IAMGOLD

Appendix G Minnow Aquatic Baseline Reports

Côté Gold Project
Closure Plan
December 2018

CÔTÉ GOLD
AQUATIC BASELINE REPORT

Report Prepared For:
IAMGOLD Corporation

Prepared By:
Minnow Environmental Inc.
Georgetown, ON

March 2014

CÔTÉ GOLD

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Prepared for:

IAMGOLD Corporation

Prepared by:
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March 2014

EXECUTIVE SUMMARY

IAMGOLD Corporation (IAMGOLD) is planning to construct, operate and eventually reclaim a new open pit gold mine as part of the Côté Gold Project (the Project). The Projects is located approximately 20 km southwest of Gogama, 130 km southwest of Timmins, and 200 km northwest of Sudbury. The proposed development of the Project will fully or partially overprint several water features. These include Côté Lake, portions of Three Duck Lakes, Clam Lake, Mollie River/Chester Lake system and Bagsverd Creek. As a consequence, these water features will need to be realigned for safe conveyance around the open pit and Tailings Management Facility (TMF).

The aquatic baseline study was a two year program to provide baseline information on sediment quality, water quality (in support of the benthic invertebrate community), benthic invertebrate community and fish habitat, and community structure within the Local Study Area (LSA; i.e., areas potentially affected by the Project) to support the Environment Assessment process.

There are numerous water bodies within the LSA which are either part of the Mollie River watershed or the Neville Lake watershed, both of which are part of the larger Mattagami River watershed. The lentic habitats within the LSA are typically shallow (<10 m) bodies of water connected by slow meandering streams. These mesotrophic lakes are dimictic in nature and are typically stratified during the summer and winter months. Few of the water bodies are shallow enough that no thermocline is established in the water column during the summer months. The lotic habitats are dominated by slow meandering streams made up of slow run, pools and frequently ponded areas as a result of beaver activity.

Surface water temperatures during summer months can get very warm (25 °C) due to the relatively shallow depths of most lakes and limited flow. Surface waters within the LSA are generally well oxygenated above the thermocline. However, below the thermocline, dissolved oxygen concentrations can seasonally approach hypoxic conditions (<2 mg/L) in most lakes greater than 5 m. Surface pH and specific conductivity varied within the lakes surveyed. Occasionally changes in pH and specific water conductivity were observed with depth in lake profiles and were likely associated with lower dissolved oxygen concentrations causing reducing conditions at greater depths.

Baseline water quality within the LSA was characterized by Golder (2013). Benchmarks were established based on the most recent water quality guidelines or 95th percentile of background concentrations, whichever was higher. Background concentrations (95th percentile of baseline) of total phosphorus, aluminum, iron and zinc were found to be elevated compared to established water quality guidelines. Water concentrations measured during the benthic invertebrate survey were typically lower than the established water quality benchmarks in the lakes and streams within the LSA. Aluminum and iron were observed at concentrations greater than the benchmark indicating that these substances can be naturally elevated within the LSA. Concentrations higher than background were also observed at some locations for chemical oxygen demand, dissolved organic carbon and total organic carbon which is likely related to the habitat conditions within the lake or stream (i.e., wetlands and highly vegetated areas will have higher concentrations of organic carbon and oxygen demand). Lastly, measured phosphorus and zinc concentrations in all samples taken in the fall of 2013 fell below the Provincial Water Quality Objectives, suggesting that the background benchmarks for these analytes may have been overstated.

Sediment physical characteristics were generally varying mixtures of sand, silt and clay for all benthic invertebrate stations. Sediment composition within the lakes closest to the proposed open pit development (Chester, Clam, Weeduck, Upper and Middle Three Duck lakes) had a naturally higher proportion of sand, likely reflective of natural differences in surficial geology.

Sediment core analysis determined that the surficial and historically deposited sediment quality was similar in all lakes. In addition, the sediment core data indicated that Mesomikenda Lake sediment was different compared to all other lakes within the LSA containing higher concentrations of arsenic, barium, cobalt, iron, lead, manganese, molybdenum, titanium, vanadium and zinc. Surficial sediment chemistry taken in conjunction with the benthic invertebrate community sampling was consistent with core sediment sampling results and proved very similar among lakes (excluding Mesomikenda Lake).

Sediment chemistry was less than the Severe Effect Level (SEL) for all metals; however concentrations of arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, total phosphorus, total Kjeldahl nitrogen and zinc were elevated above the Lowest Effect Level (LEL). Natural background concentrations of sediment metals, particularly in mineralized areas of the Canadian Shield, can often exceed LELs. Total organic carbon (TOC) was higher than the SEL in at least some stations in all the lakes within the LSA which is also typical of lakes found within the Canadian Shield. Sediment chemistry within the stream samples was generally consistent with the lake samples, with the exception that manganese concentrations in Bagsverd Creek were higher than SEL. Overall sediment chemistry within the LSA was typically found above the LEL but less than the SEL. Sediment concentrations were only observed above the SEL for arsenic and iron in Mesomikenda Lake and manganese in both Mesomikenda Lake and Bagsverd Creek. No spatial patterns among lakes or within watersheds were observed.

The benthic communities within the LSA were evaluated in thirteen lakes and two streams within the Mollie River and Neville Lake watersheds. Within both the deep (3.5 to 4.5 m) and shallow (1.5 to 2 m) lake stations the benthic communities were dominated by Chironomidae and Chaoboridae (midges) reflective of the habitat conditions in most of the lakes sampled (i.e., soft fine sediments with summer anoxia with depth). Benthic invertebrate density, taxon richness and Simpson's Evenness varied greatly in both the deep and shallow among and within lake stations. However the high variability among areas resulted in few statistical differences. Generally, the benthic community structure of deep lakes differed based on the presence and abundance of the two dominant groups (Chironomidae and Chaoboridae) versus the presence of or a variety of other species (i.e., presence of Harpactoicoida in Bagsverd Lake or high abundance of *Cyclocalyx* sp. in Neville and Clam lakes). The shallow lake stations differed in their benthic community structure but these differences were likely reflective of subtle habitat differences in sand, silt, total organic content and clay. Schist Lake was sampled as a potential reference lake for future studies. However the benthic communities in both the shallow and deep stations proved to be quite different and it is not recommended that it be used in future studies.

The benthic community within Bagsverd Creek was very different than Errington Creek in density, taxon richness, Simpson's Evenness and community composition. Despite that Errington Creek represented a similar size water course and upstream watershed size, was located within the same watershed as Bagsverd Creek and appeared to be a good reference, the benthic communities were very different and it is therefore recommended that Errington Creek not be used as a reference in the future for Bagsverd Creek.

The fish community within the LSA was generally characterized by warm water species. Both the lentic and lotic habitat were dominated by northern pike and yellow perch. Walleye, white sucker and lake whitefish were also common, and varied in abundance depending on the lake. Smallmouth bass and burbot were only present in a few lakes, but were found within both watersheds. Lake trout are only present within Mesomikenda Lake. The small-bodied fish community varied based on habitat conditions; however it primarily consisted of blacknose shiner, spottail shiner and Iowa darter. In areas where sportfish were absent, dace (northern redbelly and finescale) and fathead minnow were common. Overall, very few species were limited to one watershed (central mudminnow, common shiner and johnny darter), which is likely attributable to differences in sampling gear, effort applied among areas and the time of year. No endangered, threatened or special concern fish species (COSWIC 2013) were observed in any of the water bodies within the LSA over the two year program.

The estimated population of northern pike in both Côté Lake (442 individuals, 22.3 pike/ha) and Unnamed Lake #1 (387 individuals, 20.5 pike/ha) were within a range considered typical for lakes of comparable size and geographic latitude. The white sucker population in Côté Lake (906 individuals, 46.7 white sucker/ha) was similarly within range of published literature values (11 to 82 white sucker/ha), but the population within Unnamed Lake #1 (54 individuals, 2.9 white sucker/ha) was below regional norms. In addition, very low numbers of walleye were captured in Unnamed Lake #1 (27 individuals, 1.4 walleye/ha) compared to regional norms (6.6 to 14.8 walleye/ha).

Northern pike and yellow perch were caught within size ranges representative of all life stages (i.e., young-of-the-year, juvenile and adults), whereas walleye, lake whitefish, smallmouth bass and white sucker were largely represented by adults with only a few juveniles represented. Overall, all large-bodied fish within the LSA have similar conditions (length at weight) among lakes. Growth, measured as age at length indicated that northern pike growth was variable among lakes within the LSA in 2013. All other species age at length data suggests similar growth rates among lakes.

Fish were present in all the water bodies surveyed within the LSA. A few water bodies only had small-bodied fish present (East Beaver Pond, Beaver Pond, and North Beaver Pond) and two other water bodies only had small-bodied fish and white sucker (West Beaver Pond and Bagsverd Pond). The fish habitat within the lakes surveyed generally provides adequate quantities of spawning (including incubation), rearing, adult and overwintering habitat for the fish communities present within each of the lakes. The exception is a paucity of spawning habitat for walleye and white sucker throughout the LSA. The only spawning habitat identified for these species was a few locations within Bagsverd Creek and the Mollie River near Chester Lake outlet. Not surprising, northern pike and yellow perch dominate the fish community within the LSA as an abundance of habitat is available for both of these species.

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1.0 INTRODUCTION

1.1 Project Background

IAMGOLD Corporation (IAMGOLD) is planning to develop the Côté Gold Project (the Project) located approximately 20 kilometres (km) southwest of Gogama, 130 km southwest of Timmins, and 200 km northwest of Sudbury (see Figure 1.1).

This document is one of a series of physical, biological and human environment baseline reports that describe the current environmental conditions at the Project site. These baseline reports are written with the intent to support the Environmental Assessment (EA) process.

1.2 Overview of the Côté Gold Project

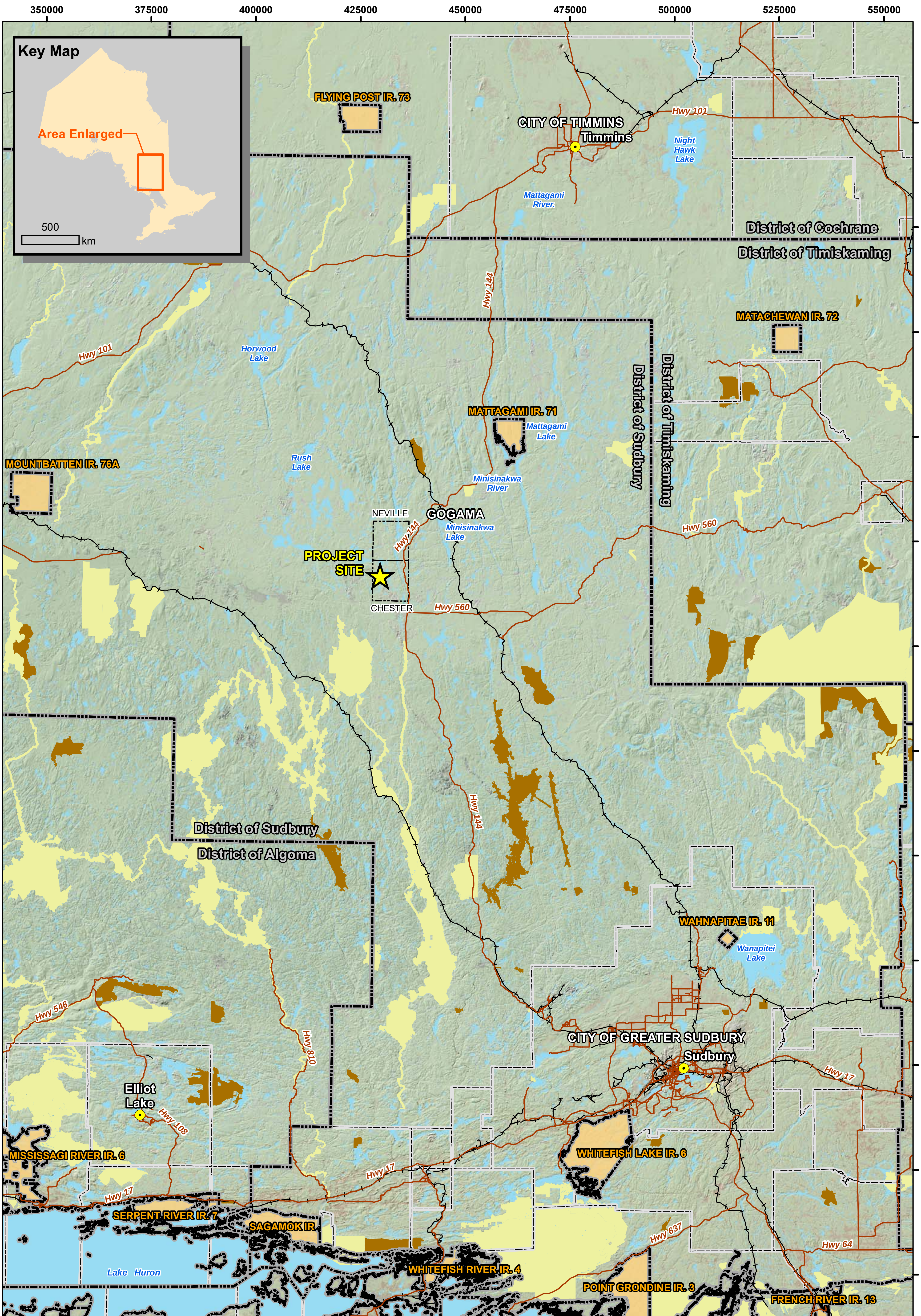
IAMGOLD is planning to construct, operate and eventually reclaim a new open pit gold mine at the Côté Gold Project site.

The proposed site layout places the required mine-related facilities in close proximity to the open pit, to the extent practicable. The proposed site layout is presented in Figure 1.2 showing the approximate scale of the Côté Gold Project. The site plan will be refined further as a result of ongoing consultation activities, land purchase agreements and engineering studies.

As part of the proposed development of the Project, several water features will be fully or partially overprinted. These include Côté Lake, portions of Three Duck Lakes, Clam Lake, Mollie River/Chester Lake system and Bagsverd Creek. As a consequence, these water features will need to be realigned for safe conveyance around the open pit and Tailings Management Facility.

The major proposed Project components are expected to include:

- open pit;
- ore processing plant;
- maintenance garage, fuel and lube facility, warehouse and administration complex;
- construction and operations accommodations complex;
- explosives manufacturing and storage facility (emulsion plant);
- various stockpiles (low-grade ore, overburden and mine rock area [MRA]) in close proximity to the open pit;
- aggregate extraction with crushing and screening plants;



LEGEND

- Project Site Location
- Regional Communities
- Major Roads
- Railway
- Lower Tier Municipality Boundary
- Upper Tier Municipality Boundary
- First Nation Reserve
- Conservation Reserve (Regulated)
- Provincial Park
- Wooded Area
- Waterbody / Large Watercourse

NOTES:
- Base data on this map was extracted from Land Information Ontario, MNDM, OBM Ontario Digital Geospatial Database and Ontario Road Network Database.

Datum: NAD83
Projection: UTM Zone 17N

0 12.5 25 50 75 100 Kilometres

IAMGOLD CORPORATION amec

CÔTE GOLD PROJECT

Project Location

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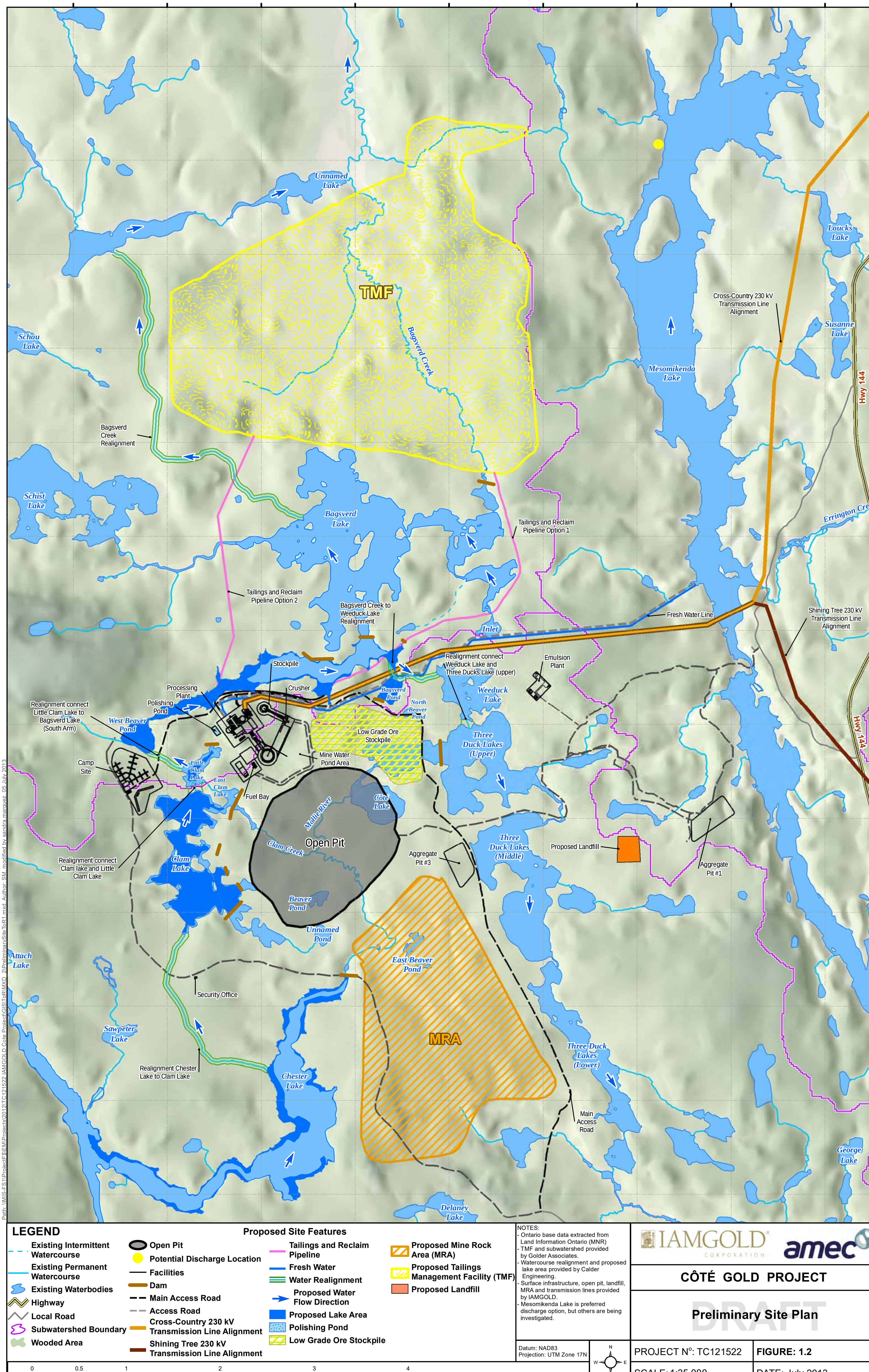
PROJECT Nº: TC121522	FIGURE: 1.1
SCALE: 1:850,000	DATE: July 2013



TMF
MRA
Open Pit
Mesomikenda Lake
Bagsverd Lake
Bagsverd Creek
Bagsverd Creek Realignment
Unnamed Lake
Schou Lake
Schist Lake
Loucks Lake
Susanne Lake
Errington Creek
Hwy 144
Cross-Country 230 kV Transmission Line Alignment
Shining Tree 230 kV Transmission Line Alignment
Tailings and Reclaim Pipeline Option 1
Tailings and Reclaim Pipeline Option 2
Bagsverd Creek to Weeduck Lake Realignment
Fresh Water Line
Inlet
Realignment connect Weeduck Lake and Three Ducks Lake (upper)
Emulsion Plant
Stockpile
Crusher
Processing Plant
Polishing Pond
Realignment connect Little Clam Lake to Bagsverd Lake (South Arm)
West Beaver Pond
Camp Site
Little Clam Lake
East Clam Lake
Fuel Bay
Bagsverd Pond
North Beaver Pond
Low Grade Ore Stockpile
Mine Water Pond Area
Weeduck Lake
Three Duck Lakes (Upper)
Côté Lake
Mollie River
Clam Creek
Realignment connect Clam lake and Little Clam Lake
Clam Lake
Beaver Pond
Unnamed Pond
Aggregate Pit #3
Three Duck Lakes (Middle)
Proposed Landfill
Aggregate Pit #1
East Beaver Pond
Attach Lake
Security Office
Sawpeter Lake
Realignment Chester Lake to Clam Lake
Chester Lake
Three Duck Lakes (Lower)
Main Access Road
George Lake
Delaney Lake
427000
428000
429000
430000
431000
432000
433000
434000
435000
5275000
5274000
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5272000
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LEGEND
Existing Intermittent Watercourse
Existing Permanent Watercourse
Existing Waterbodies
Highway
Local Road
Subwatershed Boundary
Wooded Area
Proposed Site Features
Open Pit
Potential Discharge Location
Facilities
Dam
Main Access Road
Access Road
Cross-Country 230 kV Transmission Line Alignment
Shining Tree 230 kV Transmission Line Alignment
Tailings and Reclaim Pipeline
Fresh Water
Water Realignment
Proposed Water Flow Direction
Proposed Lake Area
Polishing Pond
Low Grade Ore Stockpile
Proposed Mine Rock Area (MRA)
Proposed Tailings Management Facility (TMF)
Proposed Landfill
NOTES:
- Ontario base data extracted from Land Information Ontario (MNR)
- TMF and subwatershed provided by Golder Associates.
- Watercourse realignment and proposed lake area provided by Calder Engineering.
- Surface infrastructure, open pit, landfill, MRA and transmission lines provided by IAMGOLD.
- Mesomikenda Lake is preferred discharge option, but others are being investigated.
Datum: NAD83
Projection: UTM Zone 17N
0 0.5 1 2 3 4 Kilometres
IAMGOLD CORPORATION
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CÔTÉ GOLD PROJECT
Preliminary Site Plan
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PROJECT N°: TC121522
FIGURE: 1.2
SCALE: 1:35,000
DATE: July 2013

- Tailings Management Facility (TMF);
- on-site access roads and pipelines, power infrastructure and fuel storage facilities;
- potable and process water treatment facilities;
- domestic and industrial solid waste handling facilities (landfill);
- water management facilities and drainage works, including watercourse realignments; and
- transmission line and related infrastructure.

1.3 Aquatic Baseline Objectives and Approach

The aquatic baseline study was a two year program, the findings of which have been integrated into a consolidated baseline report to support the Environment Assessments. The objective of the study is to provide baseline information on sediment quality, water quality (in support of the benthic invertebrate community), benthic invertebrate community, fish habitat and community structure and fish tissue quality within the Local Study Area (i.e., areas potentially affected by the Project).

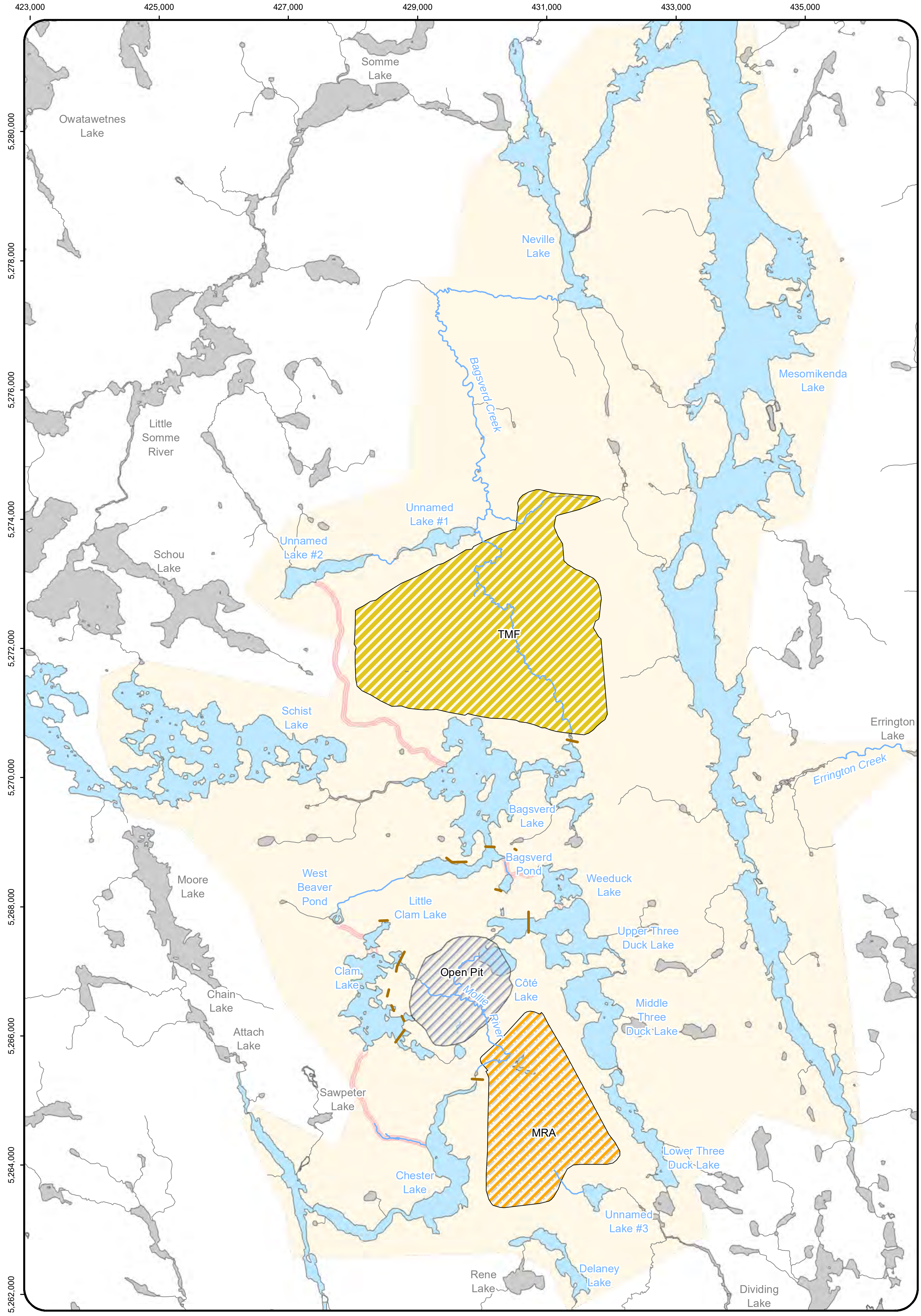
1.4 Local Study Area

The local study area (LSA) includes areas where there is potential for measurable effects as a result of either, construction, operation or closure. Based on this definition, the LSA includes everything within the site boundary (site study area) as well as downstream water bodies that may receive effluent, site drainage or storm water discharge from the Côté Gold Project or have the potential to be affected by watercourse realignments. The extent of the water bodies included in the assessment was based on the currently defined Project design and the expected extent of potential changes to the aquatic ecosystems (Figure 1.3).

A regional study area was not defined for the Aquatic Baseline Study as the effects were not anticipated to be measurable beyond the LSA.

1.5 Report Organization

The methods followed for sample collection, sample processing, sample analysis and data analysis for each study component are presented in Section 2.0. Water quality is provided in Section 3.0 and sediment quality data are presented in Section 4.0. The biological study components, including benthic invertebrate community and fish surveys, are presented in Sections 5.0 and 6.0, respectively. Section 7.0 provides conclusions of the study and references cited throughout the report are listed in Section 8.0.



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Côté Gold Map Features:

- Dam Structure
- Water Realignment
- Area Evaluated
- Area Evaluated
- Local Study Area

Figure 1.3: Côté Gold Local Study Area

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minnow environmental inc.

2.0 METHODS

Thirty-two water bodies (including rivers/streams; Figure 2.1) within the Local Study Area (LSA) were assessed, from July 4th to 16th, 2012, June 4th to 9th and September 12th to 16th, 2013. Field investigations included water and sediment quality monitoring, and surveys of the benthic invertebrate and fish communities. Fish surveys included documentation of fish habitat, fish community structure, abundance and estimates of northern pike, white sucker and/or walleye population sizes in Côté Lake and Unnamed Lake #1. Detailed methodology related to the field investigations are provided in the sections that follow.

2.1 Water Quality

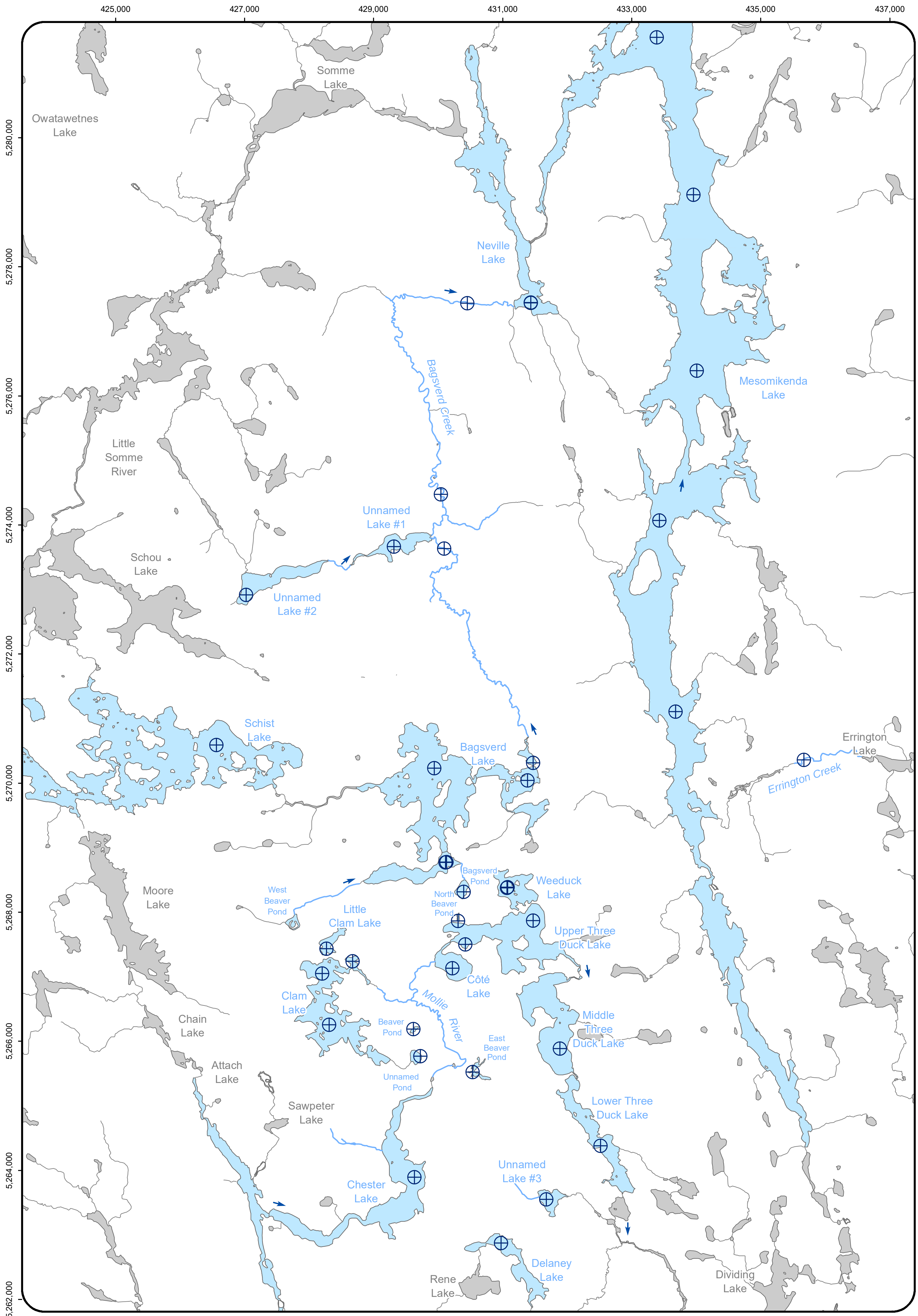
Water quality was assessed through field measures and water sampling was undertaken in all the water bodies assessed as part of the aquatic baseline. Each station was geographically referenced using a GPS (Figure 2.1; Appendix Tables C.1 to C.24).

