug/L	-	<1.0	1
Total Bismuth (Bi)	ug/L	-	<2.0	2
Total Boron (B)	ug/L	1500	<50	50
Total Cadmium (Cd)	ug/L	0.09	<0.010	0.01
Total Calcium (Ca)	ug/L	-	7900	100
Total Chromium (Cr)	ug/L	-	<1.0	1
Total Cobalt (Co)	ug/L	-	<0.40	0.4
Total Copper (Cu)	ug/L	2	<0.50	0.5
Total Iron (Fe)	ug/L	300	<50	50
Total Lead (Pb)	ug/L	1	<0.50	0.5
Total Magnesium (Mg)	ug/L	-	2000	100
Total Manganese (Mn)	ug/L	-	7.2	2
Total Molybdenum (Mo)	ug/L	73	<2.0	2
Total Nickel (Ni)	ug/L	25	<2.0	2
Total Phosphorus (P)	ug/L	-	<100	100
Total Potassium (K)	ug/L	-	1200	100

Table B.3 - General Chemistry for Surface Water Samples Taken in Watercourse #3 at Touquoy Mine, NS, 2021

BV Labs ID	UNITS	CWQG PAL*	PRW745	Reportable Detection Limit
Sampling Date			2021/05/27 16:30	
COC Number			D50589	
			AMNS-WC3-SW1	
Total Selenium (Se)	ug/L	1	<0.50	0.5
Total Silver (Ag)	ug/L	0.25	<0.10	0.1
Total Sodium (Na)	ug/L	-	4900	100
Total Strontium (Sr)	ug/L	-	22	2
Total Thallium (Tl)	ug/L	-	<0.10	0.1
Total Tin (Sn)	ug/L	-	<2.0	2
Total Titanium (Ti)	ug/L	-	<2.0	2
Total Uranium (U)	ug/L	15	<0.10	0.1
Total Vanadium (V)	ug/L	-	<2.0	2
Total Zinc (Zn)	ug/L	7	<5.0	5
Total Mercury (Hg)	ug/L	0.026	<0.013	0.013
Dissolved Aluminum (Al)	ug/L	-	25	24
Dissolved Antimony (Sb)	ug/L	-	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	-	<1.0	<1.0
Dissolved Barium (Ba)	ug/L	-	5.2	5.2
Dissolved Beryllium (Be)	ug/L	-	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	-	<2.0	<2.0
Dissolved Boron (B)	ug/L	-	<50	<50
Dissolved Cadmium (Cd)	ug/L	-	<0.010	<0.010
Dissolved Calcium (Ca)	ug/L	-	7800	7800
Dissolved Chromium (Cr)	ug/L	-	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	-	<0.40	<0.40
Dissolved Copper (Cu)	ug/L	-	<0.50	<0.50
Dissolved Iron (Fe)	ug/L	-	<50	<50
Dissolved Lead (Pb)	ug/L	-	<0.50	<0.50
Dissolved Magnesium (Mg)	ug/L	-	2000	2000
Dissolved Manganese (Mn)	ug/L	-	6.8	6.6
Dissolved Molybdenum (Mo)	ug/L	-	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	-	<2.0	<2.0
Dissolved Phosphorus (P)	ug/L	-	<100	<100
Dissolved Potassium (K)	ug/L	-	1200	1200
Dissolved Selenium (Se)	ug/L	-	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	-	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	-	4900	4800
Dissolved Strontium (Sr)	ug/L	-	23	21
Dissolved Thallium (Tl)	ug/L	-	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	-	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	-	<2.0	<2.0
Dissolved Uranium (U)	ug/L	-	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	-	<2.0	<2.0
Dissolved Zinc (Zn)	ug/L	-	<5.0	<5.0