2.1.1 Water Quality

In situ water temperature, dissolved oxygen, pH and specific conductance were measured at sediment coring locations, benthic invertebrate sampling stations, and fish habitat characterization areas (Figure 2.1). Vertical profiles were completed in the deepest basins of each lake at one metre intervals, while measurements were collected at the surface or mid-column in streams, rivers and ponds. A calibrated YSI 650 MDS (Multiparameter Display System) equipped with a YSI 600QS Sonde or a YSI Professional Plus Multiparameter Instrument (YSI Inc., Yellow Springs, OH) was used to collect the *in-situ* measurements. Water quality profiles were taken to coincide with sediment core sampling in 2013. Surface (0.25 m below surface) and bottom (0.25 m above bottom) measurements were also collected at benthic invertebrate sampling locations in 2013. Secchi depth and/or observations of water colour and clarity were recorded at each water quality station.

2.1.2 Water Samples

Water quality samples were collected at all benthic invertebrate community survey areas (in September 2013) below the water surface to avoid floating material, and facing upstream to avoid any potential influence of the individual collecting the sample (Figure 2.2). Samples were collected into labelled bottles provided by Maxxam Analytics Inc. (Maxxam). Immediately after sampling, the samples were placed into a cooler for transport to the mine laboratory where they were placed in a refrigerator prior to shipping. Samples were shipped to Maxxam in Mississauga, Ontario within four days of collection. Water samples were



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
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Project No.: 2496

Côté Gold Sampling Stations:

- Water Quality Station
- Water Flow Direction
- Area Evaluated
- Area Evaluated

Figure 2.1: Côté Gold Water Bodies Evaluated and *In Situ* Water Quality Stations

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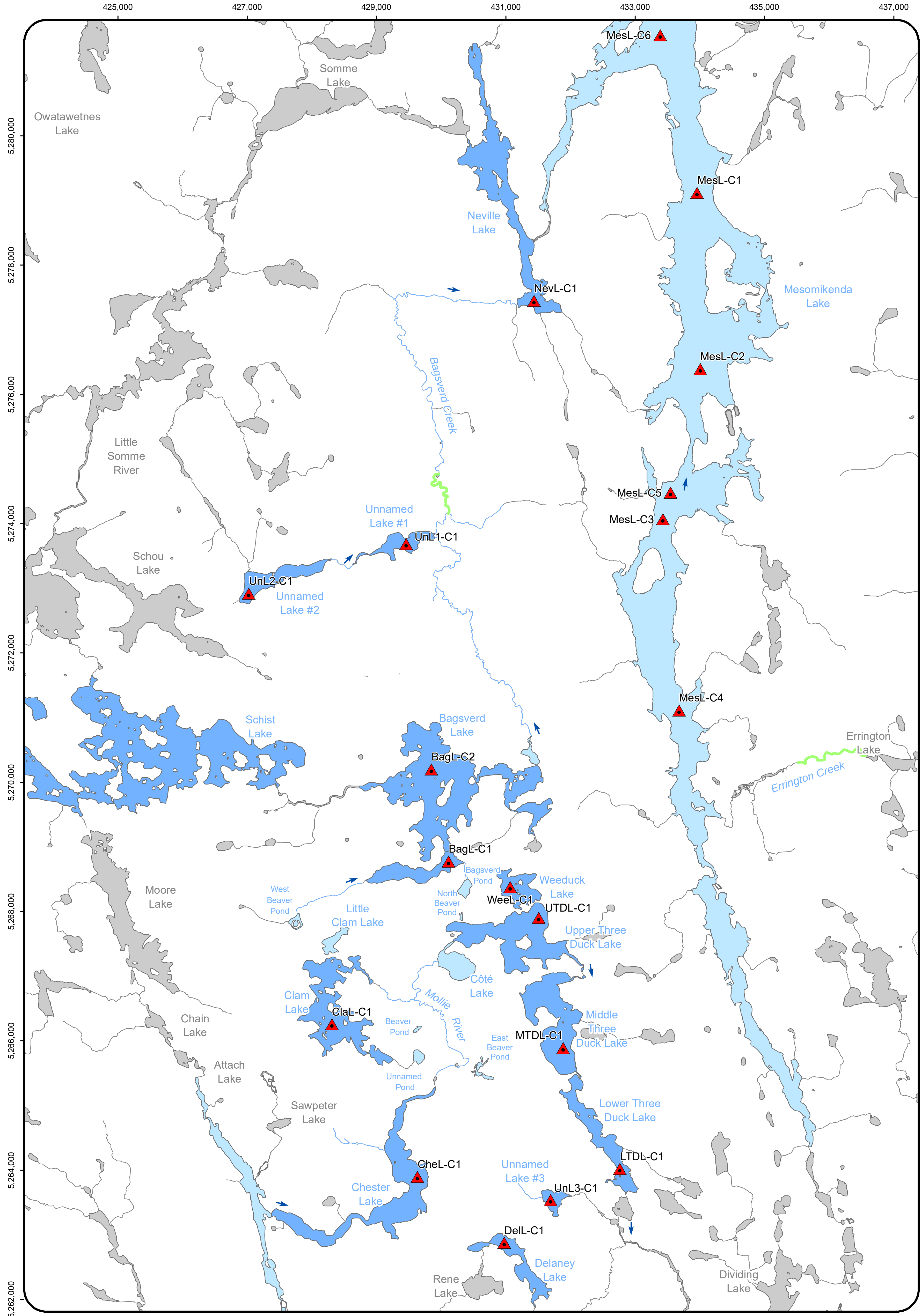

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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
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Project No.: 2496

Côté Gold Sampling Stations:

- Coring Site
- Sediment and Benthic Invertebrate Sampling Areas
- Sediment and Benthic Invertebrate Sampling Areas

Other Features:

- Water Flow Direction
- Other Water Bodies within LSA
- Other Water Bodies within LSA

Figure 2.2: Côté Gold Sediment Core Stations and Sediment and Benthic Community Sampling Areas

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analyzed for acidity, alkalinity, ammonia, chemical oxygen demand, chloride, conductivity, cyanide (WAD[1] and total), dissolved organic carbon, fluoride, hardness, nitrate, nitrite, pH, phosphate, total phosphorus, total organic carbon, total Kjeldahl nitrogen, total suspended solids, turbidity and metals (through an Inductively Coupled Plasma - Mass Spectrometry scan [ICP-MS]). Two duplicates were taken for quality control assurance (see Appendix B).

2.1.3 Data Evaluation

In situ water quality data were compared to Provincial Water Quality Objectives (PWQO; MOEE 1994) for the protection of aquatic life. In addition, water quality profiles were evaluated graphically to determine the thermocline and depth at which hypoxic (very low dissolved oxygen concentrations e.g., <2 mg/L) conditions occur.

Baseline water quality and hydrology was characterized by Golder (2013). Water quality guidelines are established in Canada (Canadian Water Quality Guidelines [CWQG]; CCME 2013) and Ontario (Provincial Water Quality Objectives [PWQO]; OMOEE 1994) for the protection of fish and aquatic life. These guidelines are typically more stringent than drinking water guidelines and thus generally protective of both uses[2]. In recent years, Environment Canada has revised water quality guidelines based on current toxicity literature for some substances (CCME 2013). The rationale and supporting document for many of the PWQO are now dated (i.e. based on literature from the 1970's and 1980's) and do not provide the best basis for assessing potential effects to aquatic biota. Furthermore, some other Canadian jurisdictions have developed water quality guidelines for substances that do not currently have provincial or federal guidelines (e.g., sulphate). However, in some instances background (pre-mining) concentrations are naturally higher than these guidelines (e.g., aluminum, iron, total phosphorus and zinc; Table 2.1). Therefore, water quality concentrations have been compared to a single benchmark based on the most recent federal or provincial guideline, or background concentration, whichever is higher (Table 2.1). If a Federal or Provincial guideline was not available, the most recent guideline from another Canadian jurisdiction was used, if available (Table 2.1). Background concentration was used as the benchmark for acidity, alkalinity, calcium, conductivity, total cyanide, dissolved organic carbon, magnesium, sodium, strontium, titanium, chemical oxygen demand, hardness, total Kjeldahl nitrogen, total organic carbon and total suspended solids since no water quality guidelines exist for these analytes (Table 2.1).

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[1] WAD Cyanide – weak acid dissociable cyanide.
[2] CWQG and PWQO do not address microbial levels in water that could impair its use as potable water and thus all water should be tested before being used as potable water.

Table 2.1: Selected benchmarks for the evaluation of water quality, Cote Gold Project.

Analyte	Units	95th Percentile Baseline Concentration	Water Quality Guidelines [a]				Selected Benchmark[e]
			Primary			Alternative	
			PWQO OMOEE 1994 [b]	CWQG Environment Canada[c]		BCMOE 2006 [d] unless noted	
Acidity	mg/L	2.5	-	-			2.5
Alkalinity	mg/L	29	-	-			29
Aluminum	mg/L	0.1182	0.075[f]	0.1[f]	1987		**0.1182**
Ammonia (Total)	mg/L	0.21	-	6.89[f]	2001		6.89
Ammonia (Un-ionized)	mg/L	0.00049	0.02	0.019	2001		0.019
Antimony	mg/L	< 0.006	0.02	-			0.02
Arsenic	mg/L	< 0.003	0.005	0.005	1997		0.005
Barium	mg/L	0.007	-	-		1.0	1.0
Beryllium	mg/L	< 0.001	0.011[f]	-			0.011
Boron	mg/L	< 0.01	0.2	1.5	2009		1.5
Cadmium	mg/L	0.00005	0.0001[f]	0.000058[f,g]	2012		0.000058
Calcium	mg/L	10.465	-	-			10.465
Chloride	mg/L	1.2	-	120	2011		120
Chromium	mg/L	< 0.003	0.0089[f]	0.0089[f]	1997		0.0089
Cobalt	mg/L	0.00025	0.0009	0.0025 [f]	2013		0.0025
Conductivity	umho/cm	79.7	-	-			79.7
Copper	mg/L	0.001	0.005[f]	0.002[f]	1987		0.005
Cyanide (Total)	mg/L	0.001	-	-			0.001
Cyanide (Free)	mg/L	-	0.005	0.005	1987	0.009784[k]	0.005
Dissolved Organic Carbon	mg/L	18	-	-			18
Fluoride	mg/L	0.025	-	0.12	2002		0.12
Iron	mg/L	0.369	0.3	0.3	1987		**0.369**
Lead	mg/L	0.0005	0.003[f]	0.001[f]	1987		0.001
Magnesium	mg/L	2.003	-	-			2.003
Manganese	mg/L	0.0878	-	-		0.7 [f]	0.7
Mercury	mg/L	< 0.0001	0.0002	0.000026	2003		0.000026
Molybdenum	mg/L	< 0.002	0.04	0.073	1999		0.073
Nickel	mg/L	0.0015	0.025	0.025[f]	1987		0.025
Nitrate	mg/L	0.13	-	13	2012		13
Nitrite	mg/L	< 0.05	-	0.06	1987		0.06
pH	mg/L	7.16	6.5 - 8.5	6.5 - 8.5	1994		6.5 - 8.5
Phosphorus (Total) [h]	mg/L	0.035	0.02	0.02	2004		**0.035**
Potassium	mg/L	0.49	-	-		373	373
Selenium	mg/L	< 0.004	0.1	0.001 [i]	1987		0.001
Silver	mg/L	0.00005	0.0001	0.0001	1987		0.0001
Sodium	mg/L	1.3365	-	-			1.3365
Strontium	mg/L	0.026	-	-			0.026
Sulphate	mg/L	4.092	-	-		218 [f,j]	218
Thallium	mg/L	0.00015	0.0003	0.0008	1999		0.0008
Titanium	mg/L	0.002	-	-			0.002
Total Chemical Oxygen Demand	mg/L	39	-	-			39
Total Hardness	mg/L	33.5	-	-			33.5
Total Kjeldahl Nitrogen	mg/L	1.2	-	-			1.2
Total Organic Carbon	mg/L	16	-	-			16
Total Suspended Solids	mg/L	5	-	-			5
Tungsten	mg/L	< 0.01	0.03	-			0.03
Uranium	mg/L	< 0.002	0.005	0.015	2011		0.015
Vanadium	mg/L	< 0.002	0.006	-			0.006
Zinc	mg/L	0.032	0.02	0.03	1987		**0.032**
Zirconium	mg/L	< 0.004	0.004	-			0.004

Selected benchmark

benchmark is the upper limit of background

Bold upper limit of background is greater than the water quality guideline.

[a] The most recent CWQG or PWQO for the protection of aquatic life was used. If there was no federal or provincial guideline, the most recent guideline from another Canadian jurisdiction (BCMOE) was used.

[b] PWQO - Provincial Water Quality Objectives. Ministry of Environment and Energy, July 1994, re-issued in 1999 (OMOEE 1994).

[c] CWQG - Canadian Water Quality Guidelines for the protection of aquatic life. Canadian Council of Ministers of the Environment, http://st-ts.ccme.ca/, accessed September 2013 (CCME 2013). The dates for the derivation of the guideline for each substance is provided.

[d] British Columbia Ministry of Environment, Water Quality Guidelines (BCMOE 2006).

[e] Selected water quality benchmark was the most recent water quality guideline of the upper limit of background whichever was higher.

[f] Aluminum guideline depends on pH; total ammonia guideline depends on pH and temperature; beryllium, cadmium, copper, lead, manganese, nickel and sulphate guidelines depend on hardness; guidelines in table assume: pH = 7, temperature = 15°C, hardness = 33 mg/L as CaCO3 based on background water quality (Golder 2013). Guideline for trivalent chromium used for comparison purposes for total chromium.

[g] Cadmium CCME guideline is based on the Draft CCME for cadmium (Environment Canada 2012)

[h] The 95th percentile total phosphorus concentration was calculated based on data from samples collected by IAMGOLD in August 2013 and analyzed via spectrophotometer.

[i] The CCME guideline was selected as the PWQO value is not consistent with other jurisdictions in Canada (BCMOE 2006) or internationally (USEPA 2004)

[j] Sulphate guideline established by BCMOE in 2013 (BCMOE 2013)

[k] USEPA free cyanide value selected for non-salmonid bearing waters, PWQG was used for Mesomikenda due to presence of salmonids.

2.2 Sediment Quality

Two types of sediment samples were taken for the aquatic baseline assessment; sediment cores to determine surficial and historically deposited sediment quality and sediment grabs (collected concurrent with the benthic invertebrate sampling) to determine sediment composition and chemical quality relative to benthic invertebrate communities.

2.2.1 Sediment Coring

Sediment cores were taken in the deepest basin of each lake, representative of the most profundal[3] area (Figure 2.2). The deepest part of the lake was located using bathymetry maps and a depth sounder. Once at the station, the location was recorded using a Global Positioning System (GPS; Appendix Table D.1). The core was collected using a 4" diameter Tech Ops corer. The corer was deployed from a boat, with care taken to control the rate of descent and to maintain the corers vertical position once it reached the bottom. After it penetrated the sediment, the corer was carefully raised to the surface and an extruder was inserted into the bottom of the core tube prior to lifting it out of the water to prevent any slippage. Core samples were rejected if there was any evidence of slippage, if there was any evidence that the core did not adequately penetrate the substrate, or if there was any evidence of disturbance of the sediment-water interface. A photograph was taken, and the number of rejected cores, penetration depths and visible sediment characteristics (*i.e.*, the presence of epibenthic organisms or stratification) were recorded on field sheets (see Appendix D).

The core extruder was used to push sediments upwards towards the top of the core tube in a controlled fashion with care taken to minimize suspension of fines. In the event of the suspension of fines, momentum was stopped allowing the solids to re-settle. Once the sediment was near the top of the tube, an extrusion collar marked in 1-cm intervals was carefully aligned on the top of the tube and the sediment was extruded upwards to a depth of one centimetre. A core slicer (box design) was then carefully inserted between the tube and the collar, the collar removed and the sample transferred from the slicer to labelled re-closable polyethylene bags. This was repeated five times for a total of five slices (corresponding to 0-1 cm, 1-2 cm, 2-3 cm, 3-4 cm and 4-5 cm). To ensure sufficient sample size in the top first centimetre, another core was taken and the top first centimetre was removed and added to the 0-1 cm sample. Three duplicates were taken, with two additional

[3] The profundal zone is the deep zone of a lake which consists of exposed fine sediment free of vegetation, below the range of effective light penetration.

cores taken in the same location to complete a full duplicate sample of each of the five intervals for quality assurance (see Appendix B).

Following collection, all sediment samples were placed into a cooler, transported to the mine and stored in a refrigerator until shipment to Saskatchewan Research Council (SRC) in Saskatoon, Saskatchewan. Sediment samples were analyzed for total weight, total organic carbon (TOC), sulphur, mercury, thorium and metals (aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium and zinc).

2.2.2 Sediment Grabs in Support of the Benthic Invertebrate Community Survey

Sediment samples were collected concurrent with, and at the same locations as, benthic invertebrate samples (Figure 2.2) using a petite Ponar grab (15.24 cm x 15.24 cm, 0.023 m^2 total bottom area per grab). A composite sample was created by collecting the surficial three centimetres of sediment from each of three acceptable grabs (i.e., full to each edge of sampler). A stainless steel spoon was used to transfer the sample into re-closable polyethylene bags for subsequent analysis. Details pertaining to the samples (e.g., depth, substrate characteristics, colour, texture, presence of aquatic vegetation) were recorded on field sheets (see Appendix E). Nine duplicate samples were also assessed for quality assurance (see Appendix B).

Following collection, all sediment samples were placed into a cooler, transported to the mine and stored in a refrigerator until shipment to SRC in Saskatoon, Saskatchewan or Maxxam in Mississauga, Ontario. Sediment samples were analyzed for TOC, total Kjeldahl nitrogen (TKN), mercury, and metals (aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, phosphorus, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium and zinc) by SRC and particle size was analyzed by Maxxam.

2.2.3 Data Evaluation

Sediment quality data were evaluated relative to applicable Provincial Sediment Quality Guidelines (PSQG; OMOE 1993). The PSQG are numerical criteria that are designed to be protective of sediment-dwelling organisms based on long-term exposure (OMOE 1993). The PSQGs include lowest effect level (LEL) and severe effect level (SEL) values. The LEL is defined as the concentration of an analyte that can be tolerated by the majority of benthic organisms (i.e., at least 90 to 95 % of species) and reflects clean to moderately polluted sediments (OMOE 1993). The SEL is the concentration at which pronounced disturbance to the benthic community (i.e., 90 to 95 % of benthic species) can be expected (OMOE 1993) and is typically about five times higher than the LEL. The data on which the PSQGs were developed were strongly weighted by data for Great Lakes basin sediments, which tend to have substantially lower natural content of many metals relative to sediments in Canadian Shield lakes (Prairie and McKee 1994). As such, natural background concentrations of sediment metals, particularly at mineralized areas of the Canadian Shield, can often exceed LELs.

2.3 Benthic Invertebrate Community Sampling

Benthic macroinvertebrate samples were collected from 13 lakes and two riverine areas (Bagsverd Creek and Errington Creek) as part of the baseline assessment (Figure 2.2). Benthic invertebrates in lakes with a depth greater than 4 m were collected at a depth of 3.5 to 4.5 m to remain above anoxic conditions frequently observed at greater than 5 m in many water bodies within the LSA[4]. In water bodies where maximum depth was less than 3.5 m, benthic invertebrates were sampled at 1.5 to 2 m. The benthic invertebrate samples were collected from the same locations as sediment samples (Section 2.2.2) so that the benthic communities could be considered relative to sediment composition and chemical quality. Each station was geographically referenced using a GPS (Appendix Table E.1).

2.3.1 Sample Collection

Benthic invertebrate community samples were collected using a petite-Ponar grab (0.023 m^2). Five stations were sampled in each area. One sample was collected at each station and was a composite of three sub-samples (grabs; 0.69 m^2 of bottom area in total), to ensure that each sample was representative of that station. Upon retrieval, all samples were closely examined to verify that only high quality, comparable samples were retained (based on factors such as particle size, organic matter, presence or absence of plants or algae). Each grab was placed into a tub to evaluate whether the grab was complete (i.e., that the grab captured the surface material and was full to each edge) and to evaluate the depth to which the grab penetrated. Incomplete or unusual samples were discarded. If accepted, the petite-Ponar was rinsed to ensure the all material was removed and transferred to the tub. The sample was then transferred to a 500 µm mesh sieve bag. Sampling was repeated until three acceptable grabs were collected and transferred to the sieve bag. The sample was then sieved to remove fine material and reduce sample volume. Details about each acceptable grab were recorded on field sheets (see Appendix E). After sieving, the retained

[4] Water quality profiles were conducted prior to benthic invertebrate sampling to confirm location of the thermocline within the lake.

material (sample) was carefully transferred to a labelled 2-L wide mouth plastic jar using a stainless steel spoon and a wash bottle, over a plastic tub to avoid any potential loss of organisms. Any organisms that adhered to the sieve bag were removed and added to the sample. All samples were labelled internally (using wooden sticks) and externally with the station number, area identifier, Minnow project number, date and field personnel in order to ensure correct identification at the laboratory. Samples were preserved with buffered formalin solution to achieve a nominal concentration of 10 %. Supporting measures (GPS coordinates, station depth, *in situ* water quality and sediment quality) were collected at each benthic station as previously described.

2.3.2 Sampling Processing

Benthic invertebrate samples were shipped to Zaranko Environmental Assessment Services (ZEAS Inc.) in Nobleton, Ontario. Upon arrival at the laboratory, each benthic invertebrate sample was inspected to verify adequate preservation and a biological stain was added to improve sorting efficiency. Prior to sorting, benthic invertebrate samples were washed free of formalin in a 500 μm sieve under well-ventilated conditions. Samples were then examined by a technician under a stereomicroscope at a magnification of at least ten times. All benthic organisms were removed from the sample debris and placed into vials containing 70 % ethanol. A senior taxonomist then identified and enumerated the benthic organisms to the lowest practical level (typically genus or species) utilizing the most up-to-date taxonomic keys.

Quality assurance/quality control (QA/QC) for benthic laboratory operations was conducted in accordance with the recommendations of Environment Canada (Environment Canada 2012). Specifically, the effects of sub-sampling were examined by analyzing duplicate sub-samples at a frequency of at least 10 % to determine sub-sampling precision. A duplicate sub-sample is a second fraction of the original sample that is enumerated and compared to the first. Ten percent of the samples were also re-sorted to verify that less than 10 % of total organisms were missed (see Appendix B).

2.3.3 Data Analysis

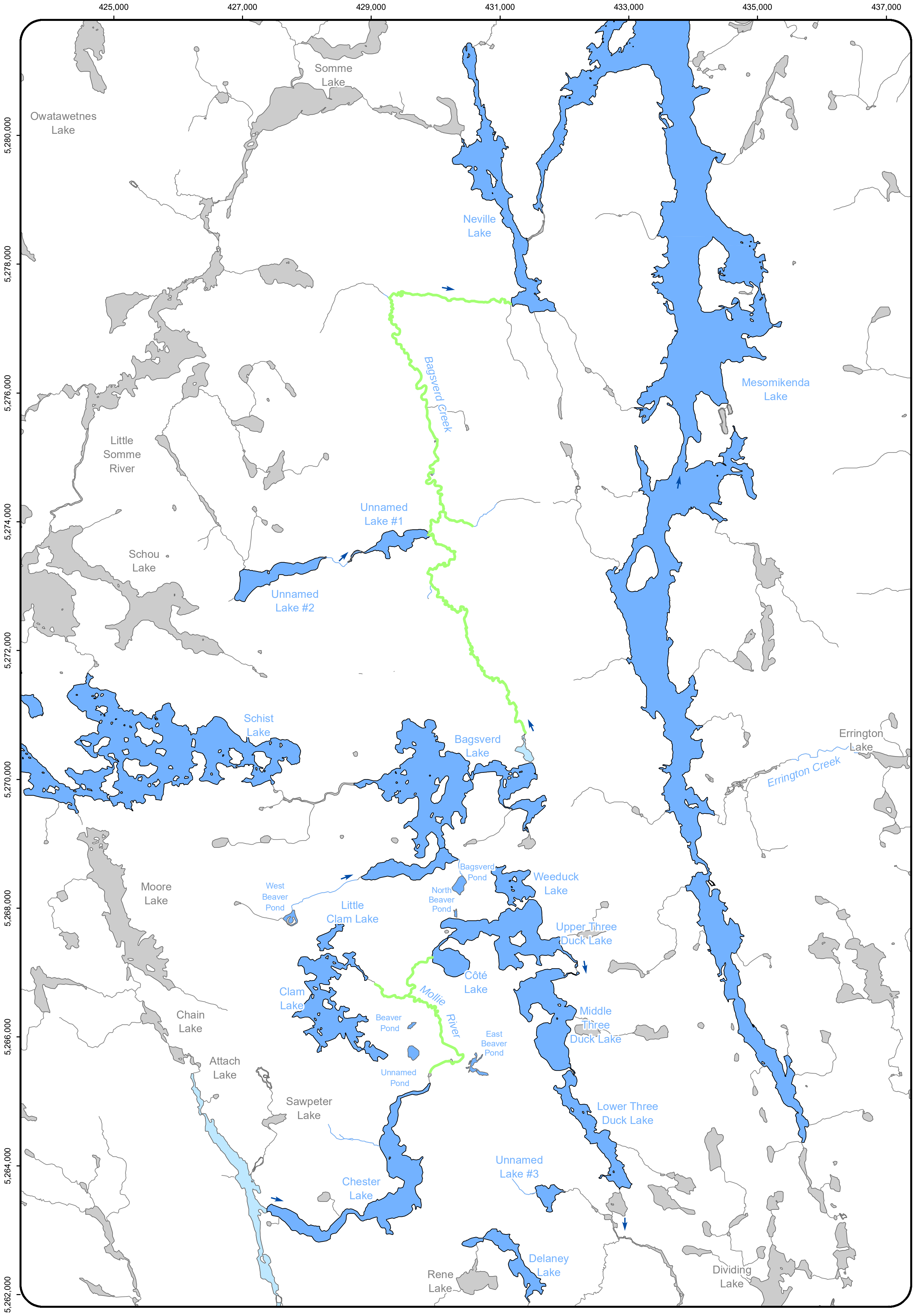
Endpoints used to determine the overall condition of the benthic invertebrate community included taxon richness (number of taxa identified at the lowest practical level), benthic invertebrate density (organisms per m^2) and Simpson's Evenness (calculated as in Smith and Wilson 1996). In addition, the relative proportions of the most abundant taxa were computed (calculated as the abundance of each respective dominant/indicator taxon relative to the total number of organisms in the sample). Dominant/indicator taxon groups were defined as those groups representing greater than ~10% of total organism abundance or any groups considered to be important indicators of environmental stress.

All benthic endpoints were summarized by separately reporting mean, median, minimum, maximum, standard deviation, standard error and sample size for each sampling area (Environment Canada 2012). Differences between areas were tested using Analysis of Variance (ANOVA) and post-hoc Bonferroni comparisons. Data were transformed as necessary to satisfy assumptions of normality and homogeneity of variance. In instances where variances could not be homogenized by transformation, post-hoc tests not requiring this assumption (Tamhane's) were used instead of Bonferroni comparisons. Statistical tests and plots were generated using SPSS Version 12.0 (SPSS Inc., Chicago, IL). Interpretation of benthic community metrics was enhanced by inspection of raw data and taxonomic proportions to detect patterns of ecologically relevant differences between areas. Ecological and habitat requirements of taxa were assessed using standard references (Clarke 1981, Edmunds et al. 1976, Merrit and Cummins 2008, Weiderholm 1983, Wiggins 1996).

Community structure was also quantified using Nonmetric Multidimensional Scaling (NMDS), an iterative optimization ordination method that is not limited by the particular underlying model as is the case with Principal Component Analysis (PCA) and Canonical Correspondence Analysis (CCA), which makes NMDS generally more effective at finding ecologically relevant ordination solutions (McCune and Grace 2002). All NMDS used the Bray-Curtis distance and were run using the "slow and thorough" settings of maximum iterations = 400, instability criterion = 0.00001, number of real runs 40, and number of randomized runs 50 (McCune and Grace 2002). All NMDS solutions were checked to ensure that stress was stable and below 0.20, and that each axis explained more variation than by chance alone based on $p \leq 0.05$ Monte Carlo randomization tests. Rare taxa were also removed for NMDS analyses, as their inclusion can obscure detection of major ecological gradients (Bailey et al. 2004). Therefore, taxa that did not occur in three or more samples were removed from the NMDS specific dataset being analyzed; deep stations, shallow stations, and stream stations. Direct and indirect Pearson's correlation was conducted using NMDS solution axes against benthic invertebrates and environmental variables (sediment particle size and total organic carbon concentration), respectively.

2.4 Fish Sampling

The fish habitat and community was characterized as part of the aquatic baseline assessment for all water bodies potentially influenced by the Côté Gold Project (Figure 2.3). In addition, fish abundance was assessed, and fish meristics and tissue were collected for



MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Côté Gold Sampling Stations:
- Fish Sampling Area
- Fish Sampling Area

Other Features:
- Water Flow Direction
- Other Water Bodies within LSA
- Other Water Bodies within LSA

Figure 2.3: Côté Gold Fish Sampling Areas

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minnow environmental inc.

key fish species within the LSA. Lastly, fish population estimates were conducted in Côté Lake and Unnamed Lake #1 for northern pike, walleye (Unnamed Lake #1 only) and white sucker (Figure 2.3).

2.4.1 Fish Habitat

Assessment of the biophysical habitat was conducted by experienced aquatic biologists using standard habitat evaluation procedures (e.g., Dodge et al. 1989; OMNR 1993; Bain and Stevenson 1999). The habitat assessment was conducted by visually assessing the wetted area/perimeter of each water body by foot and/or by boat, with the characterization focused on identifying general habitat types, and any unique or significant physical or biological features (e.g., tributaries, groundwater seeps, fish barriers, etc. or macrophyte beds, woody debris etc.) within the given water body, and by recording key features on habitat maps.

For each water body, the surface area was determined from digitized aerial photographs using computer software (e.g., AutoCAD LT, Autodesk Inc., San Rafael, CA), with other areal dimensions determined using Geographic Information System (GIS) software, or measured during the field program using a rangefinder (Yardage Pro, Bushnell Performance Optics, Richmond Hill, ON), a tape measure (for streams), or with the aid of a GPS unit. Spot depths were measured to the nearest decimetre using a portable sounding unit, or to the nearest centimetre using a meter stick (streams and shallow ponds). Substrate material was characterized by eye, with sediment retrieved by petite-Ponar for the assessment of deep water areas. A visual assessment was also used to characterize shoreline material and relative stability, as well as to document riparian features. Documentation of key biological features (e.g., aquatic macrophyte species and relative spatial extent, large woody debris etc.) was also conducted, with emphasis placed on those related to fish habitat. Field guides used to assist in the identification of aquatic macrophytes and riparian vegetation included those by Newmaster et al. (1997), and Lahring (2003). Photographs of key habitat features were also taken to further support habitat descriptions. For each water body, habitat maps were created using GIS software (see Appendix A).