*Canadian Water Quality Guidelines for the Protection of Aquatic Life

Table B.4 - Raw Fish Habitat Information for Square Lake, Touquoy Mine, NS

Habitat Unit Number	Latitude	Longitude	Riparian Bank Stability	Riparian Composition (%)						Substrate (%)									Instream Cover Aquatic Vegetation (% of area)	Aquatic Vegetation Composition (%)					
				Bare	Grass	Shrub	Conifer	Deciduous	Wetland	Organics	Fines (<0.06mm)	Sand (0.06-2 mm)	Small Gravel (2-16 mm)	Large Gravel (17-64 mm)	Cobble (65-256 mm)	Small Boulder (257-1000mm)	Large Boulder (>1000mm)	Bedrock		Emergent	Floating Leafed	Free Floating	Submerged	Filamentous Algae	Macrophytic Algae
1	44.9956	-62.9234	Stable	5	15	60	15	5	0	10	0	0	0	20	50	20	0	0	15	100	0	0	0	0	0
2	44.99601	-62.9235	Stable	5	10	50	30	5	0	5	0	0	0	5	60	20	10	0	10	100	0	0	0	0	0
3	45.0003	-62.927	Stable	5	15	60	15	5	0	10	0	0	0	20	50	20	0	0	60	45	30	0	20	5	0
4	45.00074	-62.9281	Stable	5	10	50	30	5	0	5	0	0	0	5	60	20	10	0	20	100	0	0	0	0	0
5	45.00087	-62.9289	Stable	5	15	60	15	5	0	10	0	0	0	20	50	20	0	0	10	45	30	0	20	5	0
6	45.00012	-62.9308	Stable	5	15	60	15	5	0	10	0	0	0	20	50	20	0	0	60	0	40	30	30	0	0
7	44.99892	-62.9294	Stable	5	15	60	15	5	0	10	0	0	0	20	50	20	0	0	15	90	10	0	0	0	0
8	44.99794	-62.9304	Stable	5	15	60	15	5	0	10	0	0	0	20	50	20	0	0	5	90	10	0	0	0	0
9	44.99686	-62.9304	Stable	5	15	60	15	5	0	10	0	0	0	20	50	20	0	0	5	90	10	0	0	0	0
10	44.9966	-62.9312	Stable	5	0	45	35	15	0	5	0	0	0	0	40	30	25	0	10	95	5	0	0	0	0
11	44.99303	-62.9245	Stable	0	30	40	25	5	0	50	0	0	0	0	0	25	25	0	30	50	20	0	30	0	0
12	44.99393	-62.9249	Stable	5	10	50	30	5	0	5	0	0	0	5	60	20	10	0	15	100	0	0	0	0	0
13	44.9956	-62.9234	Stable	5	15	60	15	5	0	10	0	0	0	20	50	20	0	0	20	100	0	0	0	0	0

Table B.5 - In Situ Water Quality Data for Square Lake, Touqouy Mine, NS, 2021

Location	Latitude	Longitude	Survey Date	Survey Time	Water Clarity	Water Depth (m)	Water Temperature (oC)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	Specific Conductivity (µs/cm)	pH
Square Lake	44.99712	-62.927061	2021-10-14	14:09:12	Clear	0.0	15.2	94	9.4	23.5	7.1
Square Lake	44.99712	-62.927061	2021-10-14	14:09:12	Clear	0.5	15.3	92	9.3	23.4	-
Square Lake	44.99712	-62.927061	2021-10-14	14:09:12	Clear	1.0	15.2	94	9.4	23.4	-
Square Lake	44.99712	-62.927061	2021-10-14	14:09:12	Clear	1.5	15.2	94	9.4	23.4	-
Square Lake	44.99712	-62.927061	2021-10-14	14:09:12	Clear	2.0	15.2	91	9.2	23.5	-
Square Lake	44.99712	-62.927061	2021-10-14	14:09:12	Clear	2.5	15.0	87	8.9	23.6	-
Square Lake	44.99712	-62.927061	2021-10-14	14:09:12	Clear	3.0	14.5	86	8.8	23.9	-
Square Lake	44.99712	-62.927061	2021-10-14	14:09:12	Clear	3.5	14.4	83	8.4	23.8	-

APPENDIX C

Fish Data

Table C.1 - Raw Fishing Data for Trap/Net Fish Surveys, Touqouy Mine, NS, 2021

Location	Station ID	Latitude	Longitude	Fishing Method	Survey Start Date (UTC)	Survey Start Time (UTC)	Survey End Date (UTC)	Survey End Time (UTC)	Number of Traps	Effort (hours)	Fish Caught	CPUE (fish per net day)	Comnents
Watercourse #3	MT1	44.979662	-62.92943	Minnow Trap	2021-05-27	14:57:05	2021-05-27	16:35:16	1	25.6	0	0	No fish captured
Watercourse #3	MT2	44.97971	-62.92897	Minnow Trap	2021-05-27	15:08:51	2021-05-27	16:30:48	1	25.4	2	2	-
Square Lake	FN1	44.99634	-62.9239	Trap/Fyke Net	2021-10-13	15:44:39	2021-10-14	9:42:32	1	18.0	126	168	-
Square Lake	GN1	44.997151	-62.92701	Gill Net	2021-10-13	13:44:20	2021-10-13	16:14:05	1	26.5	2	2	Set at 4.0 m
Square Lake	GN2	44.996042	-62.92548	Gill Net	2021-10-13	14:00:13	2021-10-13	16:25:22	1	26.4	1	1	Set at 2.5 m
Square Lake	GN3	44.994981	-62.92765	Gill Net	2021-10-14	9:36:27	2021-10-14	14:38:06	1	29.0	3	2	Set at 3.0 m
Square Lake	GN4	44.997603	-62.92707	Gill Net	2021-10-14	9:45:32	2021-10-14	14:53:10	1	29.1	3	2	Set at 3.8 m
Square Lake	MT1	44.995792	-62.92461	Minnow Trap	2021-10-13	15:55:21	2021-10-14	11:09:07	2	30.4	12	9	-
Square Lake	MT2	44.995536	-62.92512	Minnow Trap	2021-10-13	15:57:42	2021-10-14	11:12:08	2	30.4	0	0	No fish captured
Square Lake	MT3	44.994297	-62.92508	Minnow Trap	2021-10-13	16:01:23	2021-10-14	11:14:54	2	30.5	21	17	No fish captured
Square Lake	MT4	44.997268	-62.92435	Minnow Trap	2021-10-13	16:19:18	2021-10-14	11:23:00	2	30.4	0	0	No fish captured
Square Lake	MT5	44.99589	-62.92359	Minnow Trap	2021-10-13	16:30:27	2021-10-14	11:08:39	2	29.8	0	0	No fish captured
Square Lake	MT6	44.999909	-62.92783	Minnow Trap	2021-10-14	11:31:04	2021-10-14	15:00:26	3	57.5	20	8	-
Square Lake	MT7	44.998122	-62.92956	Minnow Trap	2021-10-14	11:35:28	2021-10-14	15:05:46	3	57.7	0	0	No fish captured
Square Lake	MT8	44.996921	-62.93013	Minnow Trap	2021-10-14	11:38:22	2021-10-14	15:05:46	3	57.6	0	0	No fish captured

Table C.2 - Raw Fishing Effort Data for Electrofishing Surveys in Moose River, NS, 2021

Location	Site ID	Latitude	Longitude	Fishing Method	Survey Start Date (UTC)	Pass/Sweep	Voltage (V)	Duty Cycle (%)	Frequency (Hz)	Pulse Width (ms)	Electrofishing Time (s)	Comment
Moose River	MR-01	44.987163	-62.946703	Backpack Electrofisher	2021-09-14	1	225	14	30	4.7	529	Missed 1 unidentified fish.
Moose River	MR-02	44.979103	-62.943925	Backpack Electrofisher	2021-09-14	1	250	12	30	4	558	Missed 1 eel