2.4.2 Fish Community and Abundance

Fish community composition and relative abundance were assessed using standard fish collection methods implemented with care to minimize fish mortality. Fish communities were sampled using baited minnow traps, seine nets, backpack electrofisher (Bagsverd Creek), boat electrofishing (Côté Lake and the Mollie River), hoop nets, and gill nets (Table 2.2). For each method, sampling effort (i.e., set duration, electrofishing seconds, number of seine

Table 2.2: Fishing equipment and techniques employed in the baseline for the Côté Gold Project .

Equipment Details	Dimensions/Details	Target/Use
Large Hoop Net	3' [0.9 m] diameter hoops, 1.5” [3.8 cm] stretched mesh	Overnight sets for population studies and community characterization of large-bodied species.
Medium Hoop Net	2.5' [0.75 m] diameter hoops, 1” [2.5 cm] stretched mesh	Overnight sets for population studies and community characterization of large-bodied species.
Small Hoop Net	2' [0.61 m] diameter hoops, 0.5" [1.3 cm] stretched mesh	Overnight sets for characterization of small-bodied fish community.
Seine Net	50’ [15 m] x 3’ [0.9 m], 0.3 cm mesh size	Near-shore hauls for characterization of small-bodied fish community.
Gill Net	Experimental: 150’ x 6’ [45.4 m x 1.82 m] with mesh size from 1” [2.5 cm] to 4” [10.2 cm]	Short sets (< 4 hrs) for population studies and short + overnight sets for community characterization
Minnow Trap	16.5” [42 cm] length, 0.25” [0.6 cm] mesh, 1” [2.5 cm] diameter opening	Near-shore deployment for characterization of small-bodied fish commmunity.
Boat Electrofisher	Generator-operated Smith-Root Model 5.0 GPP A 100-m long transect was generally sampled at water depths ranging from two to three metres (maximum effective sampling depth), with one GPP operator and one netter.	Employed throughout Côté Lake and the Mollie River for population study and community characterization.
Backpack Electrofisher	Smith-Root LR-24	Utilized in Bagsverd Creek to characterize the high-gradient fish community.

hauls, approximate area sampled), electrical settings (electrofishing units) and GPS coordinates were recorded (Appendix Tables F.1 to F.24). Fishing techniques and equipment were selected based on the habitat of the given water body (e.g., size and depth; stream vs. lake) and the target species (e.g., large- vs. small-bodied fish; Table 2.2). All captured small- and large-bodied fish were identified and enumerated. Catch-per-unit-effort (CPUE), representing the number of fish caught over a specified unit of time and/or area, was later calculated for each fish species by fishing method and water body.

2.4.3 Population Estimates for Côté Lake and Unnamed Lake #1

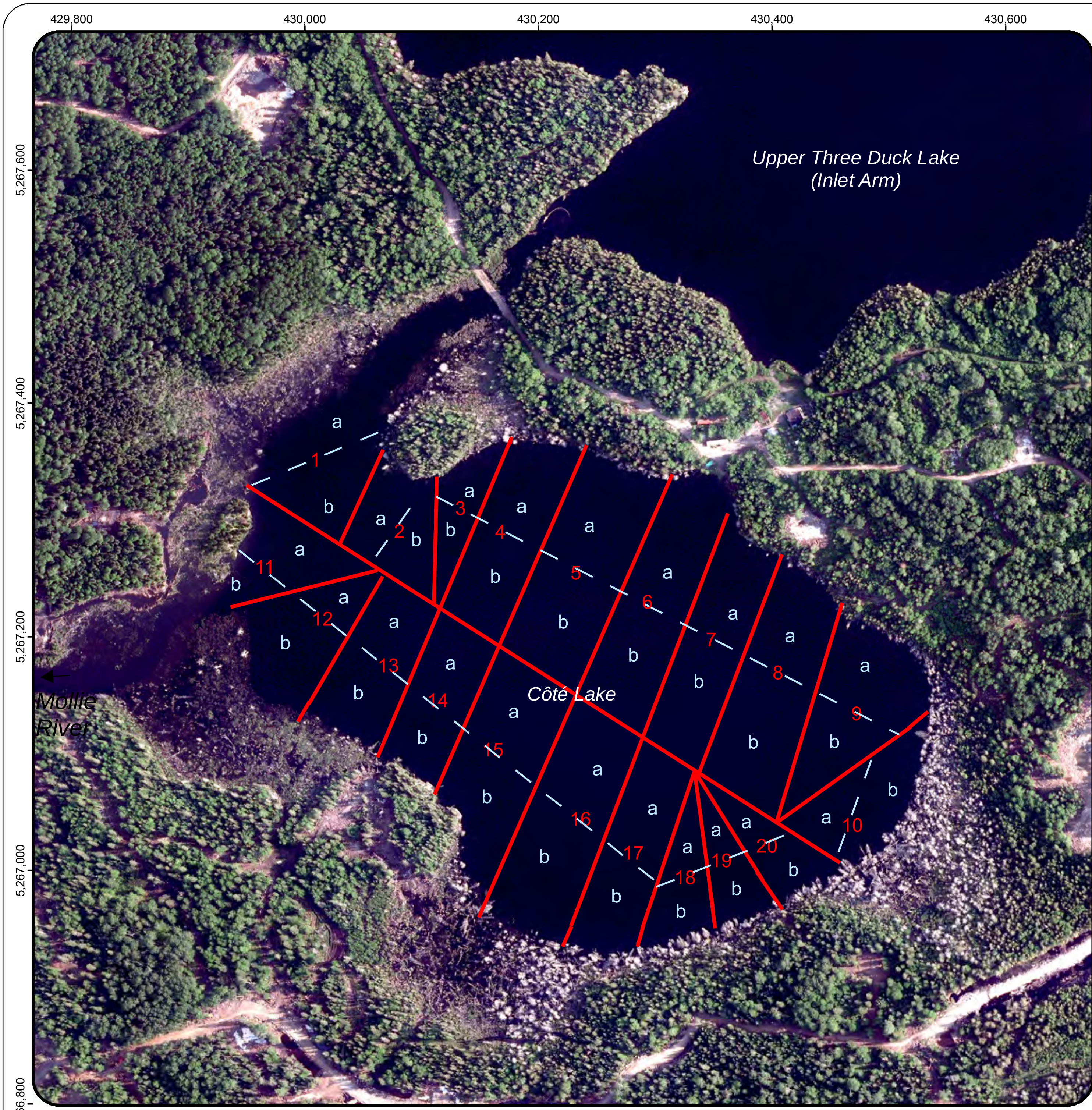
Northern pike, white sucker and/or walleye population size was estimated in both Côté Lake and Unnamed Lake #1 in 2012 using mark-recapture methods. The study was designed using the Schnabel method of population estimation (Schnabel 1938, Krebs 1989), which is based on the following assumptions:

1. the population size is constant without recruitment or losses;
2. all individuals have the same chance of capture in any given sample;
3. marking individuals does not affect their catchability;
4. animals do not lose their marks over the sampling period; and
5. all recaptures are reported.

To ensure individuals had the same chance of capture in any given sample, fishing effort was standardized by dividing Côté Lake into 40 (20 near-shore and 20 deeper) sampling areas and Unnamed Lake #1 into 20 areas, respectively (Figures 2.4 and 2.5). A random number generator was then used to determine the areas at which daily fishing effort would be concentrated for each fishing method. Fishing included the use of hoop nets, gill nets (in both Côté and Unnamed Lake #1), and and/or boat electrofishing (Côté Lake only). Hoop and gill nets were moved to a different location each day after retrieval, to assure complete coverage of the study lake and to meet the assumption of random sampling and equal catchability.

The assumptions of the Schnabel method were addressed by:

1. sampling over a short period of time (6 and 5 days at Côté Lake and Unnamed Lake #1, respectively);
2. moving the nets after every set so that sampling was random;



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Meters

MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
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Creation Date: December 2013
Project No.: 2496

Features:

Hoop Net Area Boundaries

Gill Net Area Boundaries (splits hoop net boundary)

Figure 2.4: Randomization Design for the Mark-Recapture Study on Côté Lake

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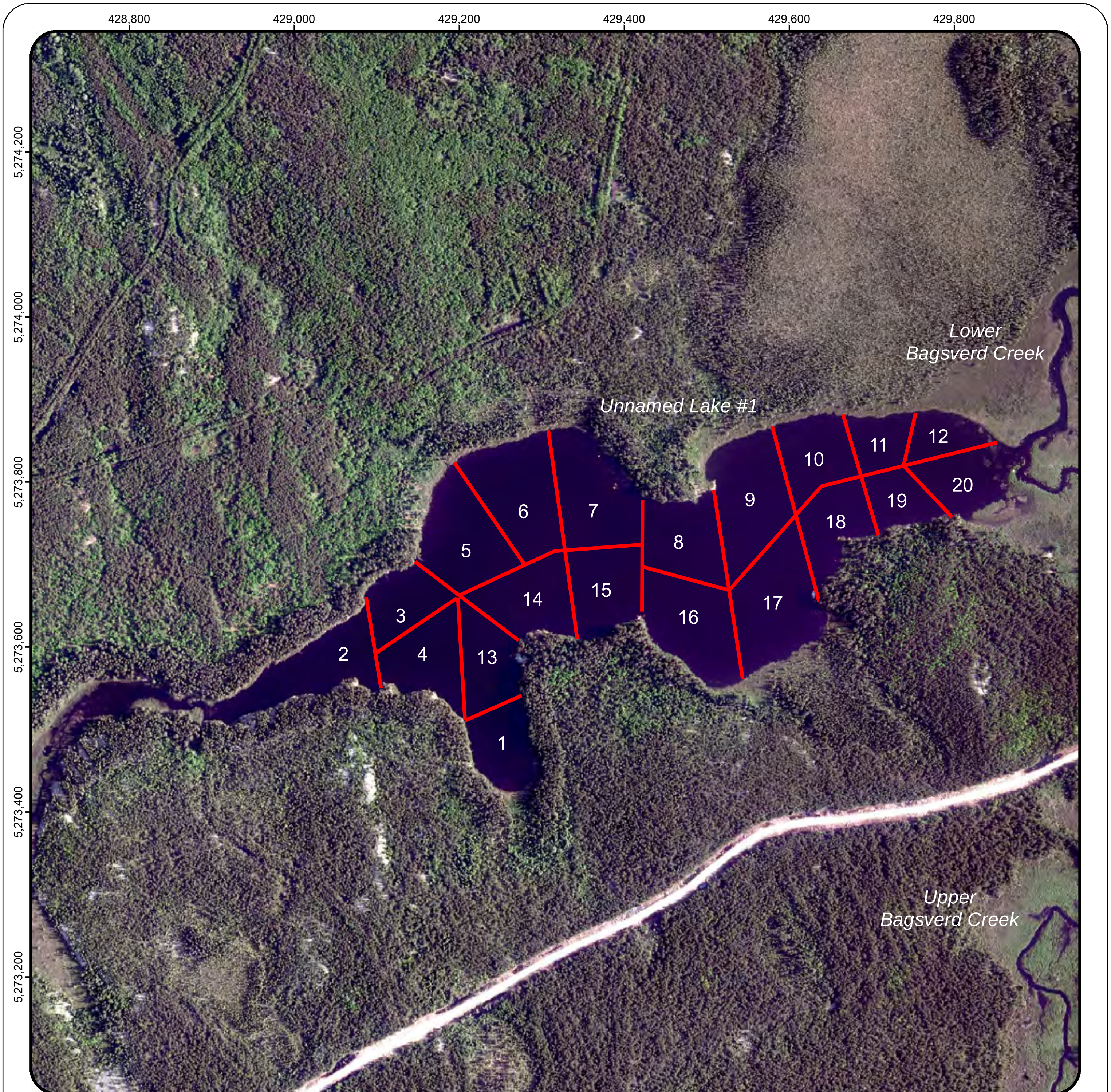

Features:

Hoop Net and Gill Net Area Boundaries

MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Figure 2.5: Randomization Design for the Mark-Recapture Study on Unnamed Lake #1

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3. using unobtrusive and readily distinguishable fluorescent red Visible Implant Elastomer (VIE) tags that would not impair fish movement
4. using VIE tags that remained visible for a long time period; and,
5. examining each fish carefully to ensure tags were identified.

At the conclusion of the field survey, a population estimate was determined for each species using the following equation:

$$N = SUM\ (C_t{*}M_t)/(SUM\ R_t)+1$$

Where N = the estimate of the number of individuals in the population

C_t = the number of fish caught

M_t = the number of marked fish at large

R_t = the number of recaptures

The 95% confidence intervals were calculated using the formula:

$$95\%\ \text{Confidence Limit} = SUM\ (C_t{*}M_t)\ /\ SUM\ R\ (\text{Poisson})$$

Fish population estimates were compared to published literature for lakes of comparable size and latitude, if possible, to provide a relative gauge of the quality of fish habitat available at each lake.

2.4.4 Fish Meristics and Tissue Sampling

Length and weight were measured on a sub-set of fish from each water body assessed. Fork and/or total length was measured to the nearest millimetre using a measuring board or, for fish less than 12 cm long, to the nearest hundredth of a millimetre using digital callipers. Similarly, fresh body weight on fish less than approximately 30 g was measured using a Scout Pro balance (to the nearest 0.001 gram with ± 1% precision), whereas fish greater than 30 g were weighed using appropriately sized Pesola™ spring scales (precision to the nearest 1 % to 5 % of total weight). The external condition of each fish was also assessed, with any abnormalities recorded. Warm air and water temperatures in July of 2012 added considerable stress to fish during handling; therefore, to reduce potential mortalities, many fish were simply enumerated and released without measurement. During the July 2012 survey, boneless, skinless muscle tissue samples were collected from any large-bodied sport fish that died during capture or handling (up to five per study water body). These samples were frozen and archived for potential future analysis. Small-bodied fish that died during handling were also frozen whole (individually, or pooled by species and sampling water body) and archived for potential future analysis.

Additional fish tissue samples were taken in 2013. Five large-bodied fish (specifically walleye or northern pike) and five forage fish (juvenile yellow perch, fathead minnow or dominant small-bodied species present) samples were targeted in each water body for ageing and fish tissue analysis. Ageing structures (dorsal spines [yellow perch, smallmouth bass, walleye], pectoral fins [white sucker and lake white fish], cliethra [northern pike] and scales [all fish]) were collected from each sacrificed fish and/or a subset of all fish captured by water body. Tissue samples were collected using clean implements (cutting boards, filet knives and tweezers). Approximately 5 g of boneless, skinless muscle tissue was collected from large-bodied fish and whole bodies were collected for forage fish samples. If the forage fish had to be composited to obtain a 5 g sample, similar sized fish were composited together for one sample. Samples were placed in clean, labeled Whirl-Pak™ bags and frozen until analysis. Quality Assurance/Quality Control (QA/QC) measures included 10 % field duplicate samples (duplicate filets; see Appendix B).

Tissue samples collected in 2013 and those archived from 2012, were submitted to SRC in Saskatoon, Saskatchewan, along with a chain-of-custody record. Tissue samples were analyzed for total metals (aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium and zinc), mercury and percent moisture. Ageing structures were shipped to North Shore Environmental Services in Thunder Bay, Ontario, along with a chain-of-custody record for determination of fish ages.

Fish tissue data were provided to AMEC for the human health risk assessment and are provided in Appendix Table F.46. The relationship between individual fish weight and length (i.e., condition) and age at length (i.e., growth) was plotted for each large-bodied species by water body, and compared among lakes sampled in 2012 and 2013 to evaluate any spatial differences that might suggest areas of differing productivity, or otherwise unusual population features. Data collected in 2010 by AMEC (2011) were also included in the plots to assist with this evaluation and to provide temporal context.

3.0 WATER QUALITY

3.1 *In situ* Water Quality and Water Quality Profiles

Lakes within the LSA are typically shallow (<10 m) and mesotrophic[5] with water that is yellow-brown in colour. The yellow-brown colour of the water is typical of northern lakes found within the LSA and is associated with the abundance of dissolved organic matter such as humus, peat or decaying plant matter from aquatic vegetation, runoff from forests or wetland areas in proximity to the lake. Light penetration varied depending on the water body (e.g., Secchi depth range from 0.8 to 4.5 m), however in most water bodies light penetration was moderate (mean Secchi depth = 2.24 m).

Water bodies within the LSA are dimictic[6] and typically stratified during the summer and winter months. A few of the water bodies are shallow enough that no thermocline[7] is established in the water column during the summer months (e.g., Bagsverd Pond, Chester Lake, Delaney Lake, East Beaver Pond, North Beaver Pond, Unnamed Lake #1, and Unnamed Pond; Appendix Tables C.1 to C.24). Surface water temperatures during summer months can get very warm (25 °C; Appendix Tables C.1 to C.24) due to the relatively shallow depths of most lakes and the limited flow. Surface waters within the LSA are generally well oxygenated above the thermocline (Appendix Figure C.1 and Appendix Tables C.1 to C.24). However, below the thermocline, dissolved oxygen concentrations can seasonally approach hypoxic conditions (<2 mg/L; Appendix Figure C.1) in most lakes greater than 5 m.

Surface water pH and specific conductivity varied within the lakes surveyed (Appendix Tables C.1 to C.14). Occasionally changes in pH and specific conductivity were observed with depth in lake profiles and were likely associated with lower dissolved oxygen concentrations causing reducing conditions at greater depth (e.g., Clam Lake in July 2012; Appendix Tables C.1 to C.24).

3.2 Water Quality

Baseline water quality within the LSA has been characterized by Golder (2013). Benchmarks were established based on the most recent water quality guideline or 95th percentile of background concentrations, whichever was higher. Background concentrations

[5] Mesotrophic lakes are lakes with an intermediate level of primary productivity, defined by measures of nutrient content (total phosphorus, nitrogen), chlorophyll a and Secchi depth.
[6] Lakes that undergo two periods of mixing, one in the spring and one in the autumn are referred to as dimictic. These lakes circulate freely twice a year and are directly stratified in the summer and inversely stratified in the winter.
[7] The thermocline is a transition layer between the mixed layer at the surface and the deep water layer. The water temperature change within this transition layer is greater than 1 °C in one metre of water depth.

(95th percentile of baseline) of total phosphorus, aluminum, iron and zinc were found to be elevated compared to established water quality guidelines (see Table 2.1).

Concentrations of substances measured in the fall of 2013 were typically lower than the established water quality benchmarks in the lakes and streams within the LSA (Appendix Table C.25 and C.26). Aluminum and iron were observed at concentrations greater than the benchmark (95th percentile of baseline) indicating that these substances can be naturally elevated within the LSA. In addition, chemical oxygen demand, dissolved organic carbon, total organic carbon were observed at concentrations higher than the background benchmark (i.e. these substances do not have guidelines) at some stations. The higher concentrations of these substances is likely related to the habitat conditions within the lake or stream (i.e., wetlands and highly vegetated areas will have higher concentrations of organic carbon and oxygen demand).

It is noteworthy that measured phosphorus and zinc concentrations in all samples taken in the fall of 2013 fell below the Provincial Water Quality Objectives (PWQO). In particular, phosphorus concentrations were below the PWQO of 0.03 mg/L for lakes and 0.02 mg/L for streams (Appendix Tables C.25 and C.26). Zinc concentrations were an order of magnitude below the 95th percentile of background (Appendix Tables C.25 and C.26). This data indicates that the background benchmarks for total phosphorus and zinc may be overstated. Higher total phosphorus concentrations are likely associated with the analytical methods employed (ICP-MS vs. colorimetric).

4.0 SEDIMENT QUALITY

4.1 Sediment Composition

Sediment grain size in the benthic invertebrate sampling areas within the LSA indicated varying mixtures of sand, silt and clay for all stations (Figures 4.1 to 4.3, Appendix Tables D.3 and D.4). Sediment from Clam, Weeduck, Upper Three Duck, and Middle Three Duck lakes were higher in sand content compared to the other lakes sampled at 3.5 to 4.5 m depth (Figure 4.1). Whereas the lakes lower in the Mollie River watershed and the Neville Lake watershed had less sand and therefore, more silt and clay (Figure 4.1). Total organic carbon varied from lake to lake and was highest in Schist Lake and lowest in Lower Three Duck Lake (Figure 4.1 and Appendix Table D.3). At slightly shallower depths (1.5 to 2 m) substrate composition was still largely composed of sand, silt and clay (Figure 4.2). Chester Lake within the Mollie River watershed had the highest proportion of sand (Figure 4.2). Total organic carbon was also highest in the shallow benthic invertebrate stations in Schist Lake (Figure 3.2). Stream substrate within Bagsverd and Errington creeks were similar, and largely composed of sand (Figure 4.3).

Overall, it would appear that sediment composition within the lakes closest to the proposed open pit development (Chester, Clam, Weeduck, Upper and Middle Three Duck lakes) have naturally higher proportions of sand, likely reflective of natural differences in surfical geology.

4.2 Sediment Chemistry

Sediment chemistry data indicated that similar metal concentrations were observed among core slices taken in each lake with the exception of percent moisture which decreased slightly with increasing core slice depth (Appendix Table D.2). Sediment chemistry in Mesomikenda Lake was different from all other lakes within the LSA. Sediment concentrations of arsenic, barium, cobalt, iron, lead, manganese, molybdenum, titanium, vanadium and zinc were consistently higher than all other core sampling locations (Appendix Table D.2). Not surprising, surficial sediment chemistry data taken in conjunction with the benthic invertebrate community sampling were consistent with core sediment sampling results (Appendix Tables D.3 and D.4).

Sediment chemistry data were very similar among lakes (excluding Mesomikenda Lake; Table 4.1). No sediment metal concentrations were observed above Provincial Sediment Quality Guidelines (PSQG) Severe Effect Levels (SEL; Table 4.1 and Appendix Tables D.2 and D.3). Sediment concentrations of mercury, arsenic, cadmium, chromium, copper, iron, lead, manganese, nickel and zinc were elevated above the Lowest Effect Level (LEL; Table

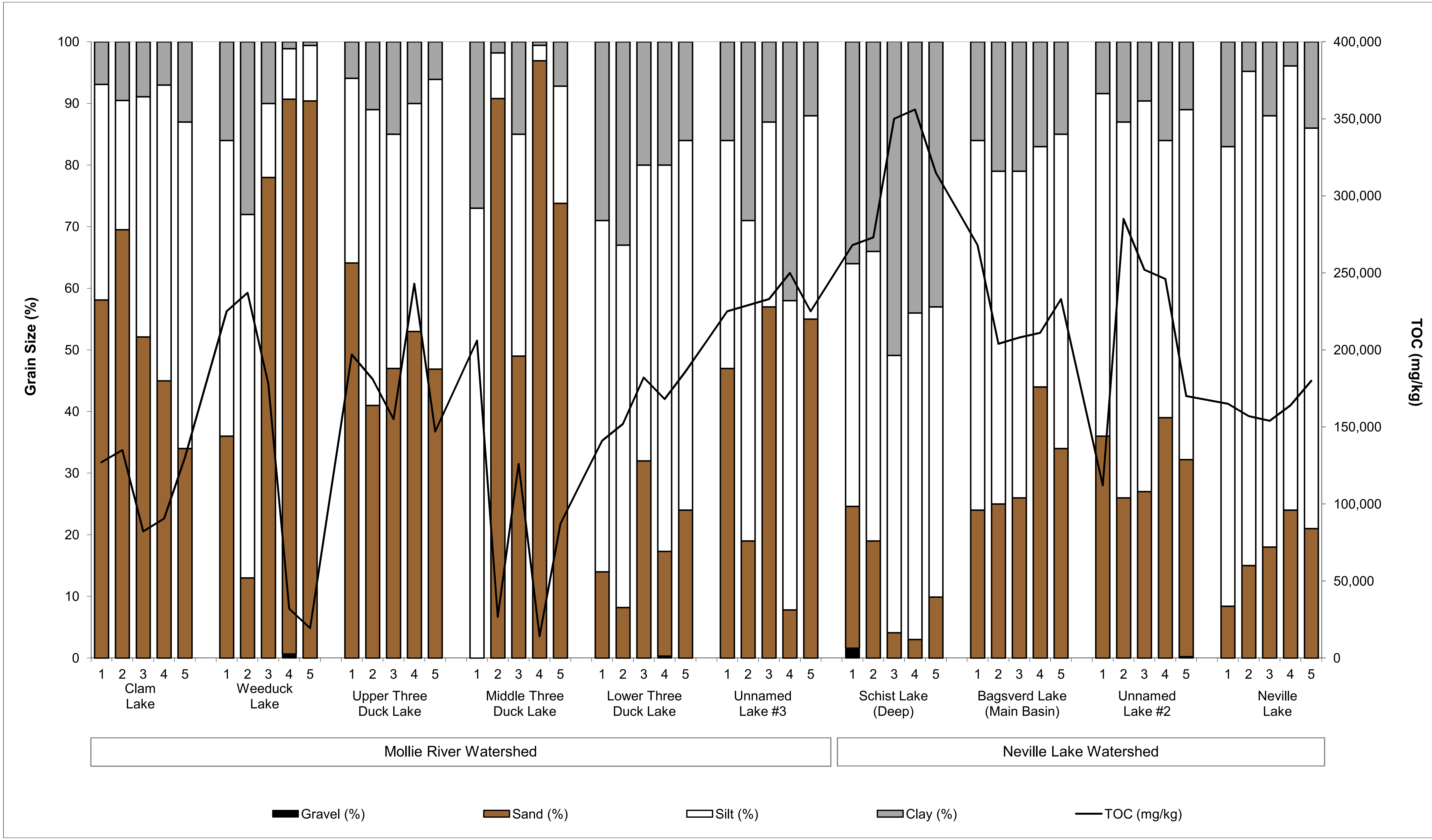


Figure 4.1: Particle size and total organic carbon (TOC) content in sediments at deep (3.5 to 4.5 m) benthic invertebrate sampling stations, Côté Gold, 2013.

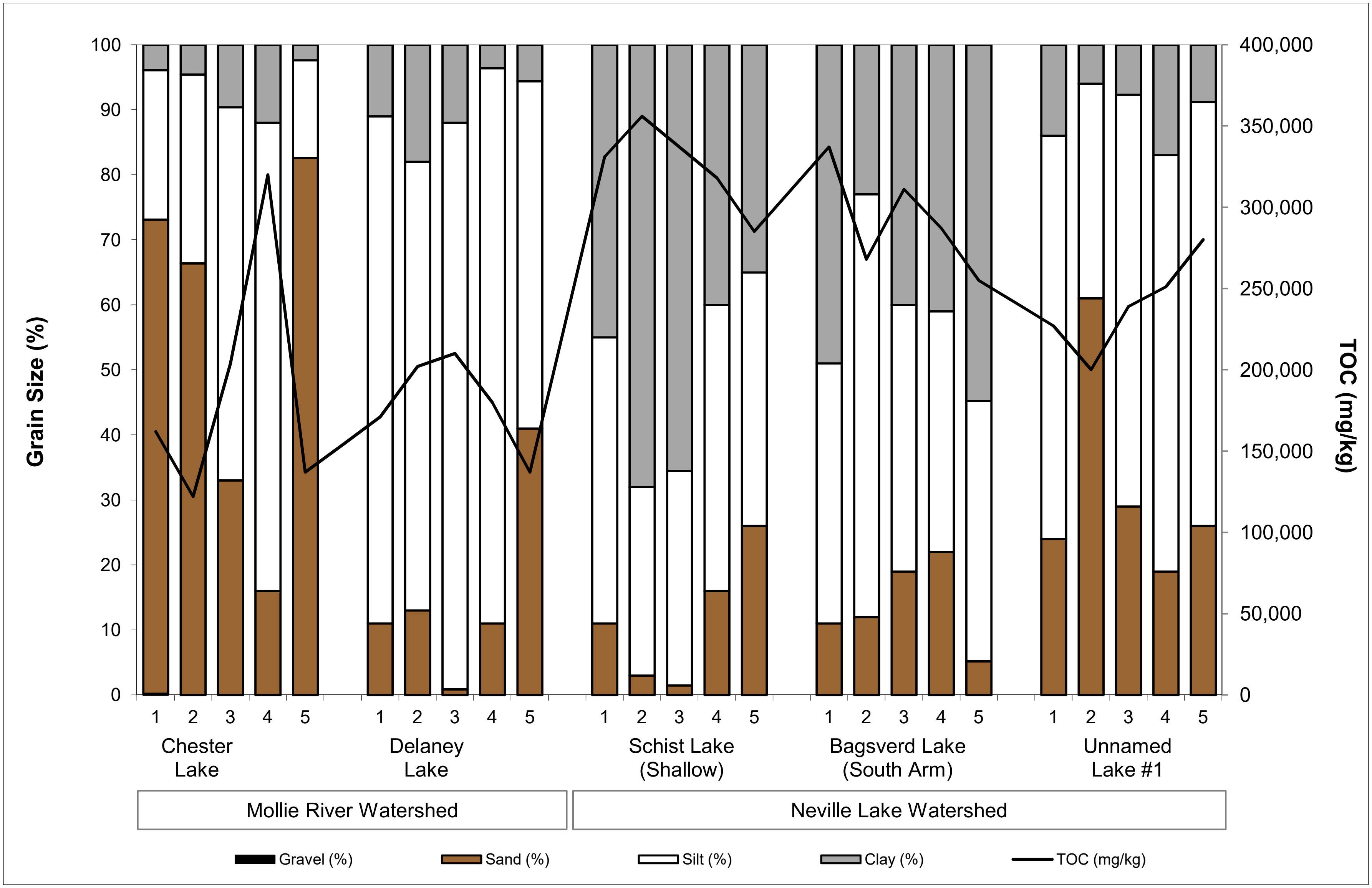


Figure 4.2: Particle size and total organic carbon (TOC) content in sediments at shallow (1.5 to 2 m) benthic invertebrate sampling stations, Côté Gold, 2013.

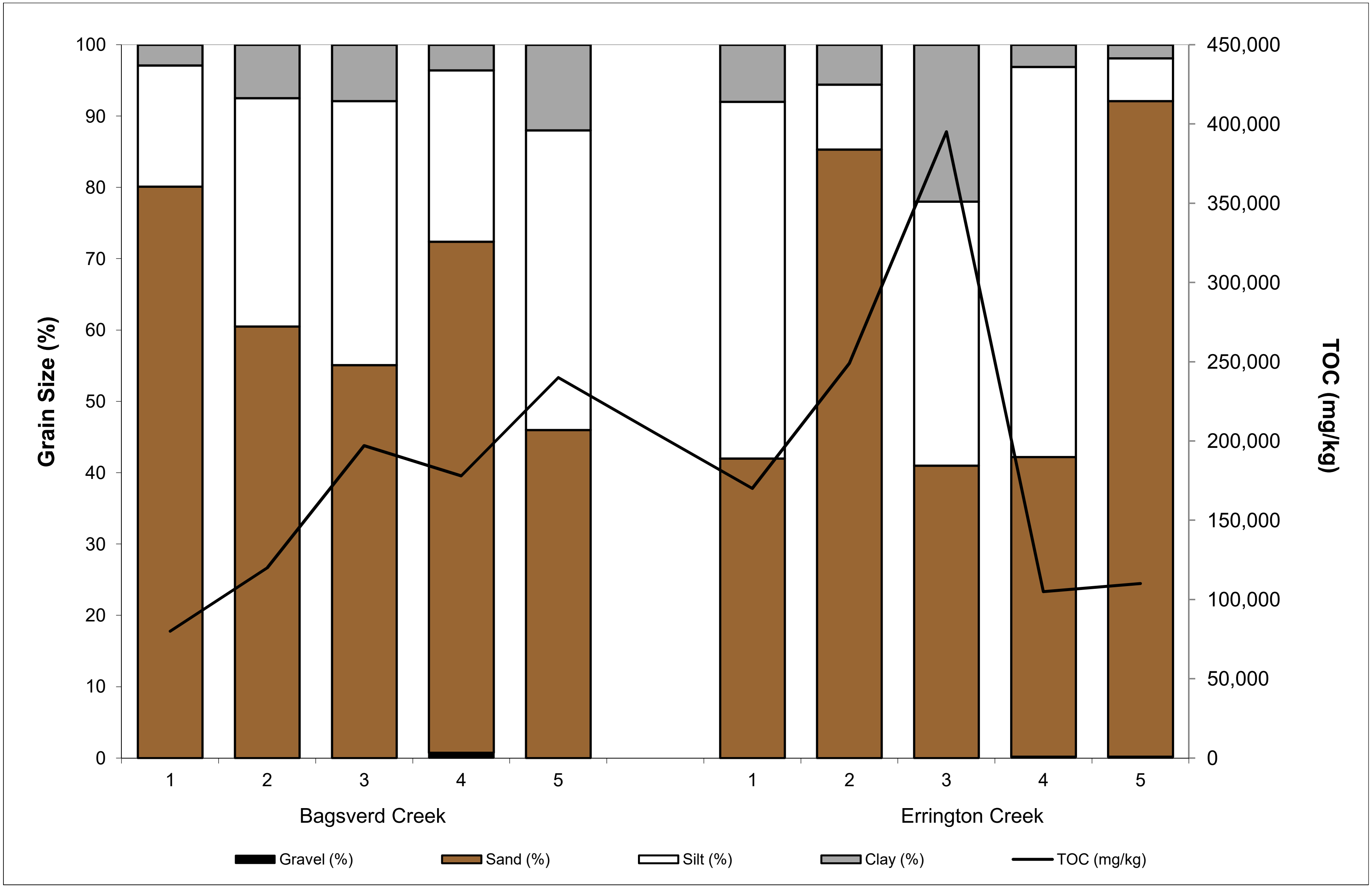


Figure 4.3: Particle size and total organic carbon (TOC) content in sediments at stream benthic invertebrate sampling stations, Côté Gold, 2013.

Table 4.1: Mean ponar sediment chemistry (n=5) in the lakes in the Côté Gold area, September 2013.

Watershed				Mollie Lake Watershed								Neville Lake Watershed						
Analyte	Units	PSQG[a] LEL[b]	PSQG[a] SEL[c]	Chester Lake	Clam Lake	Weeduck Lake	Upper Three Duck Lake	Middle Three Duck Lake	Lower Three Duck Lake	Unnamed Lake #3	Delaney Lake	Schist Lake (Deep)	Schist Lake (Shallow)	Bagsverd Lake (South Arm)	Bagsverd Lake (Main Basin)	Unnamed Lake #2	Unnamed Lake #1	Neville Lake
Dry weight	g	-	-	113.23	72.26	99.05	41.37	96.45	44.30	38.45	89.45	22.69	16.66	26.51	34.18	65.82	58.33	96.03
Moisture	%	-	-	85.45	85.17	79.70	89.14	76.65	89.80	92.73	85.09	96.91	97.33	96.02	92.73	86.97	89.26	86.78
TOC	%	-	-	18.9	11.3	13.8	18.5	9.2	16.6	23.2	18.0	31.2	32.5	29.2	22.5	21.3	23.9	16.4
TOC	mg/kg	10,000	100,000	189,000	112,940	138,260	184,600	91,980	165,800	232,400	180,000	312,400	325,400	291,600	224,800	213,000	239,400	164,000
TKN	mg/kg	550	48,000	8,486	7,214	8,046	8,614	4,656	8,042	13,360	8,248	25,480	23,380	17,480	14,520	9,618	11,900	8,212
Mercury	mg/kg	0.2	2	0.28	0.27	0.26	0.50	0.28	0.35	0.38	0.31	0.41	0.27	0.43	0.32	0.33	0.45	0.26
Aluminum	mg/kg	-	-	11,200	14,980	11,080	16,620	12,940	17,680	8,500	11,340	8,320	6,120	6,640	12,800	15,260	16,020	15,960
Antimony	mg/kg	-	-	0.2	0.3	0.5	0.3	0.3	0.3	0.4	0.2	0.8	0.4	0.3	0.4	0.4	0.2	0.3
Arsenic	mg/kg	6	33	4.7	6.3	7.5	6.1	5.1	7.3	4.7	5.1	13.8	12.0	7.5	17.4	7.4	6.4	7.1
Barium	mg/kg	-	-	45	46	45	53	38	60	49	45	42	60	53	50	62	56	61
Beryllium	mg/kg	-	-	0.2	0.3	0.4	0.4	0.3	0.4	0.2	0.2	0.2	0.2	0.2	0.3	0.5	0.5	0.4
Boron	mg/kg	-	-	2	4	5	5	6	8	3	1	5	4	6	10	1	3	1
Cadmium	mg/kg	0.6	10	0.9	1.0	1.0	1.3	0.8	1.0	0.9	1.2	1.8	1.0	0.9	1.6	1.2	1.1	1.0
Chromium	mg/kg	26	110	21	22	18	26	19	31	17	25	22	18	14	28	28	26	29
Cobalt	mg/kg	-	-	5.3	5.8	5.7	6.7	5.8	7.4	4.1	5.5	6.3	4.1	4.1	7.0	11.2	7.2	10.6
Copper	mg/kg	16	110	22	50	30	33	23	55	24	18	44	36	29	30	24	31	18
Iron	mg/kg	20,000	40,000	11,780	13,640	20,820	17,660	17,640	17,380	5,420	11,700	12,460	9,000	7,600	22,040	18,400	12,840	16,980
Lead	mg/kg	31	250	19	31	32	43	28	41	29	28	66	36	21	40	33	22	31
Manganese	mg/kg	460	1,100	348	430	492	408	364	504	154	272	198	206	296	508	542	392	568
Molybdenum	mg/kg	-	-	0.6	1.2	1.3	0.7	0.7	1.0	1.0	0.5	2.0	1.8	1.5	1.0	0.8	0.7	0.6
Nickel	mg/kg	16	75	15	14	15	19	13	21	15	17	26	21	19	22	18	20	16
Phosphorus	mg/kg	600	2,000	646	936	752	1,180	910	1,260	916	930	1,260	654	752	948	1,152	1,008	1,088
Selenium	mg/kg	-	-	1.4	1.4	1.5	1.5	1.0	1.7	1.4	1.3	2.6	1.6	1.5	1.8	1.7	2.1	1.3
Silver	mg/kg	-	-	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Strontium	mg/kg	-	-	39	35	35	31	26	33	27	35	33	28	24	37	37	35	39
Thallium	mg/kg	-	-	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2
Tin	mg/kg	-	-	0.9	1.2	1.1	1.4	1.1	1.5	0.9	1.0	1.9	0.9	0.6	1.3	1.2	0.8	1.1
Titanium	mg/kg	-	-	736	880	738	656	702	784	390	748	504	348	272	742	686	558	868
Uranium	mg/kg	104.4[d]	-	0.9	1.0	0.9	1.0	0.8	1.1	1.2	1.0	0.7	0.6	0.8	0.9	2.1	2.7	2.4
Vanadium	mg/kg	-	-	22	26	23	32	28	34	18	23	19	16	12	27	39	26	36
Zinc	mg/kg	120	820	66	91	81	93	74	97	65	86	126	76	73	111	100	90	80

Concentration exceeds LEL

Concentration exceeds SEL

[a] Provincial Sediment Quality Guideline. OMOE (Ontario Ministry of Environment) 1993.

[b] Lowest effect level

[c] Severe effect level

[d] Thompson et al. 2005

TOC - Toal Organic Carbon

TKN - Total Kjeldahl Nitrogen

4.1 and Appendix Tables D.2 and D.3). In addition, sediment total Kjeldahl nitrogen (TKN) and total phosphorus were consistently elevated above LEL (Table 4.1, Appendix Tables D.3 and D.4). However, as previously stated these guidelines (PSQG) were strongly weighted by data from the Great Lakes basin, which tends to have a substantially lower natural content of many metals relative to sediment in Canadian Shield lakes (Prairie and McKee 1994). As such, natural background concentration of sediment metals, particularly in the mineralized area of the Canadian Shield, can often exceed LELs. Total organic carbon (TOC) was found higher than SELs in at least some stations in all lakes within the LSA (Table 4.1 and Appendix Table D.2 and D.3). High TOC concentrations are typically observed in lakes found within the Canadian Shield. No spatial patterns in metal or TOC concentrations were observed among lakes, or within either watershed (Appendix Figure D.1).

Sediment chemistry within the stream samples taken from Bagsverd and Errington creeks exceeded LELs for TKN, arsenic, cadmium, copper and phosphorus (Table 4.2 and Appendix Table D.4). Total organic carbon was elevated above SEL in both areas (Table 4.2). Manganese was also elevated to SEL, but only in Bagsverd Creek (Table 4.2 and Appendix Table D.4). With the exception of manganese concentrations, sediment chemistry was similar between Bagsverd and Errington creeks.

Overall, sediment chemistry within the LSA was typically above the LEL but less than the SEL. Sediment concentrations were only observed above the SEL for arsenic and iron in Mesomikenda Lake and manganese in both Mesomikenda Lake and Bagsverd Creek. No spatial patterns among lakes or within watersheds were observed.

Table 4.2: Mean ponar sediment chemistry (n=5) in streams in the Côté Gold area, September 2013.

Analyte	Units	PSQG[a] LEL[b]	PSQG[a] SEL[c]	Bagsverd Creek	Errington Creek
Dry weight	g	-	-	79.85	59.78
Moisture	%	-	-	80.24	85.99
Total Organic Carbon	%	-	-	16.30	20.58
Total Organic Carbon	mg/kg	10,000	100,000	162,980	205,800
Total Kjeldahl Nitrogen	mg/kg	550	48,000	6,916	8,718
Mercury	mg/kg	0.2	2	0.13	0.16
Aluminum	mg/kg	-	-	8,480	8,040
Antimony	mg/kg	-	-	0.2	0.2
Arsenic	mg/kg	6	33	4.0	6.4
Barium	mg/kg	-	-	54	38
Beryllium	mg/kg	-	-	0.2	0.2
Boron	mg/kg	-	-	2	4
Cadmium	mg/kg	0.6	10	0.7	0.9
Chromium	mg/kg	26	110	17	15
Cobalt	mg/kg	-	-	8.2	5.6
Copper	mg/kg	16	110	14	27
Iron	mg/kg	20,000	40,000	9,560	9,560
Lead	mg/kg	31	250	11.5	19.0
Manganese	mg/kg	460	1,100	1,180	186
Molybdenum	mg/kg	-	-	0.4	1.2
Nickel	mg/kg	16	75	8.8	10.6
Phosphorus	mg/kg	600	2,000	576	512
Selenium	mg/kg	-	-	0.9	1.1
Silver	mg/kg	-	-	0.1	0.1
Strontium	mg/kg	-	-	45	35
Thallium	mg/kg	-	-	0.2	0.2
Tin	mg/kg	-	-	0.5	0.6
Titanium	mg/kg	-	-	838	634
Uranium	mg/kg	104.4[d]	-	2.1	1.6
Vanadium	mg/kg	-	-	20	19
Zinc	mg/kg	120	820	55	50

Concentration exceeds LEL

Concentration exceeds SEL

[a] Provincial Sediment Quality Guideline. OMOE (Ontario Ministry of Environment) 1993.

[b] Lowest effect level

[c] Severe effect level

[d] Thompson et al. 2005

5.0 BENTHIC INVERTEBRATE COMMUNITY

5.1 Lake Benthic Invertebrate Communities

Deep Stations

A total of ten lakes were sampled at water depths between 3.5 to 4.5 m; six in the Mollie River watershed and four in the Neville Lake watershed (see Figure 2.2 and Appendix A). Benthic invertebrate density values ranged from 478 (Station BagLM-1; Bagsverd Lake Main) to 6,435 (Station ClaL-3; Clam Lake) individuals per m^2 (Appendix Table E.6). Mean benthic invertebrate density was highest in Unnamed Lake #3 and lowest in Neville Lake, however due to the variability within and among lakes no significant differences were observed in post-hoc comparisons (Figure 5.1, Appendix Tables E.9, E.12 and E.15).

Taxon richness (number of taxa) ranged from 4 (Stations UnL3-1, UnL3-2; Unnamed Lake #3) to 23 (Station UTDL-3; Upper Three Duck Lake) across the deep sampling stations. Unnamed Lake #3 richness was significantly lower compared to Middle Three Duck Lake and Clam Lake (Figure 5.1, Appendix Tables E.12 and E.15). All other lakes were not significantly different (Figure 5.1, Appendix Tables E.12 and E.15).

Simpson's Evenness (E) is a measure of the relative abundance of the different species making up the richness of the areas. Upon initial evaluation Simpson's E was significantly different among areas, however variances were not equal and post-hoc comparison using Tamhane's test did not identify any differences among lakes (Figure 5.1, Appendix Tables E.12 and E.15).

Chironomidae and Chaoboridae (midges) were generally the most common taxa in the deep stations among lakes in both watersheds (Figure 5.2 and Appendix Table A.6). An exception to this was Clam Lake where Chaoboridae were less dominant and Hyalella (amphipod) were present (Figure 5.2 and Appendix Table E.6). Bivalvia were common in Neville Lake and the Bagsverd Lake benthic community was distinguished by the presence of Harpacticoida (Figure 5.2 and Appendix Table E.6). Hyalella were also present in Schist Lake (Figure 5.2 and Appendix Table E.6).

Further analysis of the benthic community data indicated that lakes generally differed between those that had higher abundance of *Chaoborus punctipennis*, and *Zalutschia* sp. (Unnamed Lake #2, Unnamed Lake #3, Neville Lake, Lower Three Duck Lake and Middle Three Duck Lake) toward lakes with greater relative proportions of *Caenis* sp., *Procladius* sp. and *Tanytarsus* sp. (Bagsverd Lake, Weeduck Lake, Schist Lake and Clam Lake; Figure 5.3,

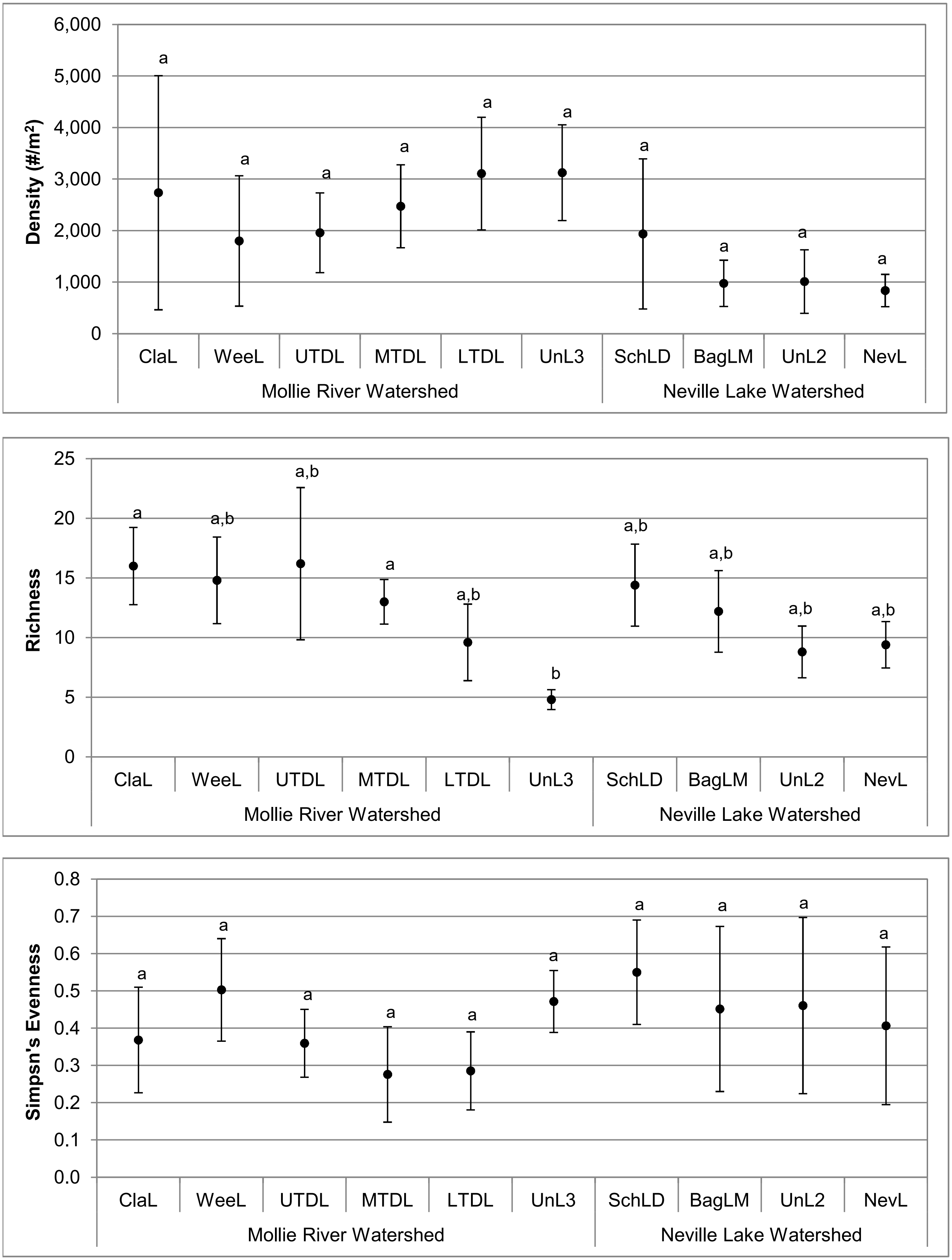


Figure 5.1: Mean (n=5) density, richness and Simpson's Evenness (± standard deviation) for all deep benthic invertebrate sampling areas, Côté Gold, 2013. Areas with same letters do not differ significantly.

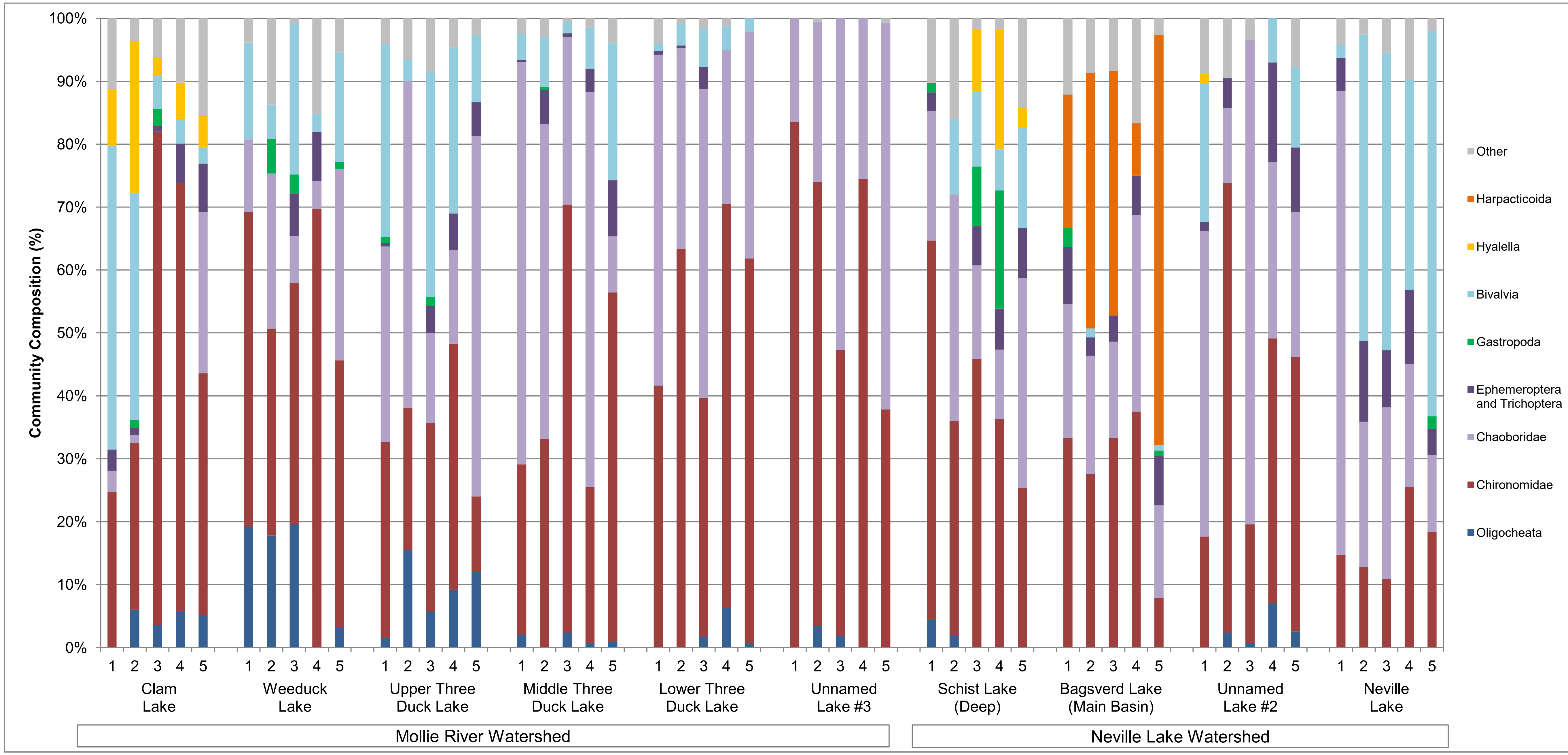


Figure 5.2: Dominant benthic invertebrate taxa at deep (3.5 to 4.5 m) sampling stations, Côté Gold, 2013.

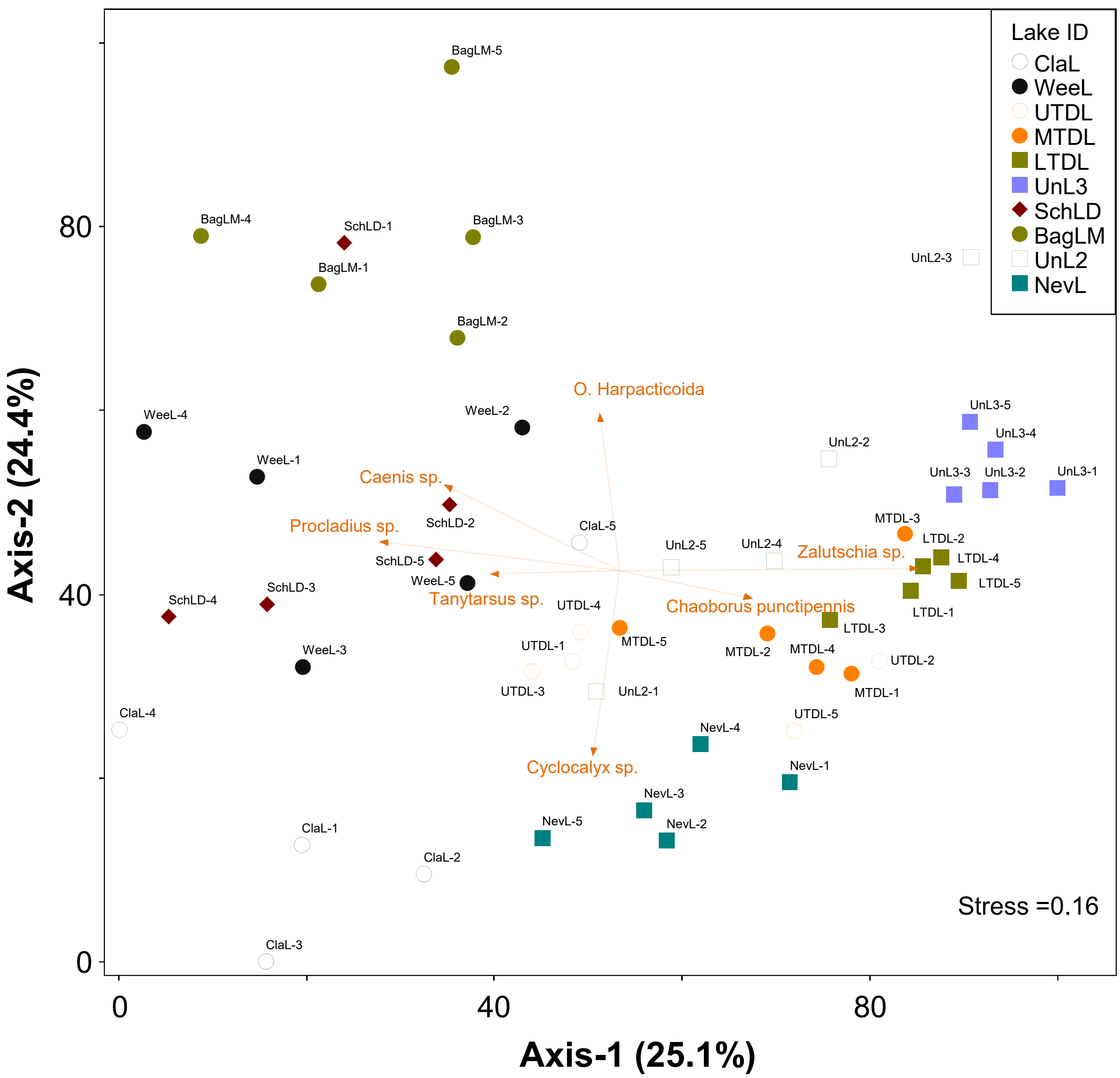


Figure 5.3: Nonmetric Multidimensional Scaling (NMDS) biplot of deep lake sampling stations using lowest practical level of taxonomic identification. Rare taxa were not included in the NMDS analysis and were defined as not occurring in more than three stations. Displayed vectors have Pearson r-values of 0.50 or greater with Axis-1 or -2. Note, sediment particle size and TOC did not have r-values greater than 0.50.

Appendix Tables E.17, E.19 and E.21). *Chaoborus* sp. and *Zalutschia* sp. are often found together in dystrophic lakes (high humic content) that can experience oxygen deficiencies (Resh and Rosenberg 1984). Deep lakes were also distinguished among those that had high abundance of Harpacticoida (Bagsverd Lake) and those that had high abundance of *Cyclocalyx* sp. (Neville and Calm lakes; Figure 5.3). There were no strong Nonmetric Multidimensional Scaling (NMDS) axes correlations with sediment particle size or total organic content (Figure 5.3 and Appendix Table E.21).

Overall, Chironomidae and Chaoboridae were generally the most common taxa at the deep stations in the lakes. Generally the deep lakes were separated on the presence and abundance of these two dominant groups versus the presence of or a variety of other species (i.e., presence of Harpacticoida in Bagsverd Lake). The dominance of Chaoboridae and Chironomidae reflect the habitat conditions in most of the lakes sampled (i.e., soft fine sediments with summer anoxia with depth).

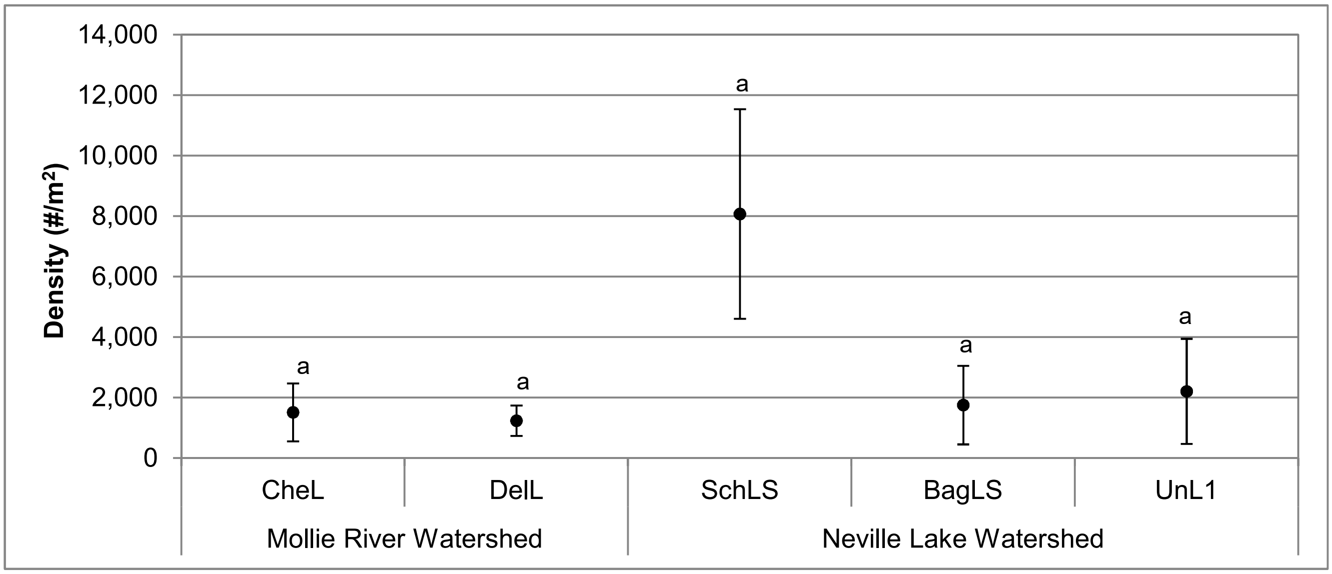
Shallow Stations

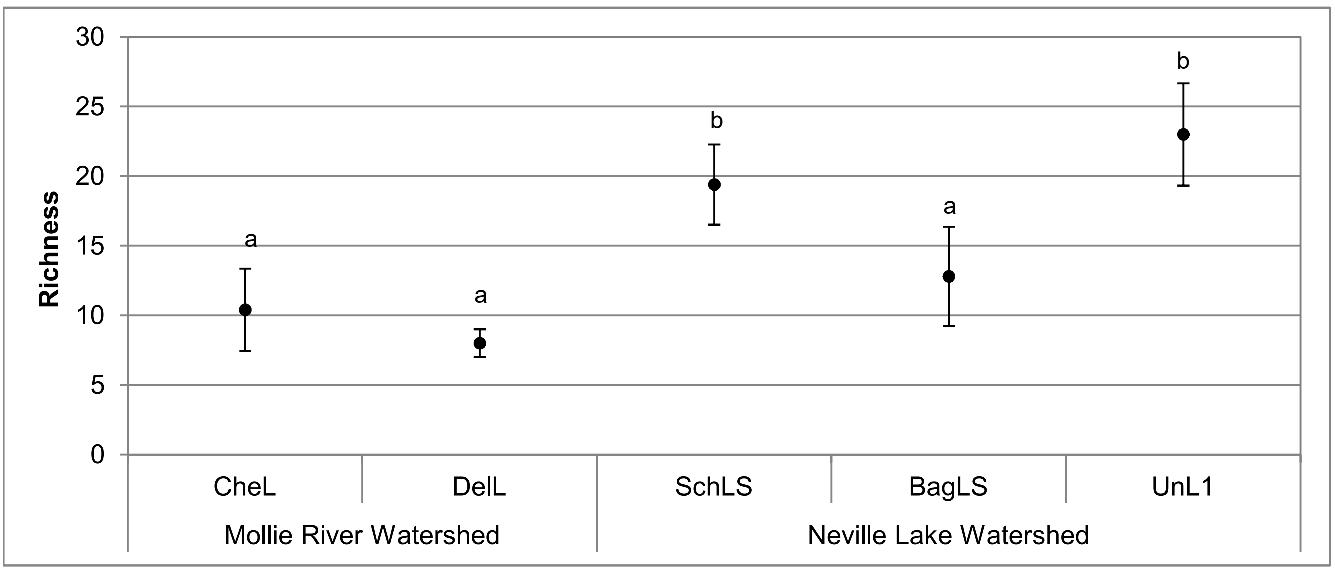
A total of five shallow lakes were sampled at 1.5 to 2 m depths, two in the Mollie River watershed and three in the Neville Lake watershed (see Figure 2.2 and Appendix A). Benthic invertebrate density varied from 362 (Station BagLS-3; Bagsverd Lake South Arm) to 13,362 individuals per m^2 (Station SchLS-3; Schist Lake Shallow; Figure 5.4 and Appendix Table E.7). Mean density was highest in Schist Lake, however in post-hoc comparisons density was not significantly different among lakes (Figure 5.4, Appendix Tables E.10, E.13 and E.16).