Table C.3 - Raw Morphometric Fish Data for Fish Surveys, Touquoy Mine, NS, 2021

Location	Site ID	Latitude	Longitude	Survey Date	Fishing Method	Pass	SpeciesID	Fork Length (mm)	Total Length (mm)	Weight (g)	Health	Maturity	Count
Moose River	MR-01	44.987163	-62.946703	2021-09-14	Backpack Electrofisher	1	White Sucker	53	55	-	Healthy	Immature	1
Moose River	MR-02	44.979103	-62.943925	2021-09-14	Backpack Electrofisher	1	American Eel	N/A	270	-	Healthy	Unknown	1
Watercourse #3	MT2	44.97971	-62.928965	2021-05-27	Minnow Trap	1	Stickleback	53	-	-	Healthy	Unknown	1
Watercourse #3	MT2	44.97971	-62.928965	2021-05-27	Minnow Trap	1	Northern Redbelly Dace	~70	-	-	Healthy	Unknown	1
Square Lake	GN2	44.996042	-62.925483	2021-10-13	Gill Net	1	White Sucker	327	-	411	Healthy	Female	1
Square Lake	GN1	44.997151	-62.927012	2021-10-13	Gill Net	1	White Sucker	314	-	387.2	Healthy	Male	1
Square Lake	GN1	44.997151	-62.927012	2021-10-13	Gill Net	1	White Sucker	325	-	420.9	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	194	-	103.9	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	38	-	0.4	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	34	-	0.3	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	45	-	1	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	40	-	0.6	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	81	-	5.5	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	85	-	7.3	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	58	-	1.5	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	43	-	1.2	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	94	-	9.6	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	49	-	1.2	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	104	-	14.8	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	101	-	13	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	86	-	8.1	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	196	-	100.1	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	130	-	16.1	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	80	-	5.6	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Northern Redbelly Dace	55	-	1.8	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	79	-	5.1	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	65	-	3.6	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	82	-	6.2	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	41	-	0.3	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	39	-	0.9	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	45	-	0.6	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	40	-	0.5	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Northern Redbelly Dace	57	-	2.6	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	100	-	13.1	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	87	-	7.8	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	83	-	8.8	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	35	-	0.7	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	80	-	3.2	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	80	-	5.5	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	32	-	0.5	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	96	-	11.4	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	88	-	7.4	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	93	-	9.9	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	92	-	9.8	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	77	-	5.3	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	78	-	5.7	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	86	-	8.6	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	42	-	0.8	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	42	-	0.8	Healthy	Unknown	1

Table C.3 - Raw Morphometric Fish Data for Fish Surveys, Touquoy Mine, NS, 2021

Location	Site ID	Latitude	Longitude	Survey Date	Fishing Method	Pass	SpeciesID	Fork Length (mm)	Total Length (mm)	Weight (g)	Health	Maturity	Count
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	37	-	0.4	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	50	-	1.4	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	34	-	0.6	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	66	-	2.9	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	84	-	6.6	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	80	-	5.7	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Stickleback	46	-	0.6	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	98	-	10.7	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	106	-	14.1	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Northern Redbelly Dace	56	-	1.7	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	196	-	110.5	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	199	-	101.8	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	115	-	19.7	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	103	-	13.7	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	106	-	14.6	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	92	-	9.5	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	59	-	2.8	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Banded Killifish	65	-	3	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	196	-	95.9	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	147	-	39.6	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	86	-	8.2	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	88	-	8.7	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	76	-	5.5	Healthy	Unknown	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	White Sucker	317	-	402.4	Healthy	Male	1
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	-	-	-	Healthy	Unknown	27
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brown Bullhead	-	-	-	Healthy	Unknown	24
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Golden Shiner	-	-	-	Mortality	Unknown	5
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Banded Killifish	-	-	-	Mortality	Unknown	3
Square Lake	FN1	44.99634	-62.923904	2021-10-13	Trap/Fyke Net	1	Brook trout	325	-	435	Healthy	Male	1
Square Lake	MT1	44.995792	-62.924606	2021-10-13	Minnow Trap	1	Brown Bullhead	-	-	-	Healthy	Unknown	12
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Banded Killifish	61	-	2.1	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Banded Killifish	62	-	2.3	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Banded Killifish	65	-	2.5	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Banded Killifish	56	-	1.8	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Northern Redbelly Dace	53	-	2	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Northern Redbelly Dace	48	-	1.2	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Northern Redbelly Dace	55	-	1.7	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Banded Killifish	61	-	2.1	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Banded Killifish	66	-	2.6	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Banded Killifish	67	-	3	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Banded Killifish	47	-	0.9	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Northern Redbelly Dace	56	-	1.8	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Northern Redbelly Dace	58	-	2.3	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Northern Redbelly Dace	50	-	1.5	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Banded Killifish	67	-	3.1	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Banded Killifish	59	-	2	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Banded Killifish	58	-	2	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Banded Killifish	59	-	2.1	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Banded Killifish	44	-	1	Healthy	Unknown	1