Taxon richness varied from 7 (Station CheL-5; Chester Lake) to 29 (Station UnL1-5; Unnamed Lake #1) in the shallow stations (Appendix Table E.7). Schist Lake and Unnamed Lake #1 had significantly higher mean taxon richness compared to Chester Lake, Delany Lake and Bagsverd Lake South (Figure 5.4, Appendix Tables E.10, E.13 and E.16).

Not surprising, Simpson's Evenness (E), a measure of the relative abundance of the different species making up the richness of the areas, was significantly different among the shallow lakes sampled (Figure 5.4, Appendix Tables E.13 and E.16). Chester Lake Evenness was significantly higher than Schist Lake (Figure 5.4, Appendix Tables E.13 and E.16).

Similar to the deep stations, the benthic invertebrate community was dominated by Chironomidae and Chaoboridae (Figure 5.5 and Appendix Table E.7). However, the presence of Chaoboridae was much less at Schist Lake and Unnamed Lake #1; which had higher proportions of Hyalella and Mullusca (Gastropoda and Bivalvia), respectively (Figure





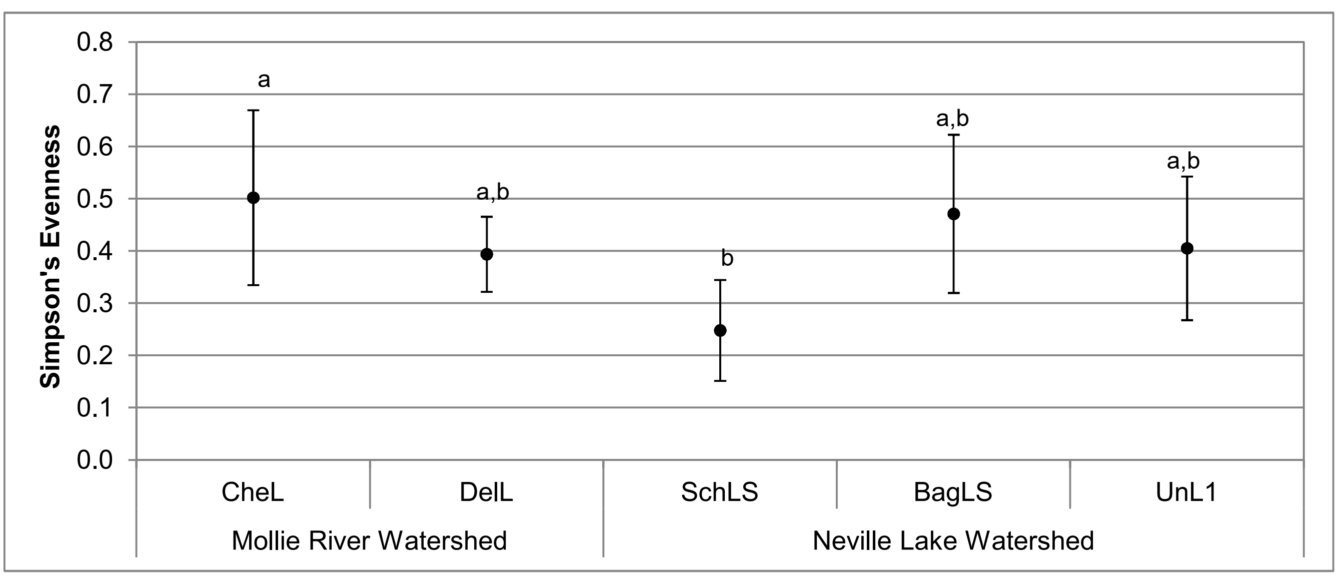


Figure 5.4: Mean (n=5) density, richness and Simpson's Evenness (± standard deviation) for all shallow benthic invertebrate sampling areas, Côté Gold, 2013. Areas with same letters do not differ significantly.

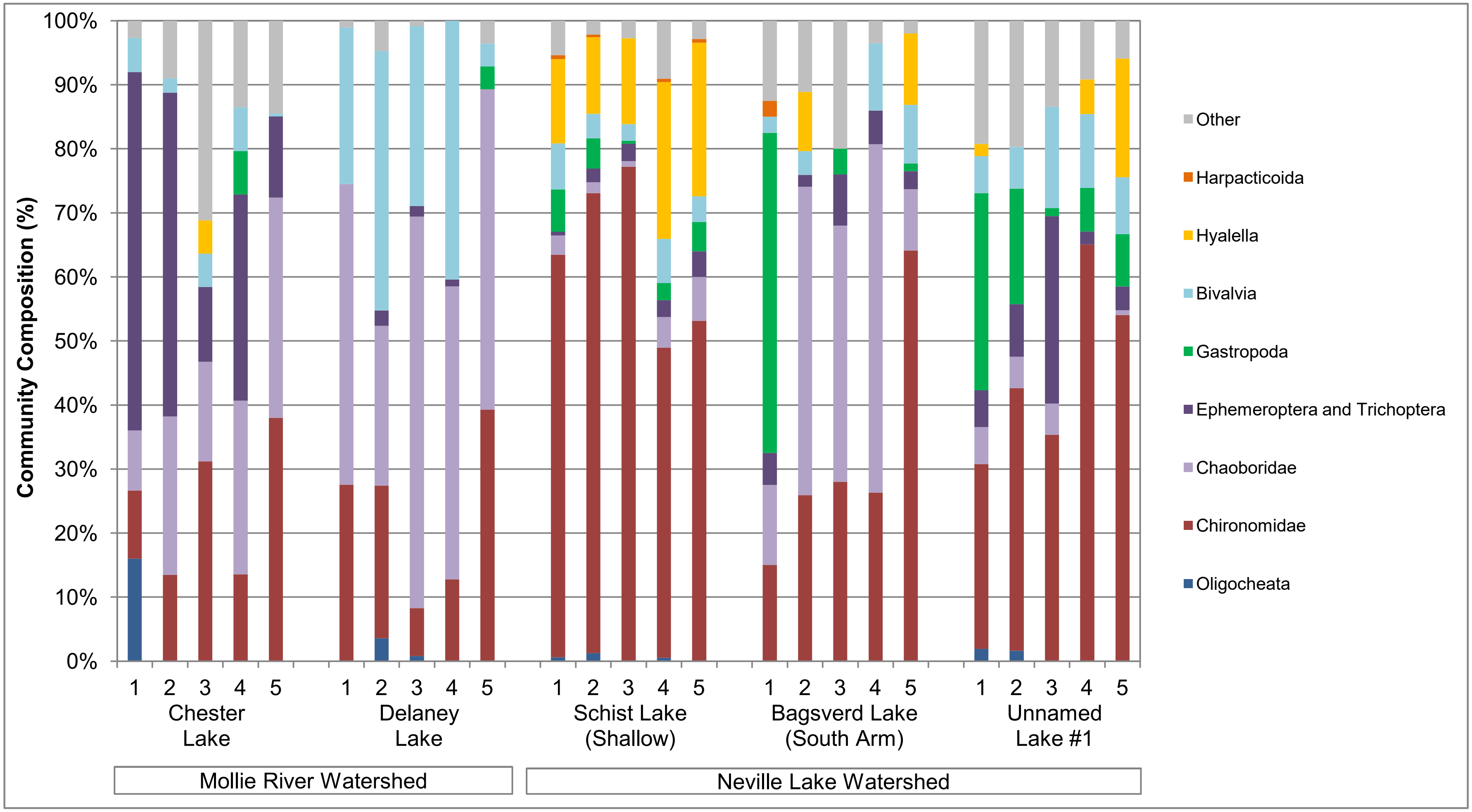


Figure 5.5: Dominant benthic invertebrate taxa at shallow (1.5 to 2 m) sampling stations, Côté Gold, 2013.

5.5 and Appendix Table E.7). The presence of Ephemeroptera were more common in Chester Lake and Bivalvia were common in Delaney Lake (Figure 5.5 and Appendix Table E.7). The amphipod, Hyalella, were found in higher abundance in the Neville Lake watershed and may be associated with the greater amounts of macrophytes present in these lakes (Figure 5.5 and Appendix Table E.7).

The shallow lake stations formed three community groups in NMDS analysis of community structure (Figure 5.6 and Appendix Table E.20). Delany Lake was dominated by *Chaoborus punctipennis* and *Zalutschia* sp. (similar to some of the deep lakes); Chester Lake by *Hexagenia* sp., *Phylocentropus* sp., *and Procladius* sp.; Schist Lake by *Hyalella* sp., *Tanytarsus* sp., *and Valvata* sp.; while Bagsverd Lake and Unnamed Lake #1 had stations amongst the three groupings of taxa assemblage. NMDS further indicated that not only did the lakes differ in their communities but these differences were likely reflective of subtle habitat differences in sand, silt, TOC and clay (Figure 5.6, Appendix Tables E.18, E.20 and E.22). *Hexagenia* sp. *and Phylocentropus* sp. burrow in the sediment (Merritt and Cummins 2008) and their presence in areas with increased sand content (Figure 5.5) is likely indicative of easier borrowing sediment.

Consistent with the deep stations, the benthic invertebrate community of Schist Lake shallow stations differed from the other shallow lakes sampled in the vicinity of the Côté Gold Project, therefore, it should not be used for a future reference lake.

5.2 Stream Benthic Invertebrate Communities

The benthic invertebrate communities of Bagsverd Creek and Errington Creek were evaluated during the Côté Gold baseline (see Figure 2.2 and Appendix A). Errington Creek was sampled as a potential future reference for Bagsverd Creek where mine effluent discharge is proposed during operations.

Benthic invertebrate density varied from 2,551 in Errington Creek (ErrC-2) to 10,667 individuals per m^2 in Bagsverd Creek (BagC-4; Appendix Table E.8). Not surprising mean density was significantly higher in Bagsverd Creek compared to Errington Creek (Figure 5.7, Appendix Tables E.11 and E.14). Number of taxa, or richness was also significantly higher in Bagsverd Creek compared to Errington Creek (Figure 5.7, Appendix Tables E.11 and E.14). Further, Simpson’s Evenness was also significantly different (Figure 5.7, Appendix Tables E.11 and E.14).

The benthic community composition in Bagsverd Creek was primarily comprised of Chironomidae, Ephemeroptera, and Hyalella (Figure 5.8 and Appendix Table E.8).

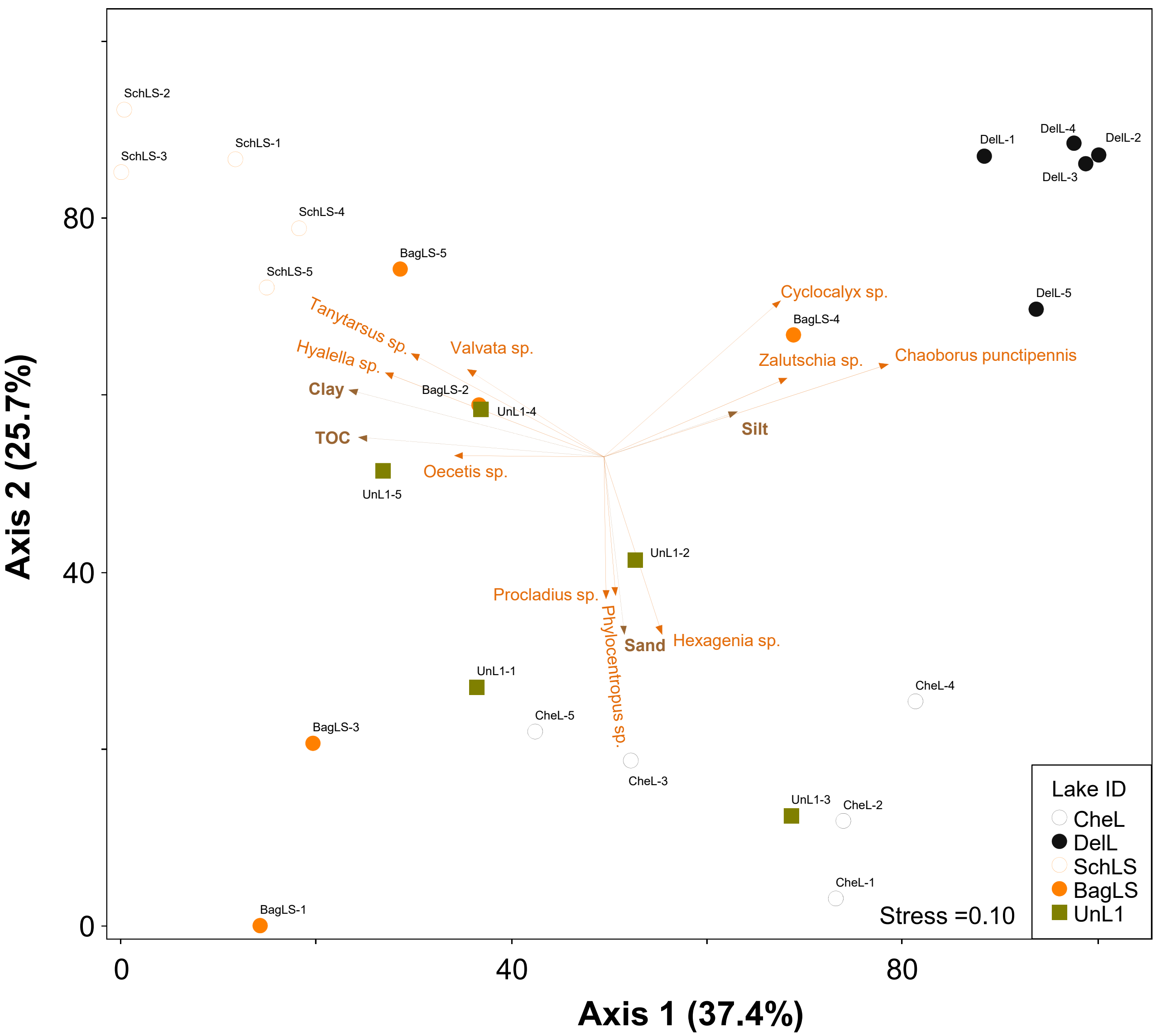


Figure 5.6: Nonmetric Multidimensional Scaling (NMDS) biplot of shallow lake sampling stations using lowest practical level of taxonomic identification. Rare taxa were not included in the NMDS analysis and were defined as not occurring in more than three stations. Displayed vectors have Pearson r-values of 0.50 or greater with Axis-1 or -2.

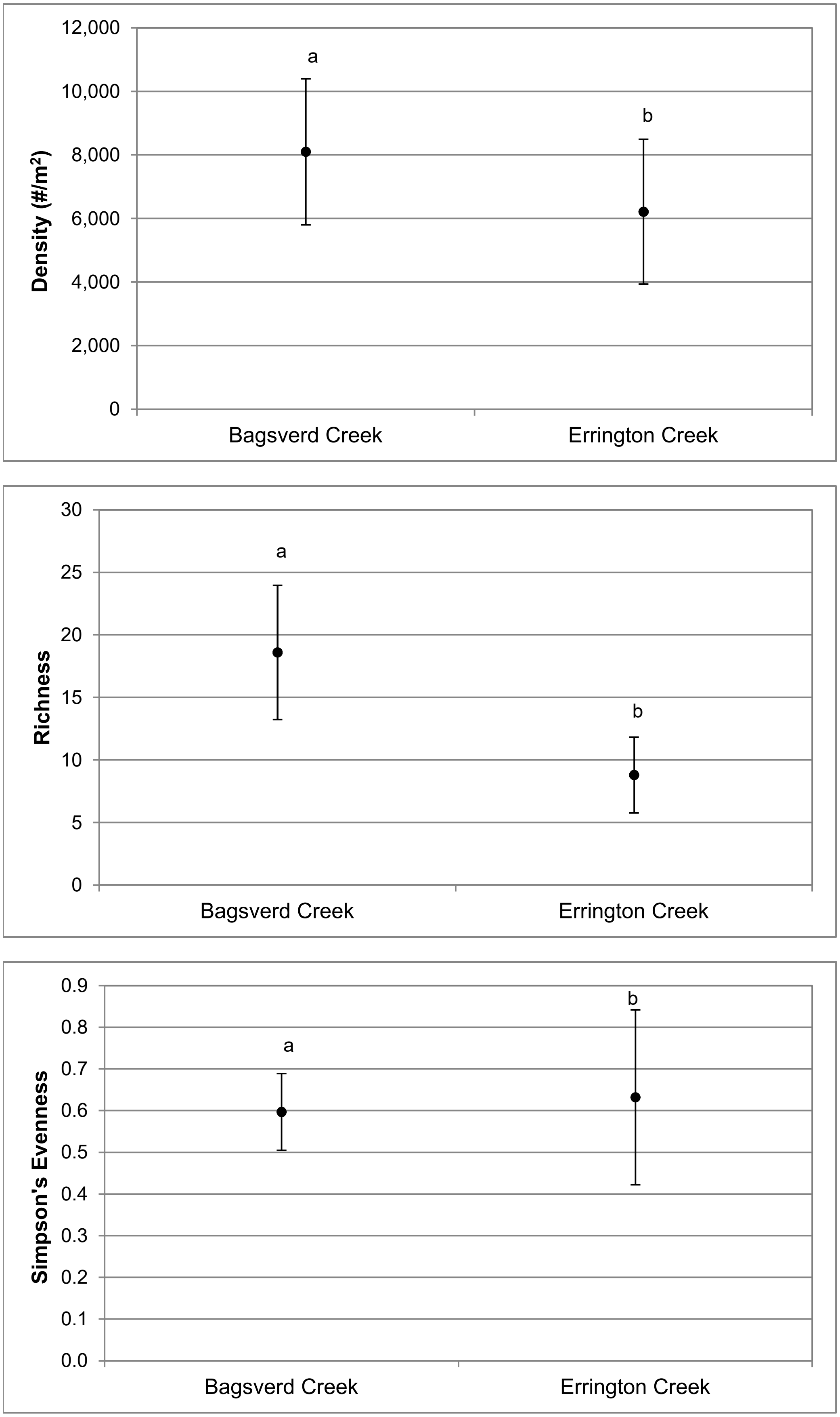


Figure 5.7: Mean (n=5) density, richness and Simpson's Evenness (± standard deviation) for Bagsverd Creek and Errington Creek sampling areas, Côté Gold, 2013. Areas with same letters do not differ significantly.

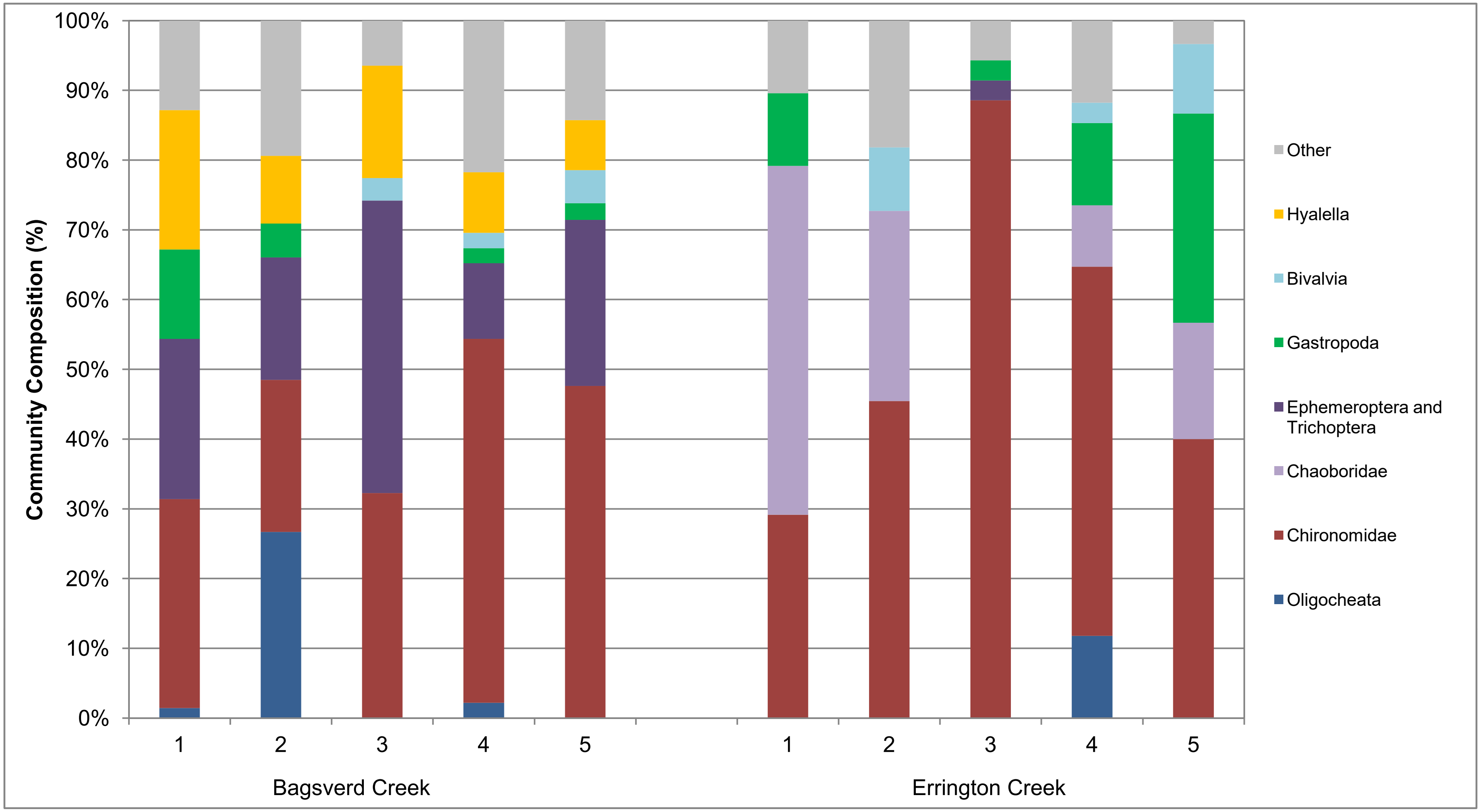


Figure 5.8: Dominant benthic invertebrate taxa at stream sampling stations, Côté Gold, 2013.

Whereas, the Errington Creek benthic community was dominated by midges (Chironomidae and Chaoboridae) that are tolerant of low dissolved oxygen with some snails and clams (Gastropoda and Bivalvia; Figure 5.8 and Appendix Table E.8). The prevalence of Chaoboridae suggest extremely low flow in Errington Creek or close proximity to a lentic source as they are unable to move against water current.

Despite the fact that Errington Creek represented a similar size water course and upstream watershed size, was located within the same watershed as Bagsverd Creek and appeared to be a good reference for Bagsverd Creek, the benthic invertebrate communities were very different. In the future it is recommended that Errington Creek not be used as a reference area for Bagsverd Creek.

6.0 FISH

6.1 Fish Habitat

The lentic habitat (lakes and ponds) within the LSA are typically shallow (<10 m) bodies of water connected by slow meandering streams. A total of 22 lakes and ponds were surveyed for the Côté Gold Project (Figure 2.1, see Appendix A for each individual habitat assessment). Lake shoreline habitat generally consisted of cobble and/or boulder substrate, embedded in silty-sand, sand or silts. Granitic bedrock outcrops are commonly found along the perimeter, or in association with small islands. Littoral substrate (<2 m) primarily consisted of what was observed on shore, transitioning to sandy-silt, with more silt with depth. Most lakes are treed to the shoreline with varying densities of black spruce (*Picea mariana*), jack pine (*Pinus banksiana*) and eastern white cedar (*Thuja occidentalis*). White birch (*Betula papyrifera*) and trembling aspen (*Populus tremuloides*) are found in lower densities. Leatherleaf (*Chamaedaphne calyculata*) commonly overhangs shorelines with cedar trees in addition to other common understory species such as sedges (*Carex* sp.) and sweet gale (*Myrica gale*), bog laurel (*Kalmia polifolia*) and speckled alder (*Alnus incana*) in lower densities. In areas where wetlands are found adjacent to the water body, vegetation is generally comprised of dense sedges, sweet gale, leatherleaf, bog laurel and scattered alder that overhangs the water's edge.

Macrophytes densities vary within and among lakes, and can generally be found in shallower bays or surrounding inlets or outlets. Submergent macrophyte beds consist of tape grass (*Vallisneria americana*), burred (*Sparganium* sp.), large-leaved pondweed (*Potamogeton amplifolius*) and/or bladderwort *(Utricularia* sp.). Floating macrophytes are largely made up of yellow pond lily (*Nuphar variegatum*), fragrant white water lily (*Nymphaea odorata*) and water shield (*Brasenia schreberi*). Fewer beds of emergent macrophytes such as spikerushes (*Eleocharis* sp.) are found on certain lakes along with scattered patches of broad-leaved arrowhead (*Sagittaria latifolia*) found along the shoreline.

The ponds surveyed were generally shallower than all the lakes (see Appendix A) with largely fine silt and muck substrates. Typically most of them had dense aquatic vegetation, including submergent pond weeds, bladderwort, floating water shield and yellow pond lily with cattails (Typha sp.). Wetland areas surrounding the ponds include floating mats of sedges, sweet gale, alder and dead black spruce with some marsh cinquefoil (*Potentilla palustris*) and bog laurel.

Lotic habitat was dominated by slow meandering streams, bordered by wetlands (see Appendix A for each individual habitat assessment). The Mollie River and Bagsverd Creek were generally comprised of predominantly low-gradient habitat with scattered patches of moderate- and high-gradient habitat.

The low-gradient habitat consisted of slow run, small to large pools, and frequently ponded areas as a result of beaver activity. Substrate of lower gradient habitat included organic muck (i.e., silt with high organic content) of varying thickness over hard-packed clay. Water depth ranged from 0.7 to 1.8 m within this habitat. Instream vegetation was generally dense in the main channel where coverage was frequently 90 to 100 %. Macrophytes included burreed, mermaid's hair, bladderwort, stonewort (Chara sp.), pondweed and/or mare's tail (*Hippuris vulgaris*).

The moderate-gradient habitat was characterized by run habitat interspersed with small pools. Substrate in these areas typically included densely packed clay, sand-gravel mixes and/or soft silt. Pools within this type of habitat reached approximately 1 to 1.4 m deep with substrate of these pools generally varying between hard-packed clay and soft silt. Substantial amounts of small- and large-woody debris were found within moderate-gradient habitat. Again, aquatic vegetation included dense growth of burreed, mermaid's hair, stonewort and/or pondweed. Quillwort (*Isoetes* sp.) and filamentous green algae (*Chlorophyta*), and floating vegetation such as yellow pond lily, were found in patches or mixed amongst the dominant emergent and submergent vegetation types indicated above. Collectively, instream vegetation commonly covered 80 to 100 % of the stream bed.

The wetland plant community adjacent to the low- and moderate stream reaches generally included a predominantly sedge, sweet gale and meadowsweet mix, with speckled alder and dwarf birch comprised the sub-dominant species. Forest next to the low-gradient area wetlands was generally dominated by coniferous species including black spruce, jack pine and eastern larch (*Larix laricina*).

A few patches of high-gradient areas occur within the LSA and generally contain riffle and/or riffle run stream morphology with some pool habitat. Substrate of high-gradient habitat generally consisted of large cobble and boulder occasionally embedded with sand, and as a result, interstitial and/or sub-surface flow is common during low flow periods. Instream vegetation in high-gradient habitat generally includes aquatic mosses (*Bryophyta* sp.) as well as filamentous green algae, with vascular plants limited to sparse growth of submergent burreed. Mixed forest typically extends to the shoreline, with the overstory commonly including eastern white cedar, black spruce, speckled alder, white birch, trembling aspen and, in some areas, eastern larch and/or maple (*Acer* sp.).

6.2 Fish Community and Health

6.2.1 Fish Community

The fish communities within lakes (including ponds) in the LSA were generally characterized by warm water species dominated by northern pike (*Esox lucius*) and yellow perch (*Perca flavenscens*; Table 6.1 and Appendix Tables F.1 to F.24). Walleye (*Sander vitreus*), white sucker (*Catostomus commersonii*) and lake whitefish (*Coregonus clupeaformis*) were also common and varied in abundance depending on lake habitat (Table 6.1 and Appendix Tables F.1 to F.24). Smallmouth bass (*Micropterus dolomieu*) and burbot (*Lota lota*) were only present in a few lakes, but were found in both the Mollie River and Neville Lake watersheds (Table 6.1). Lake trout (*Salvelinus namaycush*) are only present within Mesomikenda Lake (Table 6.1).

The small-bodied fish community within lakes varied based on habitat conditions, however it primarily consisted of blacknose shiner (*Notropis heterolepis*), spottail shiner (*Notropis hudsonius*) and Iowa darter (*Estheostoma exile*; Table 6.1 and Appendix Tables F.1 to F.24). Golden shiner (*Notemigonus crysoleucas*) were frequently observed, however consistently in low abundance (Appendix Tables F.1 to F.24). A complete list of the species found in each water body is provided in Table 6.1.

The lotic habitat fish community was also dominated by northern pike, yellow perch and white sucker (Table 6.2). Burbot were observed in Bagsverd Creek (i.e., Neville Lake watershed), but not in the Mollie River (Table 6.2). The small-bodied fish diversity within the stream habitat was lower compared to lakes and was largely comprised of golden shiner with lower numbers of finescale dace (*Chrosomus neogaeus*), central mudminnow (*Umbra limi*) and Iowa darter (Table 6.2). Longnose dace (*Chromomus eos*) were only found in higher-gradient stream habitat. The lower diversity could be attributable to difficulty using a variety of fishing methods within Bagsverd Creek and the Mollie River due to the dense instream vegetation.

Overall, all large-bodied species (excluding lake trout) captured within the baseline program were observed in both the Mollie River and Neville Lake watersheds (Table 6.1 and 6.2). A few small-bodied species were limited to one watershed (e.g., central mudminnow, common shiner and johnny darter [*Etheostoma nigrum*]), however this could be attributable to

Table 6.1: Summary of fish species presence/absence in Côté Gold area lake habitat[a].