Table C.3 - Raw Morphometric Fish Data for Fish Surveys, Touquoy Mine, NS, 2021

Location	Site ID	Latitude	Longitude	Survey Date	Fishing Method	Pass	SpeciesID	Fork Length (mm)	Total Length (mm)	Weight (g)	Health	Maturity	Count
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Banded Killifish	45	-	0.9	Healthy	Unknown	1
Square Lake	MT3	44.994297	-62.925081	2021-10-13	Minnow Trap	1	Northern Redbelly Dace	55	-	1.9	Healthy	Unknown	1
Square Lake	GN3	44.994981	-62.927645	2021-10-14	Gill Net	1	White Sucker	385	-	713.5	Healthy	Female	1
Square Lake	GN3	44.994981	-62.927645	2021-10-14	Gill Net	1	White Sucker	354	-	614.5	Healthy	Female	1
Square Lake	GN3	44.994981	-62.927645	2021-10-14	Gill Net	1	White Sucker	322	-	455.4	Healthy	Female	1
Square Lake	GN4	44.997603	-62.927074	2021-10-14	Gill Net	1	White Sucker	338	-	439.5	Healthy	Unknown	1
Square Lake	GN4	44.997603	-62.927074	2021-10-14	Gill Net	1	White Sucker	265	-	215.4	Healthy	Unknown	1
Square Lake	GN4	44.997603	-62.927074	2021-10-14	Gill Net	1	White Sucker	240	-	160.6	Healthy	Unknown	1
Square Lake	MT6	44.999909	-62.927832	2021-10-14	Minnow Trap	1	Northern Redbelly Dace	64	-	3.6	Healthy	Unknown	1
Square Lake	MT6	44.999909	-62.927832	2021-10-14	Minnow Trap	1	Northern Redbelly Dace	56	-	2	Healthy	Unknown	1
Square Lake	MT6	44.999909	-62.927832	2021-10-14	Minnow Trap	1	Northern Redbelly Dace	51	-	1.5	Healthy	Unknown	1
Square Lake	MT6	44.999909	-62.927832	2021-10-14	Minnow Trap	1	Northern Redbelly Dace	57	-	2.3	Healthy	Unknown	1
Square Lake	MT6	44.999909	-62.927832	2021-10-14	Minnow Trap	1	Northern Redbelly Dace	56	-	2.1	Healthy	Unknown	1
Square Lake	MT6	44.999909	-62.927832	2021-10-14	Minnow Trap	1	Northern Redbelly Dace	54	-	1.9	Healthy	Unknown	1
Square Lake	MT6	44.999909	-62.927832	2021-10-14	Minnow Trap	1	Northern Redbelly Dace	49	-	1.5	Healthy	Unknown	1
Square Lake	MT6	44.999909	-62.927832	2021-10-14	Minnow Trap	1	Northern Redbelly Dace	56	-	2.2	Healthy	Unknown	1
Square Lake	MT6	44.999909	-62.927832	2021-10-14	Minnow Trap	1	Northern Redbelly Dace	54	-	1.8	Healthy	Unknown	1
Square Lake	MT6	44.999909	-62.927832	2021-10-14	Minnow Trap	1	Northern Redbelly Dace	56	-	2.3	Healthy	Unknown	1
Square Lake	MT6	44.999909	-62.927832	2021-10-14	Minnow Trap	1	Northern Redbelly Dace	54	-	1.7	Healthy	Unknown	1
Square Lake	MT6	44.999909	-62.927832	2021-10-14	Minnow Trap	1	Stickleback	47	-	0.8	Healthy	Unknown	1
Square Lake	MT6	44.999909	-62.927832	2021-10-14	Minnow Trap	1	Banded Killifish	78	-	4.9	Healthy	Unknown	1
Square Lake	MT6	44.999909	-62.927832	2021-10-14	Minnow Trap	1	Banded Killifish	43	-	0.9	Healthy	Unknown	1
Square Lake	MT6	44.999909	-62.927832	2021-10-14	Minnow Trap	1	Golden Shiner	-	-	-	Healthy	Unknown	1
Square Lake	MT6	44.999909	-62.927832	2021-10-14	Minnow Trap	1	Northern Redbelly Dace	-	-	-	Healthy	Unknown	5