	Watershed	Mollie River Watershed													Neville Lake Watershed								Mettagami River
Size	Species	Chester Lake	East Beaver Pond	Unnamed Pond	Beaver Pond	Clam Lake	Cote Lake	North Beaver Pond	Weeduck Lake	Three Duck Lakes			Unnamed Lake #3	Delaney Lake	Schist Lake	West Beaver Pond	Little Clam Lake	Bagsverd Pond	Bagsverd Lake	Unnamed Lakes		Neville Lake	Mesomikenda Lake
										Upper	Middle	Lower								#2	#1		
Large-bodied Fish Species	Burbot *Lota lota*					✔	✔																
	Lake trout *Salvelinus namaycush*																						✔
	Lake whitefish *Coregonus clupeaformis*	✔					✔		✔	✔	✔	✔			✔				✔			✔	✔
	Northern pike *Esox lucius*	✔		✔		✔	✔		✔	✔	✔	✔	✔	✔	✔		✔		✔	✔	✔	✔	✔
	Smallmouth bass *Micropterus dolomieu*					✔					✔[b]											✔	
	Walleye *Sander vitreus*									✔	✔	✔			✔				✔	✔	✔	✔	✔
	White sucker *Catostomus commersonii*	✔		✔			✔		✔	✔	✔	✔		✔	✔	✔		✔	✔	✔	✔	✔	✔
	Yellow perch *Perca flavescens*	✔		✔		✔	✔		✔	✔	✔	✔	✔	✔	✔		✔		✔	✔	✔	✔	✔
Small-bodied Fish Species	Blacknose shiner *Notropis heterolepis*	✔				✔	✔		✔	✔	✔	✔			✔		✔		✔	✔	✔	✔	✔
	Brook stickleback *Culaea inconstans*																						✔
	Central mudminnow *Umbra limi*															✔		✔			✔		
	Common shiner *Luxilus cornutus*										✔												
	Fathead minnow *Pimephales promelas*		✔		✔											✔		✔	✔				
	Finescale dace *Chrosomus neogaeus*		✔		✔			✔							✔	✔		✔					
	Golden shiner *Notemigonus crysoleucas*	✔				✔	✔		✔				✔	✔	✔	✔	✔		✔		✔	✔	✔
	Iowa Darter *Etheostoma exile*	✔		✔	✔	✔			✔	✔	✔	✔	✔		✔	✔	✔	✔	✔	✔	✔		✔
	Johnny darter *Etheostoma nigrum*					✔																	
	Northern redbelly dace *Chrosomus eos*		✔		✔			✔								✔		✔					
	Pearl dace *Margariscus nachtriebi*				✔											✔							
	Sculpin sp. *Cottus bairdii*								✔			✔									✔		
	Spottail shiner *Notropis hudsonius*	✔				✔			✔	✔	✔				✔				✔	✔		✔	✔
	Trout-perch *Percopsis omiscomaycus*	✔																					✔

[a] This table reflects fish species absence/presence in the current configurations of the Mollie River and Neville Lake watersheds.
[b] AMEC 2011.

Table 6.2: Summary of fish species presence/absence in Côté Gold area stream habitat*.

	Watershed	Mollie River Watershed		Neville Lake Watershed		
Size	**Species**	**Mollie River**	**Clam Creek[a]**	**Bagsverd Creek (Lower)**	**Bagsverd Creek (Upper)**	**Unnamed Stream to Bagsverd Creek**
Large-bodied Fish Species	Burbot *Lota lota*			✔	✔	
	Northern pike *Esox lucius*	✔		✔	✔	✔
	White sucker *Catostomus commersonii*	✔		✔	✔	
	Yellow perch *Perca flavescens*	✔		✔	✔	
Small-bodied Fish Species	Blacknose shiner *Notropis heterolepis*	✔				✔
	Central mudminnow *Umbra limi*				✔	✔
	Finescale dace *Chrosomus neogaeus*					✔
	Golden shiner *Notemigonus crysoleucas*	✔		✔	✔	✔
	Iowa Darter *Etheostoma exile*	✔		✔		
	Longnose dace *Rhinichthys cataractae*			✔	✔	
	Northern redbelly dace *Chrosomus eos*					✔

* This table reflects fish species absence/presence in the current configurations of the Mollie River and Neville Lake watersheds.

[a] Minnow trapping was conducted in Clam Creek in 2013, but no fish were caught after 40.03 trap hours.

differences in sampling gear, effort applied among areas and time of year the survey was conducted (Tables 6.1, 6.2 and Appendix Tables F.1 to F.24).

No endangered, threatened or special concern fish species (COSEWIC 2013) were observed in any of the water bodies within the LSA during the field surveys conducted in 2010 (AMEC 2011), 2012 or 2013 (Minnow).

6.2.2 Fish Population Estimates in Côté Lake and Unnamed Lake #1

The northern pike population in Côté Lake was estimated to be 442 individuals with an average density of 22.3 northern pike/ha and the Unnamed Lake #1 population was estimated to be approximately 387 individuals with an average density of 20.5 northern pike/ha (Table 6.3). Cargill Lake, a 20.9 ha northern Ontario lake (Kapuskasing District) sampled using similar collection gear and mark-recapture methods, exhibited a similar estimated population density (27.6 northern pike/ha; Connors et al. 2011; Table 6.3). In addition, northern pike population density estimates for Minnesota lakes of comparable surface areas and at a similar latitude averaged 23.9 pike/ha (range from 7.5 to 46.9 pike/ha; Table 6.3; Pierce 1997, Pierce and Tomcko 2003). Therefore, the northern pike population density at Côté Lake and Unnamed Lake #1 in July 2012 was within a range considered typical for lakes of comparable size and geographic latitude.

The Côté Lake white sucker population was estimated to be 906 individuals with a population density of 46.7/ha, whereas Unnamed Lake #1 was estimated to be 54 individuals with a density of 2.9/ha (Table 6.3). The population density for Côté Lake was moderate based on comparison to published literature values, which ranged from 11 to 82 white sucker/ha in natural, un-impacted lakes that were generally larger and deeper than Côté Lake (Table 6.3). However, the white sucker population density in Unnamed Lake #1 was low compared to published values (Table 6.3). While these published values were applicable to white sucker populations in lakes that are much larger and deeper than Unnamed Lake #1 (Table 6.3), the density estimates for Unnamed Lake #1 were sufficiently lower to suggest that conditions in the lake are not optimal for white sucker.

Lastly, the walleye population was estimated in Unnamed Lake #1 and was found to be approximately 27 individuals, with a corresponding population density of 1.4 walleye/ha (Table 6.3). The average density of walleye among North American lakes of various sizes and depths was estimated to be approximately 14.8/ha (Baccante and Colby 1996). In a relatively large, shallow, unproductive lake in Northern Ontario, mean walleye density was estimated at 11.5 walleye/ha (Colby and Baccante 1996). In Northern Wisconsin, walleye density ranged between 0.47 and 29.1 walleye/ha (average = 6.6 walleye/ha) among numerous lakes (i.e., > 40) and years (Sass et al. 2004). Therefore, the walleye population of Unnamed Lake #1 was small relative to most typical northern temperate lakes, suggesting conditions in the lake were not optimal for walleye production.

6.2.3 Fish Health

Northern pike caught within the LSA were young-of-the-year (YOY) to adult, with total length ranging from approximately 10 cm to just under one metre (Figure 6.1a). Size and weight of northern pike captured from 16 lakes within the LSA overlapped broadly (Figure 6.1a and Appendix Tables F.25 to F.45). Body condition (i.e., length-at-weight) was comparable among lakes, with the exception of Clam Lake (2010; Figure 6.1a). Northern pike captured at Clam Lake in 2010 showed higher condition than pike of similar total length from other lakes in the region. However, overall the data suggests that the health of northern pike within the Project area is consistent between years, and with other lakes within the study area. Age at length of northern pike captured in 2013 suggest that northern pike from Weeduck, Bagsverd and Schist lakes were generally larger at age than those from Unnamed Lake #2, #3 and Neville Lake (Figure 6.1b). Overall, age at length (i.e., growth) for northern pike among LSA lakes varied, however this is not surprising as northern pike growth is dependent on many factors including density, climate (growing-degree-days above 5 °C) and available habitat (percent littoral zone; Malette and Morgan 2005).

Yellow perch were also caught within size ranges representative of all life stages (i.e., YOY, juvenile and adults), with the condition of all stages comparable between areas within the LSA (Figure 6.2a). Age at length data for yellow perch was largely represented by younger individuals (1 to 3 yr; Figure 6.2b). Although, based on the data collected, it would suggest similar growth among lakes within the LSA (Figure 6.2b).

Walleye and lake whitefish caught within the LSA were largely represented by the adult size class (Figure 6.3). Length and weight broadly overlapped for both species suggesting similar condition among lakes and years sampled (Figures 6.3a and 6.4a). Based on the limited age data collected in 2013 for both walleye and lake whitefish, no substantive differences in growth for either walleye or lake whitefish were observed (Figures 6.3b and 6.4b).

Length at weight relationships were also evaluated for smallmouth bass and white sucker captured in water bodies within the LSA (Figure 6.5a and b). Smallmouth bass were only captured and measured in Clam Lake in 2010, 2012 and 2013 and in Three Duck Lakes in 2010. Condition would appear to be slightly higher in smallmouth bass captured in Three Duck Lakes in 2010 (Figure 6.5a). White sucker data broadly overlapped suggesting similar condition among lakes and years sampled (Figure 6.5b). A few data points collected in 2010

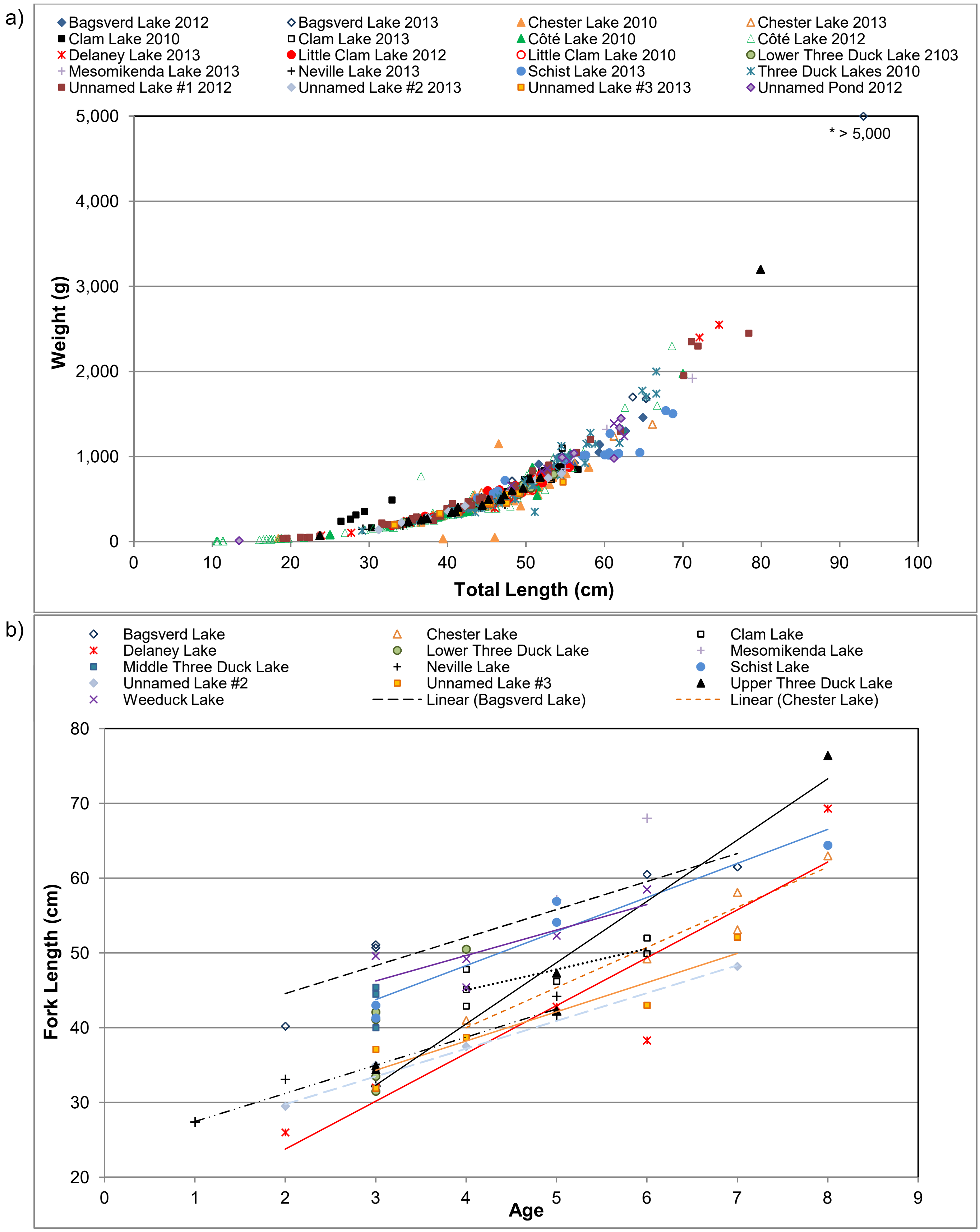


Figure 6.1: a) Length at weight relationships (August 2010, July 2012, and June 2013) and b) age at length relationships (2013) for northern pike captured from Côté Gold area water bodies.

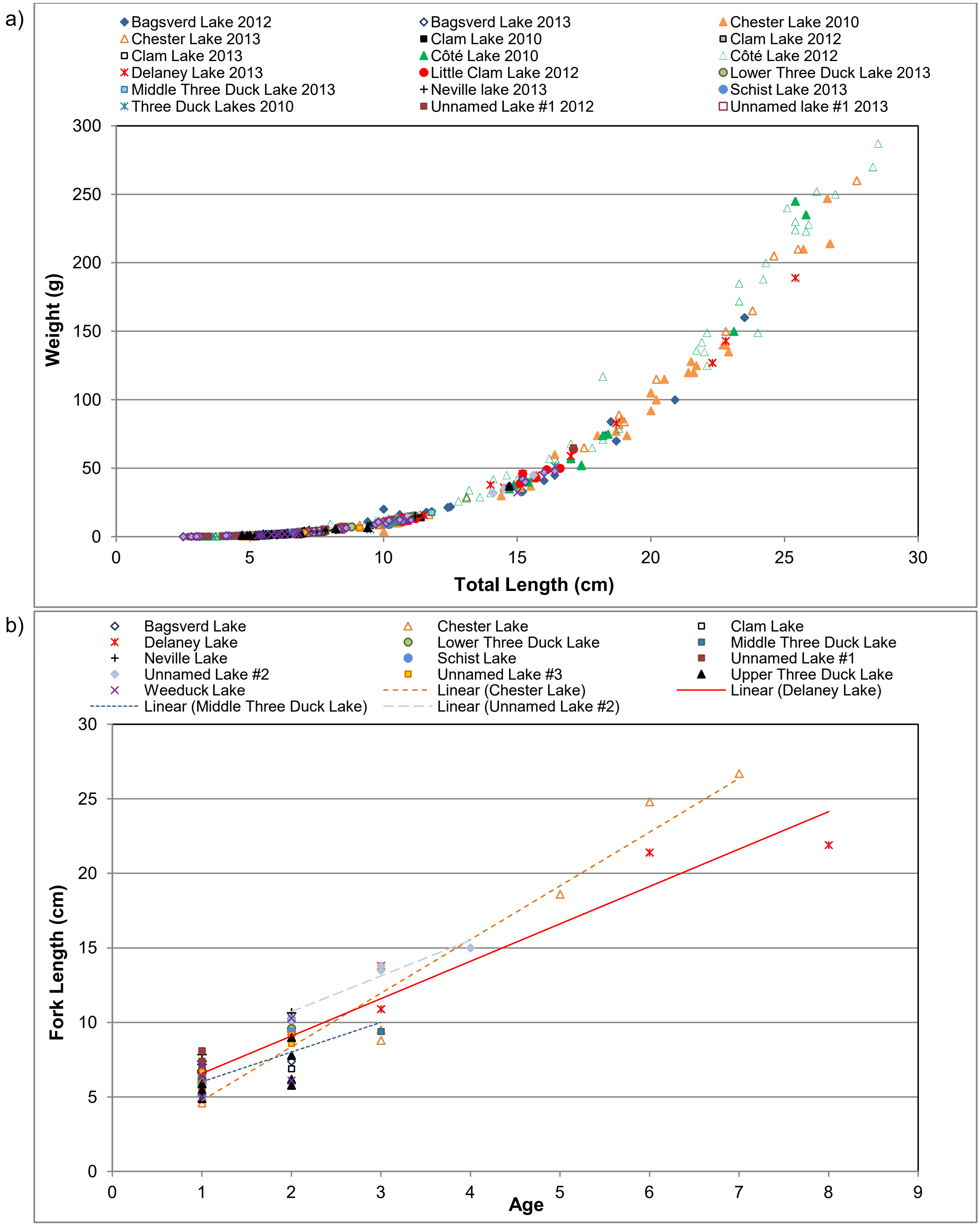
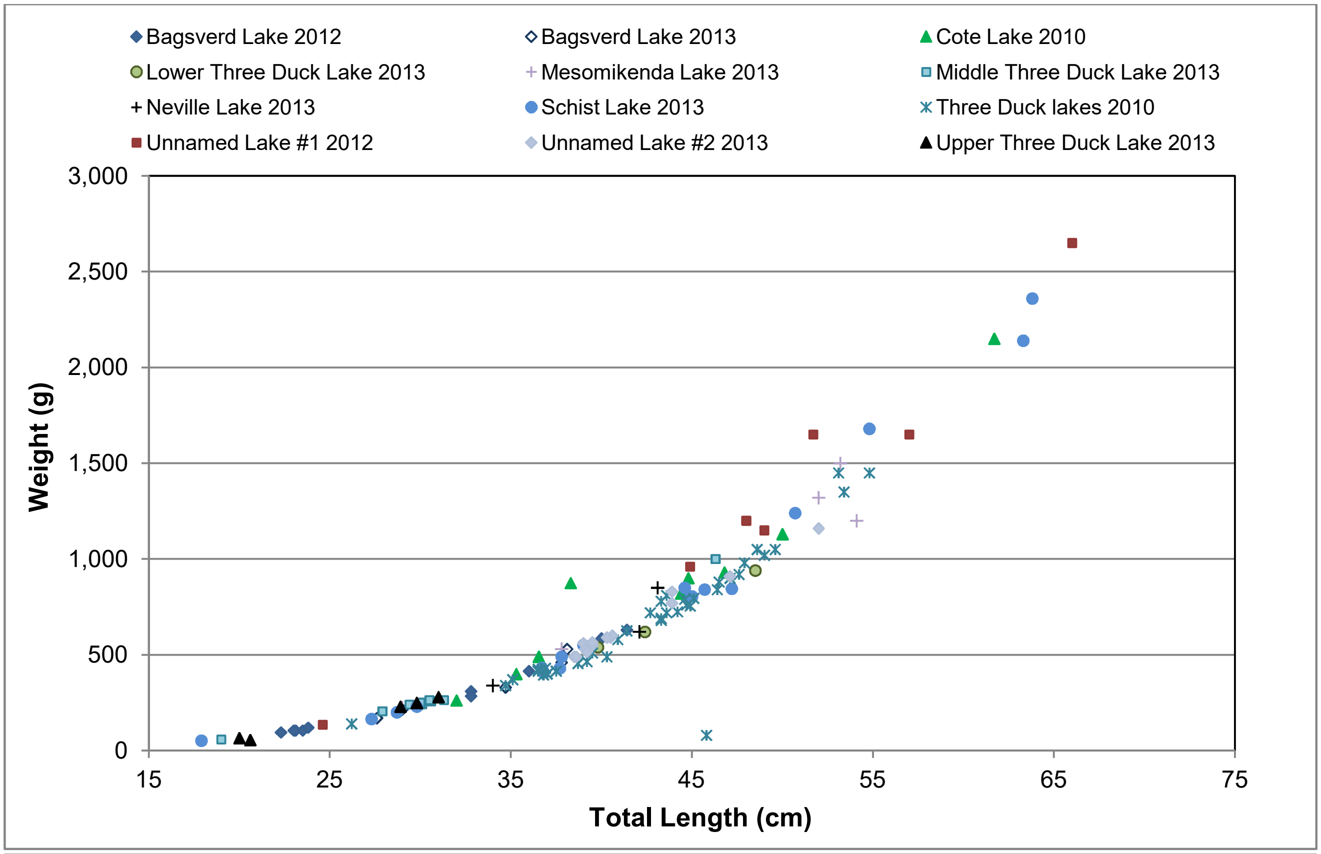


Figure 6.2: a) Length at weight relationships (August 2010, July 2012, and June 2013) and b) age at length relationships (2013) for yellow perch captured from Côté Gold area water bodies.

a)



b)

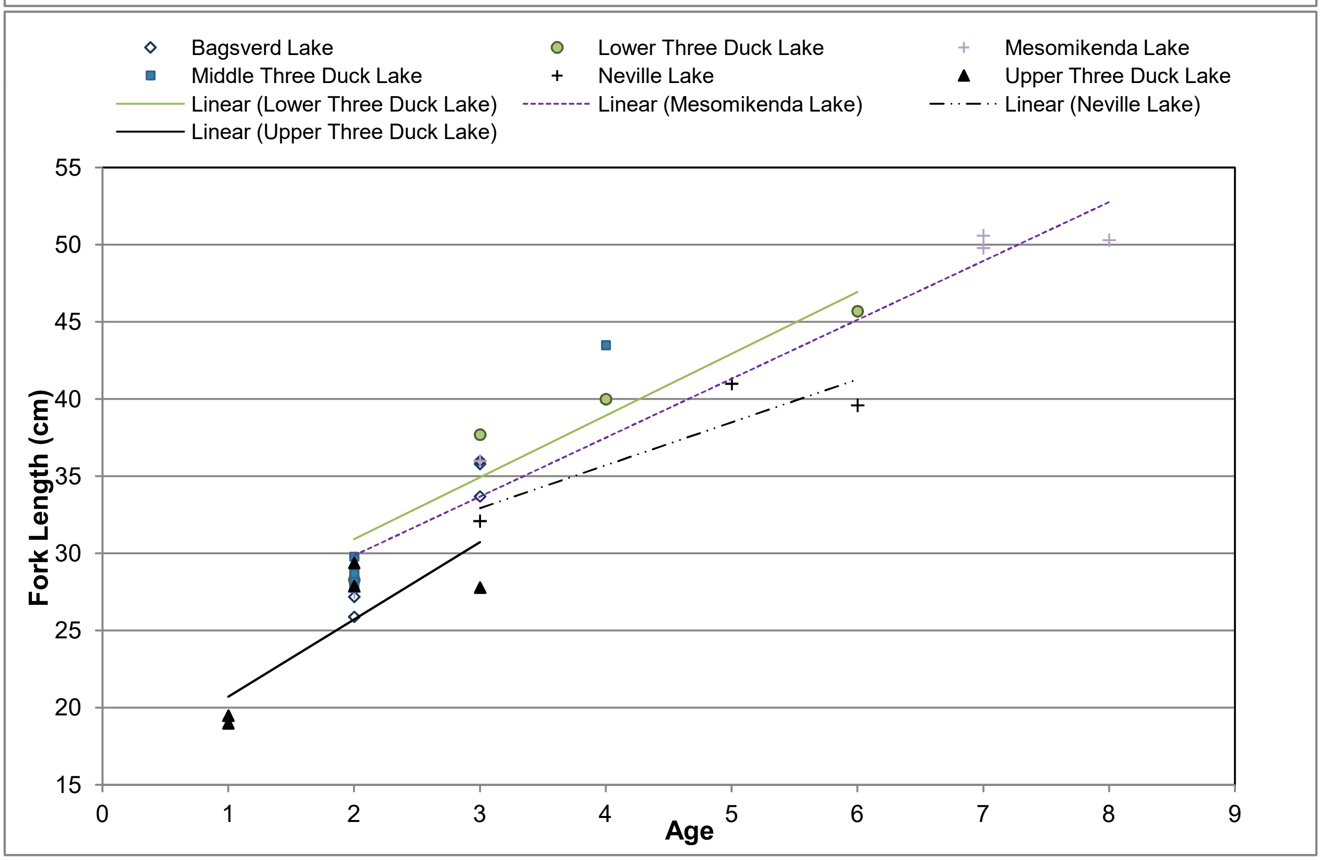
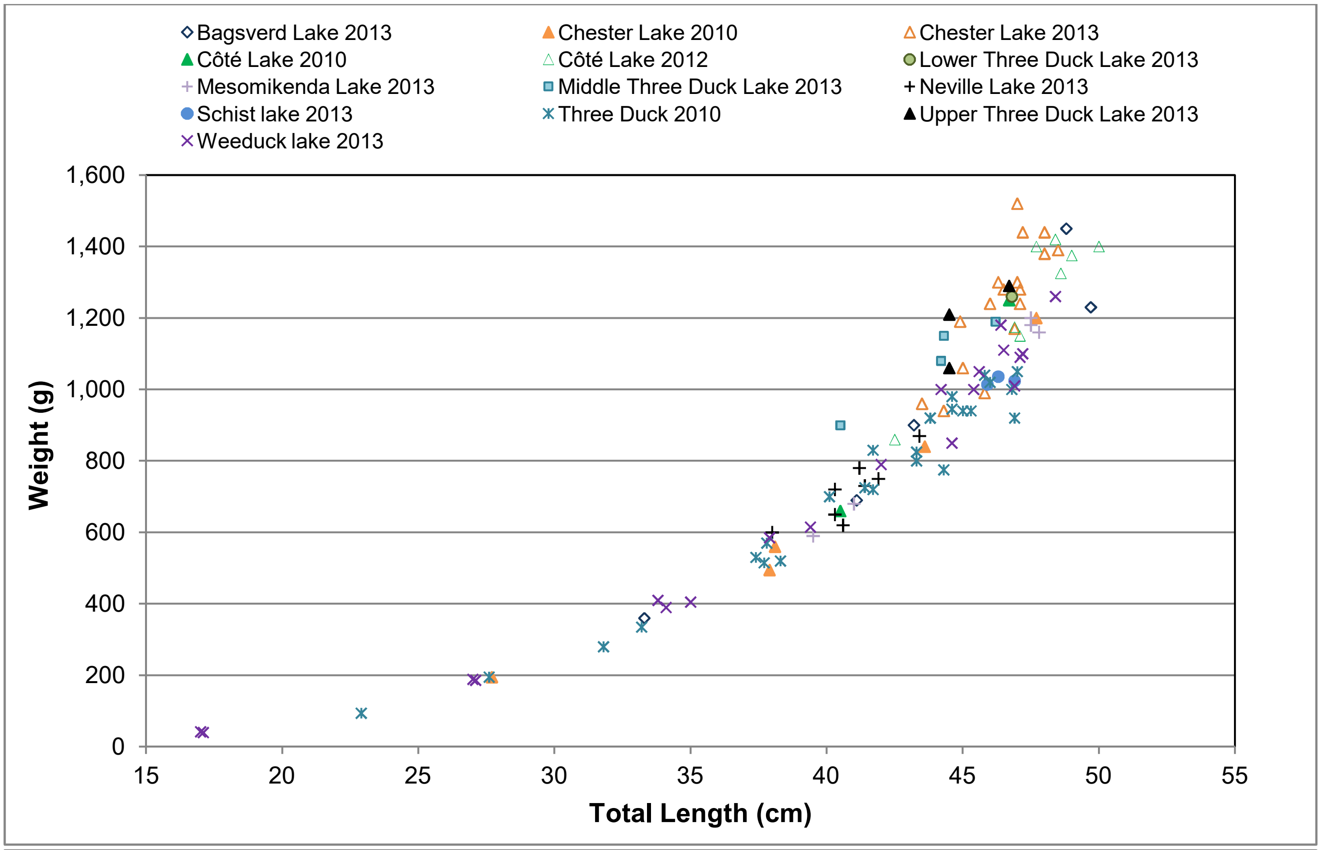


Figure 6.3: a) Length at weight relationships (August 2010, July 2012, and June 2013) and b) age at length relationships (2013) for walleye captured from Côté Gold area water bodies.

a)



b)

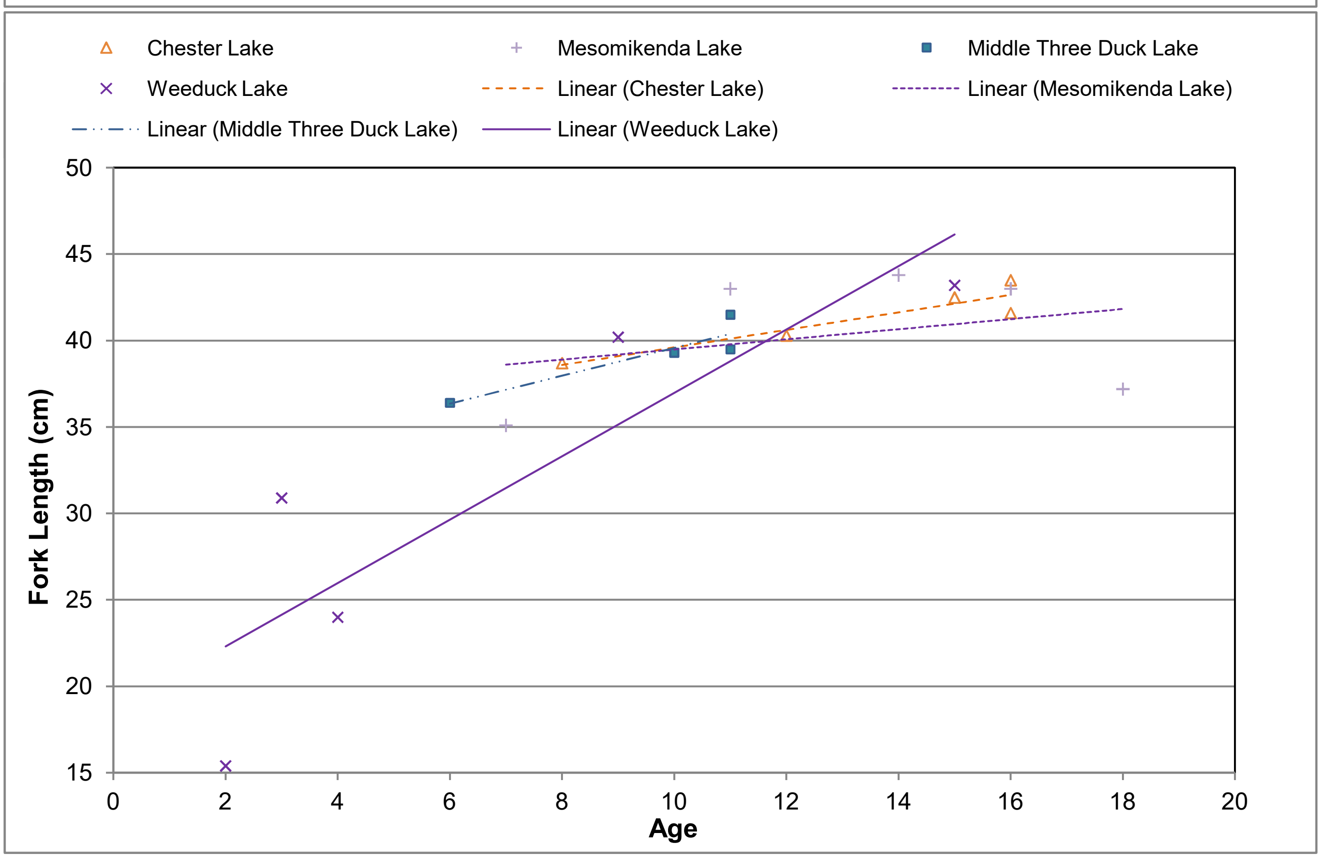


Figure 6.4: a) Length at weight relationships (August 2010, July 2012, and June 2013) and b) age at length relationships (2013) for lake whitefish captured from Côté Gold area water bodies.

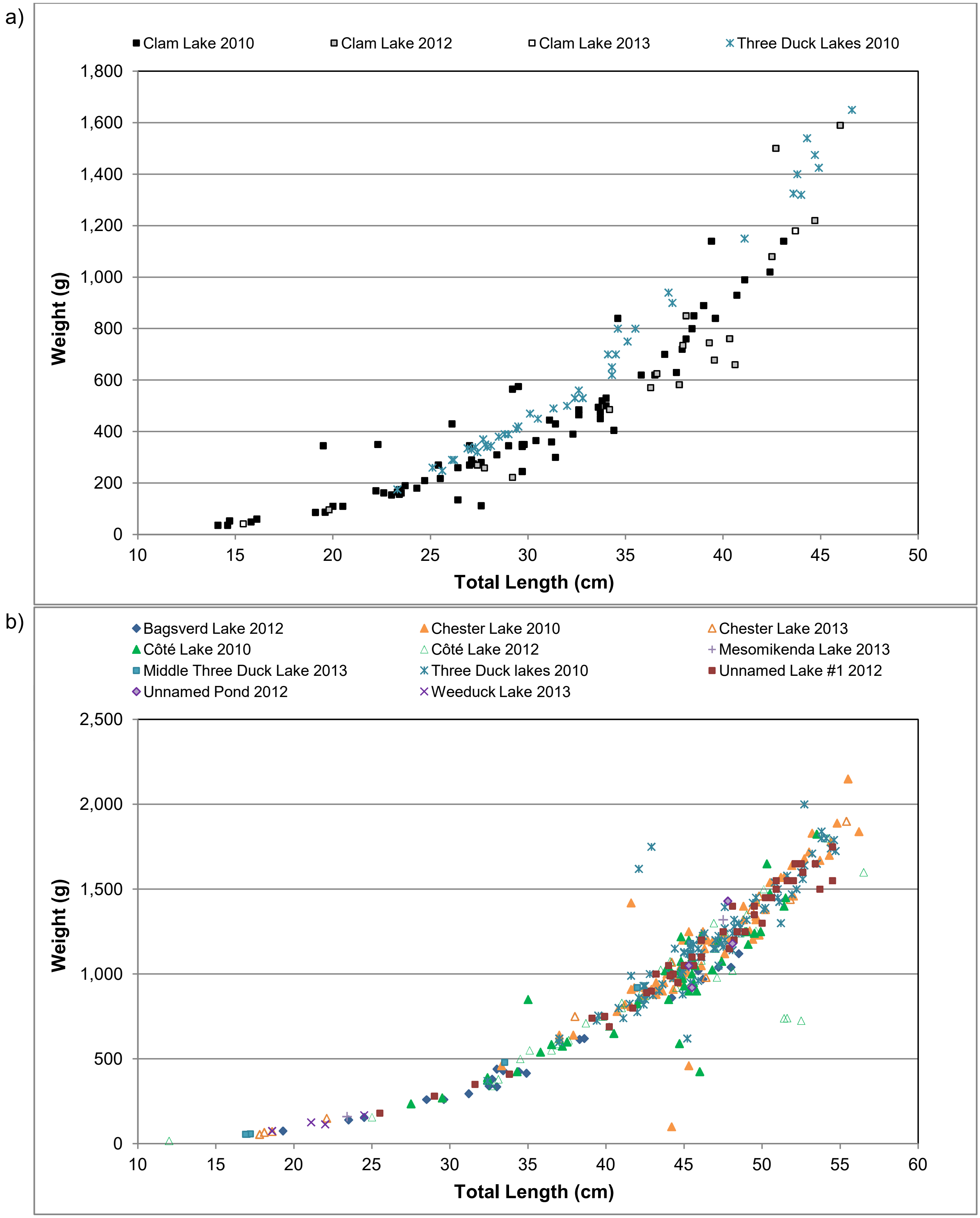


Figure 6.5: a) Length at weight relationships for a) smallmouth bass and b) white sucker captured from Côté Gold area water bodies that were sampled in August 2010, July 2012, and June 2013.

did fall outside the majority of the data; however white sucker were not all from a single lake, suggesting variability within the 2010 data.

In summary, data collected would suggest northern pike, yellow perch, walleye, lake whitefish, white sucker and smallmouth bass have similar conditions among lakes within the LSA. In addition, based on the age data collected, northern pike growth was variable among lakes in 2013. All other species age at length data would suggest similar growth rates for the age classes collected among lakes within the LSA.

6.3 Fish Habitat Evaluation

Key sport fish species found within the LSA include; northern pike, yellow perch, walleye, and lake whitefish (Figure 6.6). Smallmouth bass were also found, however this species was only observed in Clam, Three Duck and Neville lakes (Figure 6.6 and Table 6.1). Lake trout were confined to Mesomikenda Lake (Figure 6.6). Other large-bodied species include white sucker and burbot. Smaller fish species vary depending on habitat conditions.

Fish were present in all the water bodies surveyed within the LSA (Figure 6.6). A few water bodies only had small-bodied fish present (East Beaver Pond, Beaver Pond and North Beaver Pond) and two others had only small-bodied fish with white sucker (West Beaver Pond and Bagsverd Pond; Figure 6.6, Tables 6.1 and 6.2). Overwintering habitat available within these small ponds, that are typically less than 2 m in depth, is insufficient to support larger species. The overwintering habitat is limited by ice thickness (typically 0.5 to 0.6 m; Mr. Brown, IAMGOLD, pers. comm. 2013), which reduces the depth of water available and lower dissolved oxygen concentrations typically observed within these areas. One exception is Unnamed Pond where maximum depth was only 1.8 m in July 2012, with limited connectivity to the rest of the watershed; however both northern pike and yellow perch were found within this area. Both of these species are tolerant of very low dissolved oxygen concentrations which may explain their broad distribution within the LSA (Krieger et al 1983, Inskip 1982; Appendix Table A.1).

The fish habitat available in lakes surveyed within the LSA generally provides adequate quantities of spawning (including incubation), rearing, adult and overwintering habitat for northern pike and yellow perch (Figure 6.6 and Appendix Table A.1). This is not surprising as these are the two dominant species within the area. Stream habitat also provides adequate spawning, rearing and adult foraging habitat for these species. Overwintering habitat within the Mollie River and Bagsverd Creek is limited in areas of shallower depth (especially less than 1.5 m). Shallow water depths and high summer water temperatures

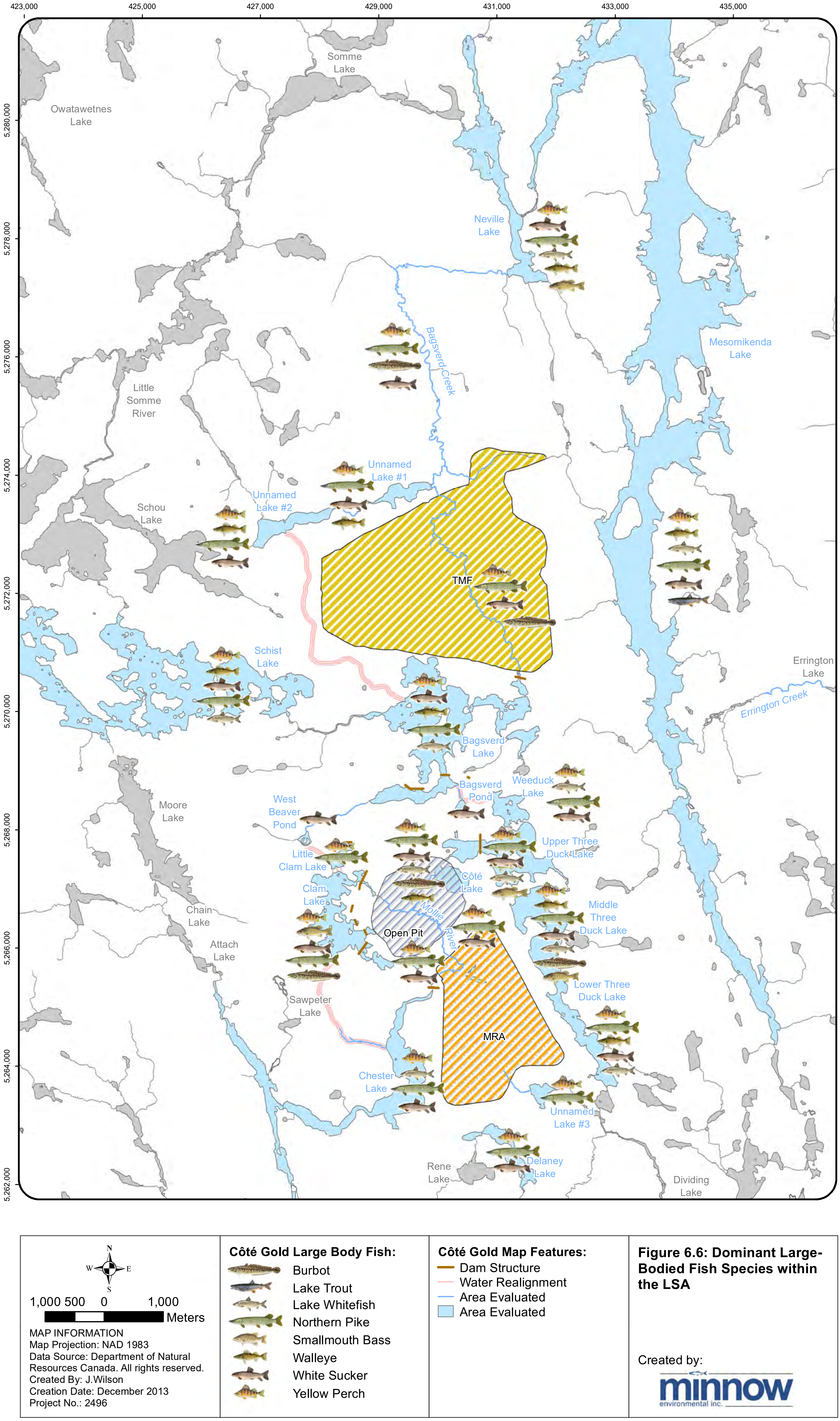


Figure 6.6: Dominant Large-Bodied Fish Species within the LSA

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may also seasonally reduce the quality of habitat for larger adults; however this habitat is not limiting within the LSA.

Fish habitat for walleye, lake whitefish, white sucker and burbot within the LSA is generally adequate for rearing and adult foraging (Appendix Table A.1). However, species such as lake whitefish and burbot prefer deeper lakes where they can escape warmer water temperatures in the summer and these habitats are limited to the deeper lakes within the LSA (Appendix Table A.1). Spawning habitat for lake whitefish and burbot is adequate in the lakes where they are found (e.g., Bagsverd Lake, Clam Lake, Three Duck Lakes; Figure 6.6). Walleye and white sucker spawning habitat was the only limiting habitat within the area surveyed. A few locations within Bagsverd Creek and the Mollie River near Chester Lake outlet were identified as marginal to good spawning habitat for white sucker and walleye (Appendix Table A.1; see Appendix A.1 and A.15). Smallmouth bass and lake trout habitat was adequate for all life stages in the water bodies where they were observed (Figure 6.6 and Appendix Table A.1).

Overall, there is generally no limiting habitat found within the LSA for the key species identified, with the exception that limited spawning habitat is available for walleye and white sucker within the areas evaluated. Northern pike and yellow perch dominate the fish community within the LSA as an abundance of habitat is available for these species.

7.0 CONCLUSIONS

There are numerous water bodies within the Local Study Area (LSA; i.e., areas potentially affected by the Project) which are either part of the Mollie River watershed or the Neville Lake watershed, both of which are part of the larger Mattagami River watershed. The lentic habitats within the LSA are typically shallow (<10 m) bodies of water connected by slow meandering streams. These mesotrophic lakes are dimictic in nature and are typically stratified during the summer and winter months. A few of the water bodies are shallow enough that no thermocline is established in the water column during the summer months. The lotic habitats are dominated by slow meandering streams made up of slow run, pools and frequently ponded areas as a result of beaver activity.

The aquatic baseline study was a two year program to provide baseline information on sediment quality, water quality (in support of the benthic invertebrate community), benthic invertebrate community and fish habitat and community structure within the LSA. The conclusions of the aquatic baseline monitoring are summarized as follows:

- Surface water temperatures during summer months can get very warm (25 °C) due to the relatively shallow depths of most lakes and limited flow. Surface waters within the LSA are generally well oxygenated above the thermocline. However, below the thermocline, dissolved oxygen concentrations can seasonally approach hypoxic conditions (<2 mg/L) in most lakes greater than 5 m. Surface pH and specific conductivity varied within the lakes surveyed. Occasionally changes in pH and specific water conductivity were observed with depth in lake profiles and were likely associated with lower dissolved oxygen concentrations causing reducing conditions at greater depths.

- Background concentrations (95^{th} percentile of baseline) of total phosphorus, aluminum, iron and zinc were found to be elevated compared to established water quality guidelines. Water concentrations measured during the benthic invertebrate survey were typically lower than the established water quality benchmarks in the lakes and streams within the LSA. Aluminum and iron were observed at concentrations greater than the benchmark indicating that these substances can be naturally elevated within the LSA. Concentrations higher than background were also observed at some locations for chemical oxygen demand, dissolved organic carbon and total organic carbon which is likely related to the habitat conditions within the lake or stream (i.e., wetlands and highly vegetated areas will have higher concentrations of organic carbon and oxygen demand). Lastly, measured phosphorus and zinc concentrations in all samples taken in the fall of 2013 fell below the Provincial Water Quality Objectives, suggesting that the background benchmarks for these analytes may have been overstated.

- Sediment physical characteristics were generally varying mixtures of sand, silt and clay for all benthic invertebrate stations. Sediment composition within the lakes closest to the proposed open pit development (Chester, Clam, Weeduck, Upper and Middle Three Duck lakes) had a naturally higher proportion of sand, likely reflective of natural differences in surficial geology.

- Sediment core analysis determined that the surficial and historically deposited sediment quality was similar in all lakes. In addition, the sediment core data indicated that Mesomikenda Lake sediment was different compared to all other lakes within the LSA, containing higher concentrations of arsenic, barium, cobalt, iron, lead, manganese, molybdenum, titanium, vanadium and zinc. Surficial sediment chemistry taken in conjunction with the benthic invertebrate community sampling was consistent with core sediment sampling results and proved very similar among lakes (excluding Mesomikenda Lake).

- Sediment chemistry was less than the Severe Effect Level (SEL) for all metals; however concentrations of arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, total phosphorus, total Kjeldahl nitrogen and zinc were elevated above the Lowest Effect Level (LEL). Natural background concentrations of sediment metals, particularly in mineralized areas of the Canadian Shield, can often exceed LELs. Total organic carbon (TOC) was higher than the SEL in at least some stations in all the lakes within the LSA, which is also typical of lakes found within the Canadian Shield. Sediment chemistry within the stream samples was generally consistent with the lake samples, with the exception that manganese concentrations in Bagsverd Creek were higher than SEL. Overall sediment chemistry within the LSA was typically found above the LEL but less than the SEL. Sediment concentrations were only observed above the SEL for arsenic and iron in Mesomikenda Lake and manganese in both Mesomikenda Lake and Bagsverd Creek. No spatial patterns among lakes or within watersheds were observed.

- The benthic communities within the LSA were evaluated in thirteen lakes and two streams within the Mollie River and Neville Lake watersheds. Within both the deep (3.5 to 4.5 m) and shallow (1.5 to 2 m) lake stations the benthic communities were dominated by Chironomidae and Chaoboridae (midges) reflective of the habitat conditions in most of the lakes sampled (i.e., soft fine sediments with summer anoxia with depth). Benthic invertebrate density, taxon richness and Simpson's Evenness varied greatly in both the deep and shallow among and within lake stations. However the high variability among areas resulted in few statistical differences. Generally, the benthic community structure of deep lakes differed based on the presence and abundance of the two dominant groups (Chironomidae and Chaoboridae) versus the presence of or a variety of other species (i.e., presence of Harpactoicoida in Bagsverd Lake or high abundance of *Cyclocalyx* sp. in Neville and Clam lakes). The shallow lake stations differed in their benthic community structure but these differences were likely reflective of subtle habitat differences in sand, silt, total organic content and clay. Schist Lake was sampled as a potential reference lake for future studies. However the benthic communities in both the shallow and deep stations proved to be quite different and it is not recommended that it be used in future studies.

- The benthic community within Bagsverd Creek was very different than Errington Creek in density, taxon richness, Simpson's Evenness and community composition. Despite that Errington Creek represented a similar size water course and upstream watershed size, was located within the same watershed as Bagsverd Creek and appeared to be a good reference, the benthic communities were very different and it is therefore recommended that Errington Creek not be used as a reference in the future for Bagsverd Creek.

- The fish community within the LSA was generally characterized by warm water species. Both the lentic and lotic habitat were dominated by northern pike and yellow perch. Walleye, white sucker and lake whitefish were also common, and varied in abundance depending on the lake. Smallmouth bass and burbot were only present in a few lakes, but were found within both watersheds. Lake trout are only present within Mesomikenda Lake. The small-bodied fish community varied based on habitat conditions; however it primarily consisted of blacknose shiner, spottail shiner and Iowa darter. In areas where sportfish were absent, dace (northern redbelly and finescale) and fathead minnow were common. Overall, very few species were limited to one watershed (central mudminnow, common shiner and johnny darter), which is likely attributable to differences in sampling gear, effort applied among areas and the time of year. No endangered, threatened or special concern fish species (COSWIC 2013) were observed in any of the water bodies within the LSA over the two year program.

- The estimated population of northern pike in both Côté Lake (442 individuals, 22.3 pike/ha) and Unnamed Lake #1 (387 individuals, 20.5 pike/ha) were within a range considered typical for lakes of comparable size and geographic latitude. The white sucker population in Côté Lake (906 individuals, 46.7 white sucker/ha) was similarly within the range of published literature values (11 to 82 white sucker/ha), but the population within Unnamed Lake #1 (54 individuals, 2.9 white sucker/ha) was below regional norms. Very low numbers of walleye were captured in Unnamed Lake #1 (27 individuals, 1.4 walleye/ha) compared to regional norms (6.6 to 14.8 walleye/ha).

- Northern pike and yellow perch were caught within size ranges representative of all life stages (i.e., young-of-the-year, juvenile and adults), whereas, walleye, lake whitefish, smallmouth bass and white sucker were largely represented by adults with only a few juveniles represented. Overall, all large-bodied fish within the LSA have similar conditions (length at weight) among lakes. Growth, measured as age at length, indicated that northern pike growth was variable among lakes within the LSA in 2013. All other species age at length data suggests similar growth rates among lakes.

- Fish were present in all the water bodies surveyed within the LSA. A few water bodies only had small-bodied fish present (East Beaver Pond, Beaver Pond, and North Beaver Pond) and two other water bodies only had small-bodied fish and white sucker (West Beaver Pond and Bagsverd Pond). The fish habitat within the lakes surveyed generally provides adequate quantities of spawning (including incubation), rearing, adult and overwintering habitat for the fish communities present within each of the lakes. The exception is a paucity of spawning habitat for walleye and white sucker throughout the LSA. The only spawning habitat identified for these species was a few locations within Bagsverd Creek and the Mollie River near Chester Lake outlet. Northern pike and yellow perch dominate the fish community within the LSA as an abundance of habitat is available for both of these species.

8.0 REFERENCES

AMEC (AMEC Americas Limited. Earth & Environmental Division). 2011. Phase II Baseline Aquatics Report Chester Project. Chester Township, District of Sudbury, Ontario. Prepared for Trelawney Mining and Exploration Inc., July 2011.

Baccante, D.A., and Colby, P.J. 1996. Harvest, density and reproductive characteristics of North American walleye populations. Ann. Zool. Fennici. 33:601-615.

Bailey, R.C., R.H. Norris, and T.B. Reynoldson. 2004. Bioassessment of Freshwater Ecosystems: Using the Reference Condition Approach. Kluwer Academic Publishers, Massachusetts, USA.

Bain, M.B. and N.J. Stevenson (Eds.). 1999. Aquatic Habitat Assessment: Common Methods. American Fisheries Society, Bethesda, Maryland.

BCMOE (British Columbia Ministry of Environment) 2006. A Compendium of Working Water Quality Guidelines for British Columbia. Updated August 2006

BCMOE (British Columbia Ministry of Environment) 2013. Ambient Water Quality Guidelines for Sulphate. Technical Appendix Update. April 2013. Prepared by Cindy Meays and Rick Nordin.

Brown, Dave. 2013. Personal Communication. Manager of Environmental Services, IAMGOLD Corp. Côté Gold Project. David_Brown@iamgold.com

CCME (Canadian Council of Ministers of the Environment). 2012. Draft Scientific Criteria Document for the Development of the Canadian Water Quality Guidelines for the Protection of Aquatic Life: Cadmium. CCME, Winnipeg.

CCME (Canadian Council of Ministers of the Environment). 2013. Canadian Water Quality Guidelines for the Protection of Aquatic Life. Accessed at http://st-ts.ccme.ca/, September 2013.

Clarke, A.H. 1981. The Freshwater Molluscs of Canada. National Museums of Canada, Ottawa. ISBN 0-660-00022-9. 446 pp.

Colby, P.J., and Baccante, D.A. 1996. Dynamics of en experimentally exploited walleye population: sustainable yield estimate. Ann. Zool. Fennici. 33:589-599.

Connors, K., Russel, C., and Munnoch, K. 2011. Moving a small boreal lake – what is involved? Application of a whole lake compensation plan under the Federal *Fisheries Act*. Poster at 2011 Canadian Conference for Fisheries Research.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. Accessed at http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm September 2013.

Dodge, D.P., Tilt, J.C., MacRitchie, I., Goodchild, G.A. and D.G. Waldriff. 1989. Manual of Instructions: Aquatic Habitat Inventory Surveys. 9th Edition. Ontario Ministry of Natural Resources, Fisheries Branch. Official Procedural Manual Policy FI. 2.03.01.

Edmunds, G.F. Jr., S.L. Jensen and L. Berner. 1976. The Mayflies of North and Central America. Univ. Minnesota Press, Minneapolis. 330 pp.

Environment Canada 2012. Metal Mining Environmental Effects Monitoring (EEM) Technical Guidance Document. ISBN 978-1-100-20496-3

Golder (Golder Associates) 2013. Water Quality Baseline Report. Prepared for IAMGOLD Corp. Côté Gold Project. Project number 13-1192-0021

Inskip, P.D. 1982. Habitat Suitability index Models: Northern Pike. United States Department of the Interior – Fish and Wildlife Service. FWS/OBS-82/10.17. July 1982.

Krebs, C.J. 1989. Ecological methodology. Harper and Row Publishers. New York.

Lahring, H. 2003. Water and Wetland Plants of the Prairie Provinces. Canadian Plains Research Center, Regina, Saskatchewan.

Malette, M.D. and Morgan, D.E. 2005. Provincial Summary of Northern Pike Life History Characteristics Based on Ontario's Fall Walleye Index Netting (FWIN) Program 1993 to 2002. Cooperative Freshwater Ecology Unit. Laurentian University, Sudbury. January 2005.

McCune, B., and J.B. Grace. 2002. Analysis of Ecological Communities. MjM Software, Gleneden Beach, Oregon, U.S.A

Merritt, R. W., K. W. Cummins, and M. B. Berg. 2008. An Introduction to the aquatic insects of North America. 4th edition. Kendall/Hunt Publishing Company.

Minnow (Minnow Environmental Inc.). 2006. Agrium Kapuskasing Phosphate Operations Cargill Lake Relocation Summary Report. December 2006.

Newmaster, S.G., Harris A.G., and Kershaw L.J. 1997. Wetland Plants of Ontario. Lone Pine Publishing, Edmonton, Alberta.

OMNR (Ontario Ministry of Natural Resources). 1993. Ontario Wetland Evaluation System: Northern Manual. First Edition. Ontario Ministry of Natural Resources. March 1993.

OMOE (Ontario Ministry of Environment). 1993. Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario. Reprinted October 1996.

OMOEE (Ontario Ministry of Environment and Energy). 1994. Water Management, Policies, Guidelines. Provincial Water Quality Objectives of the Ministry of Environment and Energy. Reprinted March 1998.

Pierce, R.B. 1997. Variable Catchability and Bias in Population Estimates for Northern Pike. Trans. Amer. Fish. Soc. 126: 658-664.

Pierce, R.B. and Tomcko, C.M. 2003. Interrelationships among production, density, growth and mortality of northern pike in seven north-central Minnesota lakes. Trans. Amer. Fish. Soc. 132:143–153.

Prairie, R. and P. McKee. 1994. Sediment Quality Assessment Near Two Ontario Mine Sites: How Relevant are the Provincial Guidelines? Paper presented at the International Land Reclamation and Mine Drainage Conference and Third International Conference on the Abatement of Acidic Drainage, Pittsburgh, PA, 24-29 April 1994.

Resh, V. H. and D. M. Rosenberg (Eds.): The ecology of aquatic insects. - Holt Saunders Ltd., Praeger Publishers, New York, 1984, 625 pp.

Sass, G.G., Hewett, S.W.Q., Beard, D., Fayrman, A.H., and Kitchell, J.F. 2004. The role of density dependence in growth patterns of ceded territory walleye populations of northern Wisconsin: effects of changing management regimes. N. Amer.J. of Fish. Manag. 24:1262-1278.

Schnabel, Z.E. 1938. The estimation of the total fish population of a lake. Am. Math. Monthly 45: 348-352.

Smith, B. and J.B. Wilson. 1996. A consumer's guide to evenness indices. Oikos 76: 70 – 82.

SPSS Version 12. 2003. SPSS Inc. 233 S. Wacker Drive, 11th floor Chicago, Illinois, U.S.A.

Trippel, E.A. and Harvey, H.W. 1986. Abundance, growth, and food supply of white suckers (*Catostomus commersonii*) in relation to lake morphometry and pH. Can. J. Zool. 65:558-564.

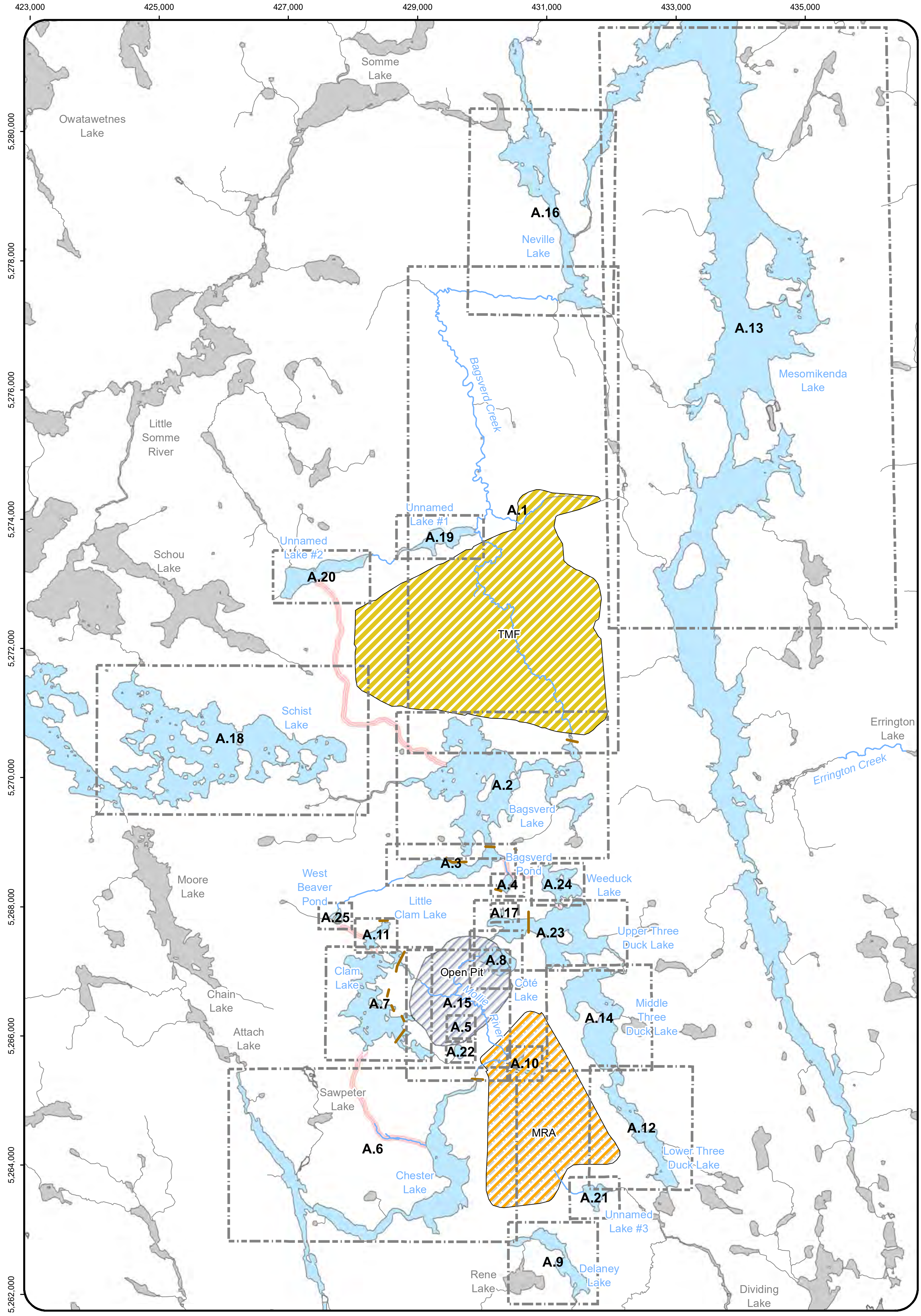
USEPA (United States Environmental Protection Agency) 2004. Draft Aquatic Life Water Quality for Selenium. U.S. Environmental Protection Agency Office of Water, Office of Science and Technology, Washington, D.C. November 2004.

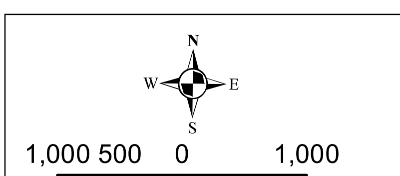
Weiderholm, T. (ed.) 1983. Chironomidae of the Holarctic region. Keys and diagnoses, Part 1. — Larvae. Ent. Scand. Suppl. 19. 457 pp.

Wiggins, G.B. 1996. Larvae of the North American caddisfly genera (Trichoptera), 2nd. Ed.

APPENDIX A

WATER BODIES





MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Côté Gold Map Features:

- Dam Structure
- Water Realignment
- Sampled Creek or River
- Sampled Pond or Lake
- Reference to Water Bodies

Figure A.1: Côté Gold Appendix Reference Map

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minnow environmental inc.

Table A.1: Summary of habitat requirements for various life stages of fish found in the vicinity of the Côté Gold Mine Project.

Size	Species	Spawning/Incubation	Juvenile/Rearing	Adult/Foraging	Overwintering
Large-bodied Fish Species	Burbot *Lota lota*	Spawns midwinter (January - March) under ice cover in 1 – 10 feet of water depth over sand or gravel. This is usually done in lakes, but the species is known to also move into rivers to spawn.	Young of the year and yearling burbot are frequently found along rocky shores, and sometimes in weedy areas of tributary streams.	Adults reside in deep, hypolimnic habitat during the summer, but sometimes move into shallower waters when active at night. In southern and central regions, burbot habitat is primarily in lakes while in the north it also includes large, cool rivers.	No info. Likely prefer dissolved oxygen concentrations > 6 mg/L.
	Lake trout *Salvelinus namaycush*	Spawning occurs in autumn over boulder or rubble bottom from depths ranging from 1 to 40 feet (0.3 to 12 m).	Young seek out deeper water within a month of being hatched.	During warmer summer months adults inhabit the hypolimnion (below the thermocline) and disperse throughout the lake during the winter months.	Require cold, well oxygenated waters. Dissolved oxygen boundary of 4 to 7 mg/L.
	Lake whitefish *Coregonus clupeaformis*	Spawning occurs in the fall (usually November-December) at shallow depths of less than 25 feet (7.6 m) over hard or stony bottom but sometimes over sand.	Young whitefish generally leave the shallow inshore waters by early summer and move into deeper water.	Whitefish are a cool water species that descend into cooler waters of the hypolimnion (below the thermocline) during the summer months. They move from deep to shallow waters in early spring and back to deeper water as warming occurs.	No info. Likely prefer dissolved oxygen concentrations > 6 mg/L.
	Northern pike *Esox lucius*	Spring spawner during daylight hours on heavily vegetated floodplains of rivers, marshes and bays of larger lakes.	Young remain in shallow spawning areas for several weeks. Generally establish a vague territory where cover and food are adequate.	Inhabit clear, slow, heavily vegetated rivers or warm, weedy bays of lakes. Generally occur in shallower water in spring and fall but move to deeper cooler water at the height of summer temperatures.	Very tolerant of low dissolved oxygen (0.1-0.4 mg/L for several days).
	Smallmouth bass *Micropterus dolomieu*	Typically spawn in late spring and early summer. Nests are built on sandy, gravelly or rocky bottom of lakes and rivers usually near the protection of rock, logs or more rarely near dense vegetation.	Juveniles can be found in shallow areas with cover.	After spawning adult fish move to moderately shallow areas that are rocky and sandy. They will move to greater depths as the weather gets warmer. In winter they congregate near the bottom and are very inactive.	Prefer dissolved oxygen concentrations above 6 mg/L. Can survive extreme winter condition but do not actively feed at <10°C.
	Walleye *Sander vitreus*	Spawning occurs in spring shortly after ice-out, either in white water below impassable barriers or coarse, rocky shoals of lakes.	Occupy the shallow edge of rivers close to vegetation or other forms of cover, and inshore areas of lakes less than two meters deep.	Generally found in large, shallow, turbid lakes or streams. Also thrive in clear lakes and rivers, but in such a habitat walleye will only feed at night due to sensitivity to light.	Generally require dissolved oxygen levels > 5 mg/L, but can tolerate low as 2 mg/L for a short time. Adults tend to avoid turbulent areas in the winter.
	White sucker *Catostomus commersonii*	Typically spawn in the spring from early May to early June. Adults migrate from lakes into streams to spawn in shallow water over gravel. They have also been known to use lake margins.	Young start to migrate to the lake about a month after spawning. Juveniles can be found in association with a variety of other species and are typically found in the same habitat as adults.	Adults usually inhabit warmer shallow lakes or warm, shallow bays, and tributary rivers of larger lakes. They are usually found in the top 20 to 30 feet (6 to 9 m).	Tolerant of low dissolved oxygen and a broad range of environmental conditions. Will avoid dissolved oxygen concentrations lower than 2.4 mg/L.
	Yellow perch *Perca flavescens*	Yellow perch spawn in the spring usually from April to early May in shallow water of lakes or rivers over rooted vegetation, submerged brush or fallen trees, but at times over sand and gravel.	Juvenile habitat requirements are similar to adults. They school in shallower water and nearer to shore than adults and the schools often contain many individuals of different species of minnow.	Perch are adaptable and able to utilize a wide variety of habitat. Most abundant in the open water of clear lakes with moderate vegetation and bottoms of muck to sand and gravel. In response to seasonal temperature, movements occur out of and in to deeper water.	Tolerant of low dissolved oxygen, 5 mg/L is the lower optimum limit.

Table A.1: Summary of habitat requirements for various life stages of fish found in the vicinity of the Côté Gold Mine Project.

Size	Species	Spawning/Incubation	Juvenile/Rearing	Adult/Foraging	Overwintering
Small-bodied Fish Species	Blacknose shiner *Notropis heterolepis*	Blacknose shiners spawn in spring and summer spawn over sandy bottoms.	Life cycle information is limited for this species.	Prefers clear, vegetated waters in the sandy shallows of lakes.	Adequate water depth. Oxygen thresholds of many freshwater fish as reported from field studies lie between 1.0 and 2.0 ppm with some less tolerant species requireing up to 3.0 ppm or more. Some fish species will use gas bubbles at the ice-water interface (i.e., central mudminnow, fathead minnow, brook stickelback) which will allow for tolerance of low dissolved oxygen (<0.30mg/L).
	Brook stickleback *Culaea inconstans*	They spawn in shallow water from late April to July. Nests are constructed out of stems of reeds or grass and green algae.	Similar habitat to adults.	Inhabit clear, cold, densely vegetated water of small streams, swampy margins of ponds or larger lakes.	
	Central mudminnow *Umbra limi*	Spawns in early spring, either in upstream shallow waters, flooded benches of main channels, or hillside brooks in weedy areas.	The young move away from spawning sites at 30 mm in length.	Preferred habitat is vegetated, cool, quiet waters of lakes and streams.	
	Common shiner *Luxilus cornutus*	Typically a stream spawning species over gravel beds or other nests but may spawn on gravelly shoals in lakes (May-June).	Juveniles remain in stream habitat and shorelines of clear-water lakes.	Inhabit stream pool and run habitat and shorelines of clear-water lakes.	
	Fathead minnow *Pimephales promelas*	Prolonged spawning begins in spring and continues until as late as August. Spawning occurs in shallow water on the surface of rocks or vegetation.	No info, likely similar to adults.	In North-Central Ontario, habitat is frequently in clear but stained, acid waters of beaver ponds and small lakes.	
	Finescale dace *Chrosomus neogaeus*	Spawns in spring in depressions under some form of cover.	In lakes juveniles school with adults and in streams they remain close to vegetated areas.	Preferred habitat is cool water, heavily vegetated, slow-moving water, shallow water of lakes and streams with bottoms of silt and detritus.	
	Golden shiner *Notemigonus crysoleucas*	Spawning can occur from May to August. Eggs are deposited over filamentous algae where aquatic vegetation is present.	No info, likely similar to adults.	Clear, weedy, quiet waters with extensive shallow areas of lakes. Moves in schools off the bottom over wide areas.	
	Iowa Darter *Etheostoma exile*	Spawning occurs from spring to as late as May or June in shallow waters of lakes, or pond-like expansions in rivers, on bottom organic debris or on fibrous root beds.	No info, likely similar to adults.	Clear, standing or slowly moving waters of lakes or rivers which have rooted aquatic vegetation as well as a bottom of organic debris, sand, peat, or some combination of the three.	
	Johnny darter *Etheostoma nigrum*	Spawning occurs in the spring, the exact time depending on local conditions but, generally in May but can be as late as June, eggs are deposited on the underside of rocks.	No info, likely similar to adults.	Most common in waters of moderate or no current, over a bottom of sand, sand and gravel, or sand and silt, but do inhabit weedy areas or gravel riffles of streams.	
	Longnose dace *Rhinichthys cataractae*	Spawning begins in May, June or early July. Probably occurs in riffles over a gravel bottom, but on occasion occurs over or near the nest of the river chub resulting in hybrids.	Similar to that of adults, but with less overhead turbulence.	Clean, swiftly flowing, streams bedded by gravel or boulders. Can inhabit very turbulent waters. Also occur in inshore waters of lakes over boulder or gravel bottoms. In warm lakes they may move offshore into deep water during increased summer temperatures.	

Table A.1: Summary of habitat requirements for various life stages of fish found in the vicinity of the Côté Gold Mine Project.

Size	Species	Spawning/Incubation	Juvenile/Rearing	Adult/Foraging	Overwintering
Small-bodied Fish Species	Northern redbelly dace *Chrosomus eos*	Commences spawning in spring or early summer. Eggs are deposited in masses of filamentous algae.	Similar to that of adults.	Prefers the quiet waters of beaver ponds, bog ponds, small lakes or quiet pool-like expansions of streams, often over a bottom of finely divided brown detritus or silt.	Adequate water depth. Oxygen thresholds of many freshwater fish as reported from field studies lie between 1.0 and 2.0 ppm with some less tolerant species requireing up to 3.0 ppm or more. Some fish species will use gas bubbles at the ice-water interface (i.e., central mudminnow, fathead minnow, brook stickelback) which will allow for tolerance of low dissolved oxygen (<0.30mg/L).
	Pearl dace *Margariscus nachtriebi*	Spawns in the spring in clear water 45 – 61 centimetres deep on sand or gravel, in a weak to moderate current.	No info, likely similar to adults.	Typically reside in cool, clear headwater streams in the south and in bog drainage streams, ponds, and small lakes in the north. Also found in stained, peaty waters of beaver ponds.	
	Sculpin sp. *Cottus bairdii* *Cottus cognatus*	Spawns in spring under rocks or ledges when water temperatures reach 4 - 5°C.	No info, likely similar to adults.	Cool streams and lakes over a sand bottom.	
	Spottail shiner *Notropis hudsonius*	Spawns in June or July, over sandy shoals.	Summer habitat is shallow water above sandy bottom or weed beds.	Known to often inhabit relatively large lakes, and large rivers.	
	Trout-perch *Percopsis omiscomaycus*	Spawns in spring to summer when water temperatures reach 10°C in shallow, rocky streams or the nearshore waters of lakes.	No info, likely similar to adults	Prefers cool waters of lakes, but may occasionally be found in streams. Move inshore in the evenings to feed and offshore in the morning to seek shelter.	

References:

Blanchfield, P.J., Tate, L.S., Plumg, J.M., Acolas, M. and K.G. Beaty 2009. Seasonal habitat selection by lake trout (*Salvelinus namaycush*) in a small Canadian sheild lake: contraints imposed by winter conditions. Aquat. Ecol. **43**: 777-787

Brown, T.G., Runciman, B., Pollard, S., Grant, A.D.A and Bradford, M.J. 2009. Biological synopsis of smallmouth bass (*Micropterus dolomieu*). Can. Manuscr. Rep. Fish. Aquat. Sci. 2887

Holmes E., Mandrak, N.E., and Burridge, M.E. 2010. The ROM Field Guide to Freshwater Fishes of Ontario. Royal Ontario Museum, Toronto, Ontario.

Inskip, P. D. 1982. Habitat suitability index models: northern pike. US Department of the Interior, Fish and Wildlife Service. FWS/OBS-82/10.17. July 1982.

Klinger, S.A., Magnuson, J.J., and Gallepp, G.W. 1982. Survival mechanisms of the cetral mudminnow (*Umbra limi*), fathead minnow (*Pimephales promelas*) and brook stickleback (*Culaea inconstans*) for low oxygen in winter. Env. Biol. Fish. Vol 7, No. 2, pp. 113-120.

Krieger, D.A., Terrell, J.W. and Nelson, P.C. 1983. Habitat Suitability Information: Yellow Perch. United States Department of the Interior – Fish and Wildlife Service. FWS/OBS-82/10.55. December 1983.

McMahon, Thomas E., James W. Terrell, and Patrick C. Nelson. 1984. Habitat suitability information: walleye. US Department of the Interior, Fish and Wildlife Service. FWS/OBS-82/10.56 April 1984.

McPhail, J.D. 2007. The Freshwater Fishes of British Columbia. The University of Alberta Press, Edmonton, Alberta.

Scott, W.B. and Crossman, E.J. 1998. Freshwater Fishes of Canada. Galt House Publications, Oakville, Ontario.

Twomey, K.A., K.L. Williamson and P.C. Nelson. 1984. Habitat Suitability Index Models and Instream Flow Suitability Curves: White Sucker. United States Department of the Interior – Fish and Wildlife Service. FWS/OBS-82/10.64. September 1984.

A.1 BAGSVERD CREEK

Bagsverd Creek was assessed from the outlet of Bagsverd Lake downstream to where it terminates in Neville Lake (approximately 10 km; Figures A.1, A.1.1 and A.1.2). Bagsverd Creek flows north from Bagsverd Lake for approximately 3.9 km before reaching Unnamed Lake #1 (Figure A.1.1). From Unnamed Lake #1, Bagsverd Creek continues to flow north approximately 3.7 km, and then east approximately 2.0 km where it discharges into Neville Lake (Figure A.1.2). One main source of inflow to Bagsverd Creek exists at Unnamed Lake #1 between Bagsverd Lake and Neville Lake (Figure A.1). Over its entire length, five distinct habitats are generally distinguishable in Bagsverd Creek that are largely reflective of area topography: low, moderate and high-gradient habitats, and deep pool habitat. The assessment of Bagsverd Creek has been separated into upper and lower sections (upstream and downstream of Unnamed Lake #1, respectively; Figures A.1.1 and A.1.2).

The upper section of Bagsverd Creek (Figure A.1.1) will be realigned due to the construction of the Tailings Mining Facility (TMF; Figure A.1). In addition, with the construction of the TMF a portion of the unnamed stream located within the northern most section of the TMF will be lost (Figure A.1). During mine operations effluent from the TMF will discharge to either Bagsverd Creek (downstream of Unnamed Lake #1) or to Mesomikenda Lake (Figure A.1). The preferred option for discharge is being evaluated as part of the environmental assessment for the Côté Gold Project. The assessment of habitat and fish community for Bagsverd Creek is largely based on the field survey conducted in July 2012. The sediment chemistry and benthic invertebrate community of Bagsverd Creek downstream of Unnamed Lake #1 was assessed during the fall of 2013. In addition, the unnamed stream flowing into Bagsverd Creek downstream of Unnamed Lake #1 was assessed during the fall 2013 survey for fish habitat and community composition. This section describes not only Bagsverd Creek but also the unnamed stream that flows into Bagsverd Creek located within the footprint of the TMF.

A.1.1 Bagsverd Creek

A.1.1.1 Habitat Description

Upper Bagsverd Creek

Bagsverd Creek discharges from Bagsverd Lake over a bedrock face with a vertical drop of approximately 1.2 m and immediately flows into Permanent Pond (see Appendix A.2 for details on Permanent Pond). Upper Bagsverd Creek, from the outlet of Permanent Pond to 2.25 km downstream, contains a high proportion of moderate-gradient habitat with three areas of

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MAP INFORMATION
Map Projection: NAD 1983
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Creation Date: December 2013
Project No.: 2496

River Habitat Topography:
- Deep Pool
- High-Gradient
- Moderate Gradient
- Low-Gradient
- Low-Gradient Ponded Area

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Water Flow Direction
- Wetland

Figure A.1.1: Upper Bagsverd Creek Habitat Features

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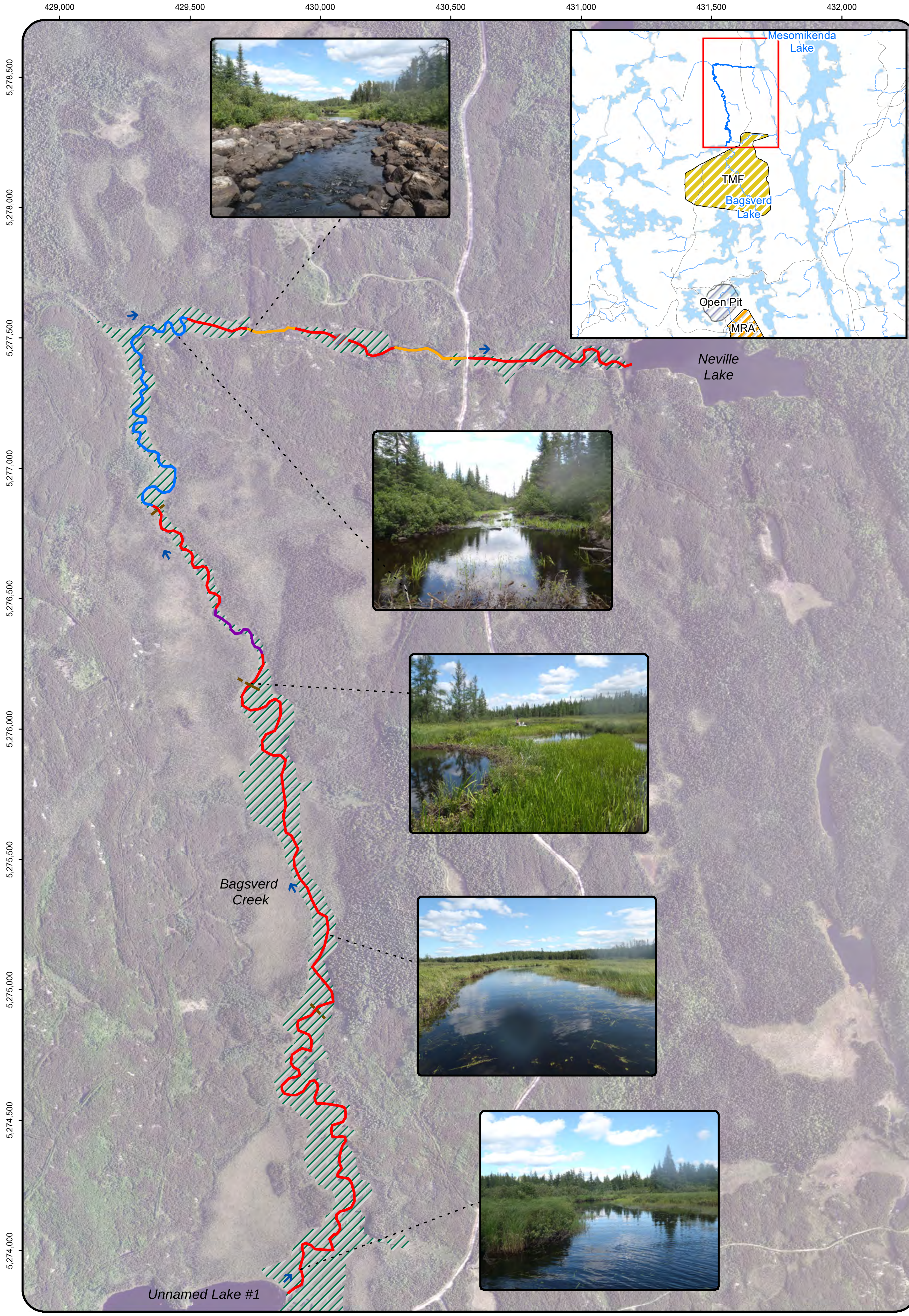

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250 125 0 250
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MAP INFORMATION
Map Projection: NAD 1983
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Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

River Habitat Topography:
- Deep Pool
- High-Gradient
- Moderate Gradient
- Low-Gradient
- Low-Gradient Ponded Area

Habitat Features:
- Beaver Dam
- Logs and Fallen Trees
- Water Flow Direction
- Wetland

Figure A.1.2: Lower Bagsverd Creek Habitat Features

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significant high-gradient habitat. The reach extending downstream of this moderate- gradient area to Unnamed Lake #1 is mainly characterized by low-gradient habitat (Figure A.1.1).

In-situ water quality measurements collected in Upper Bagsverd Creek in July 2012 indicated very warm summer water temperatures (i.e., approximately 25 °C). Nevertheless, surface diurnal dissolved oxygen concentrations appeared to remain relatively high (7.35 mg/) and above the Provincial Water Quality Objective (5.0 mg/L for warm water habitats; Appendix Table C.1), which likely reflected high daytime oxygen production associated with very dense aquatic vegetation in the stream. Surface water pH was near neutral (7.66; Appendix Table C.1).

Moderate-gradient habitat in Upper Bagsverd Creek is characterized by a meandering channel with run habitat interspersed with small pools (Figure A.1.1). Although stream channel wetted width ranges from 5 to 8 m in moderate-gradient areas, the majority of flow is often constricted to a 1 to 1.5 m wide swath as a result of very dense instream aquatic vegetation growth (Figure A.1.1). Substrate in these areas may include densely packed clay, sand-gravel mixes and/or soft silt. Water depth is typically shallower at areas where hard-packed clay and sand-gravel substrates prevail (i.e., 0.2 to 0.4 m deep), and deeper at areas where silt-substrate is more prevalent (i.e., 0.5 to 0.7 m deep). Pools that reach approximately 1 to 1.4 m deep are also commonly found within moderate-gradient areas, with substrate of these pools generally varying between hard-packed clay and soft silt. Notably, substrate of moderate-gradient habitats can be associated with substantial amounts of small- and large-woody debris. In addition to these substrates, large boulders are commonly found within moderate-gradient habitat of Upper Bagsverd Creek.

Aquatic vegetation in these reaches includes very dense growth of emergent burreed (*Sparganium* sp.), and rarely, horsetail (*Equisetum* sp.), as well as submergent vegetation represented mainly by mermaid's hair (*Scirpus subterminalis*), burreed, stonewort (*Chara* sp.) and/or pondweed (*Potamogeton* sp.; Figure A.1.1). In addition to these species, quillwort (*Isoetes* sp.) and filamentous green algae (*Chlorophyta*), and floating vegetation such as yellow pond lily (*Nuphar variegatum*), can be found in patches or mixed amongst the dominant emergent and submergent vegetation types indicated above. Collectively, instream vegetation can commonly cover 90 % to 100 % of the stream bed in moderate-gradient areas, with less substantive vegetative cover occurring at areas of hard substrate (i.e., clay) or where dense riparian vegetation overhangs the stream. Notably, freshwater sponge (*Spongilla* sp.), which are often considered indicative of relatively clean waters, were also observed in moderate gradient habitats of Upper Bagsverd Creek. Wetland areas comprised principally of sweet gale (*Myrica gale*), meadowsweet (*Spiraea sp.*) and sedges (*Carex* sp.), typically border moderate-gradient habitat of Upper Bagsverd Creek, with the average wetland width approximately 80 m.

Lowland vegetation, including speckled alder (*Alnus incana*), black spruce (*Picea mariana*) and eastern larch (*Larix laricina*), generally borders these wetland areas.

Relatively high-gradient areas occur at three locations in Upper Bagsverd Creek, including near the Permanent Pond outlet and at areas located approximately 1.17 and 2.23 km downstream of Bagsverd Lake (Figure A.1.1). The latter areas represent the longest reaches of high-gradient habitat, extending approximately 135 and 365 m, respectively. High-gradient habitat generally contains riffle and/or riffle run stream morphology with some pool habitat. Wetted and bankfull channel widths typically range from 2 to 4 m, and 8 to 10 m, respectively. Maximum water depth of riffles and pools was generally about 0.2 m and one metre, respectively, in these areas during the July 2012 survey. Substrate of high-gradient habitat generally consists of large cobble and boulder, and as a result, interstitial and/or sub-surface flow is commonly observed. Instream vegetation of high-gradient habitat generally includes aquatic mosses (*Bryophyta* sp.) as well as filamentous green algae, with vascular plants limited to sparse growth of submergent burreed. Mixed forest typically extends to the shoreline, with the overstory commonly including eastern white cedar (*Thuja occidentalis*), black spruce, speckled alder, white birch (*Betula papyrifera*), trembling aspen (*Populus tremuloides*) and, in some areas, eastern larch and/or maple (*Acer* sp.). Although large-woody debris and overhanging vegetation provide some instream cover, boulder and deep pool are the main cover source in the high-gradient areas.

Low-gradient habitat of Upper Bagsverd Creek is characterized by a meandering channel with slow run habitat, small to large pools, and frequently ponded areas as a result of beaver activity (Figure A.1.1). The main channel width of low-gradient habitat typically ranges between 4 and 6 m (average of 5.3 m), with open water areas of beaver ponds often much wider. Water depth generally ranged from 0.8 to 1.8 m deep at low-gradient habitats, with slow run and pool areas within the shallow and deep portion of this range, respectively. Given the relatively flat topography, water depth in the beaver ponds was generally similar to that of the main channel. Substrate of low-gradient habitat mainly includes organic muck (i.e., silt with high organic content) of varying thickness over hard-packed clay. However, gravel/boulder, hard-packed silt and hard-packed clay were also present over short distances in some shallow areas (i.e., 0.2 to 0.4 m deep), below beaver dams, and in some deep pools.

Instream vegetation is generally very dense in the main channel of low-gradient habitat, with 90 to 100 % coverage not uncommon. Submergent vegetation, including burreed, mermaid's hair, bladderwort (*Utricularia* sp.), stonewort, pondweed and/or mare's tail (*Hippuris vulgaris*), was generally most abundant. However, emergent aquatic grasses (*Poaceae* sp.), arrowhead (*Sagittaria latifolia*), spikerush (*Eleocharis palustris*) and sedges, together with yellow pond lily were also present along the channel margins, and particularly around pool areas. Extensive wetland areas generally border low-gradient habitats of Upper Bagsverd Creek, with the total wetland width averaging approximately 400 m (range from 80 to 1,115 m; Figure A.1.1). Wetland vegetation is generally dominated by a combination of sedges, sweet gale, leatherleaf (*Chamaedaphne calyulata*), alder and/or meadowsweet shrubs and larch trees. However, plant diversity was relatively high in the wetland, with a variety of marsh plants present in low relative abundance such as marsh cinquefoil (*Potentilla palustris*), skullcap (*Scutellaria galericulata*), northern blue flag (*Iris versicolor*), bog laurel (*Kalmia polifolia*) and dwarf birch (*Betula pumila*). Forest adjacent to the low-gradient area wetlands primarily included coniferous species such as black spruce, jack pine (*Pinus banksiana*) and eastern larch, with white birch and trembling aspen also present in low abundance.

Lower Bagsverd Creek

Lower Bagsverd Creek extends from Unnamed Lake #1 to Neville Lake. The habitat downstream of Unnamed Lake #1 to a distance of approximately 3.2 km is primarily represented by low-gradient habitat (Figure A.1.2). Deep pool is then the predominant habitat type for approximately the next 750 km downstream, with a mix of high- and low-gradient habitat occurring over the final 1.8 km before Lower Bagsverd Creek discharges into Neville Lake (Figure A.1.2).

Similar to the *in situ* water quality measurements collected at Upper Bagsverd Creek, Lower Bagsverd Creek had very warm summer water temperatures (i.e., approximately 25 °C) in July 2012 (Appendix Table C.1). Water temperatures were cooler (11 °C) in the fall of 2013 (Appendix Table C.1). Surface dissolved oxygen concentrations were consistently above Provincial Water Quality Objective of 5 mg/L during all sampling periods (Appendix Table C.1). Surface water pH was near neutral (7.13 and 6.99) in the summer of 2012, however in the fall of 2013 water pH was slightly acidic (6.34; Appendix Table C.1).

The low-gradient habitat of Lower Bagsverd Creek is characterized by a meandering channel with stream morphology represented mainly by slow run habitat with some small pools and ponded areas resulting from beaver activity (Figure A.1.2). The main channel of Lower Bagsverd Creek low-gradient habitat ranges between approximately 4.2 and 20 m wide, with mean cross-channel water depths ranging from 0.7 to 1.5 m deep and overall channel water depth averaging 1.1 m deep. Substrate of low-gradient habitat in Lower Bagsverd Creek mainly includes a moderate to thick layer of organic muck over clay pan, with a few areas containing mainly gravel/boulder substrate. Very dense instream vegetation, often covering 90 to 100 % of the stream bottom, occurs in the main channel of low-gradient habitat in Lower Bagsverd Creek, with submergent burreed, mermaid's hair and/or pondweed most abundant. Emergent aquatic grasses and spikerush, together with yellow pond lily, were also present albeit in substantially lower relative abundance than submergent vegetation. Similar to Upper Bagsverd Creek, low-gradient habitat of Lower Bagsverd Creek is generally bordered by an extensive wetland that averages approximately 475 m wide (range from 130 to 1,280 m wide; Figure A.1.2). The wetland plant community adjacent to low-gradient habitat in Lower Bagsverd Creek is similar to that described above, and includes a predominantly sedge, sweet gale and meadowsweet mix, with speckled alder and dwarf birch comprising the sub-dominant species in some areas. Forest next to the low-gradient area wetlands is generally dominated by coniferous species including black spruce, jack pine and eastern larch.

Deep pool habitat in Lower Bagsverd Creek is characterized by meandering channel with a series of deep scour pools separated by short distances of slow run habitat (Figure A.1.2). Although the main channel width of deep pool habitat does not change substantially from low-gradient habitat areas (i.e., approximately 12 m), large pools with depths of approximately 2.0 to 2.5 m are separated by run habitat measuring about 0.7 to 0.9 m deep. Substrate of deep pool habitat mainly includes hard-pack clay pan that is occasionally overlain by a thin layer of silt. Aquatic vegetation is relatively sparse (approximately 20 % coverage), with submergent burreed and mermaid's hair generally present only in shallow run habitat between pools and along pool margins. Sparse growth of emergent aquatic grasses and spikerush can also be found along the shoreline. Wetlands areas adjacent to deep pool habitat differ from those of low-gradient habitat areas, and are generally characterized by larger shrub species such as speckled alder, red-osier dogwood (*Cornus stolonifera*) and, less frequently, willows (*Salix* sp.). These species often overhang the creek in deep pool habitat areas. Tree species found bordering these large-shrub wetlands included black spruce, jack pine, white birch and trembling aspen.

High-gradient habitat occurs at three locations in Lower Bagsverd Creek, all within 3 km of Neville Lake (Figure A.1.2). From upstream to downstream, the high-gradient reaches were approximately 105, 45 and 50 m long, and therefore this habitat type represents only a small proportion of Lower Bagsverd Creek (Figure A.1.2). These high-gradient areas are mainly represented by riffle stream morphology. Wetted and bankfull channel widths average 8 m (range from 3 to 13 m) and 23 m, respectively. Water depth ranged from 0.05 to 0.4 m and averaged 0.2 m in high gradient areas of Lower Bagsverd Creek during the July 2012 survey. Substrate at high-gradient habitat consists of 5 to 15 cm diameter gravel and cobble. Aquatic vegetation included aquatic mosses and algae apparent as periphyton, with vascular plants limited to sparse growth of burreed occurring in an emergent form. Forested areas generally extend to the shoreline at all three high-gradient areas, with speckled alder, red-osier dogwood, black spruce, jack pine and white birch the most commonly encountered species.

A.1.1.2 Fish Community Composition

The Bagsverd Creek fish community included a total of eight fish species, with similar species composition found in Upper and Lower Bagsverd Creek (Table A.1.1, Figures A.1.3, A.1.4 and Appendix Table F.1). The large-bodied fish community included moderate to low numbers of northern pike (*Esox lucius*) and yellow perch (*Perca flavescens*), and relatively low numbers of white sucker (*Catostomus commersonii*) and burbot (*Lota lota*; Table A.1.1). The small-bodied fish community included golden shiner (*Notemigonus crysoleucas*), longnose dace (*Rhinichthys cataractae*), finescale dace (*Chrosomus neogaeus*), central mudminnow (*Umbra limi*) and Iowa darter (*Etheostoma exile*; Table A.1.1). Dense aquatic vegetation at both Upper and Lower Bagsverd Creek likely limited the effectiveness of the fishing methods employed (i.e., small and large mesh hoop nets). Nevertheless, CPUE for each method was generally comparable between areas, suggesting similar fish community characteristics throughout Bagsverd Creek. No endangered, threatened or special concern fish species (COSEWIC 2013) were observed in Bagsverd Creek during the July 2012 survey.

A.1.1.3 Fish Habitat Evaluation

Excellent spawning and rearing (juvenile) habitat for northern pike and excellent spawning, rearing and foraging habitat for yellow perch (Table A.1) is present in Bagsverd Creek based on the presence of abundant shallow wetland areas adjacent to the shoreline and/or shallow vegetated areas throughout the upper and lower reaches (Figures A.1.1 and A.1.2). Northern pike foraging habitat is also found in Bagsverd Creek (Table A.1), but shallow water depths and high summer water temperatures may seasonally reduce the quality of habitat for larger adults (i.e. marginal to good habitat). High gradient areas with sand, gravel-cobble and/or boulder substrate located in both upper and lower Bagsverd Creek provide marginal to good habitat for white sucker and walleye (*Sander vitreus*) spawning (Table A.1 and Figures A.1.1 and A.1.2). Moderate- and low-gradient areas of Bagsverd Creek provide good rearing habitat for juveniles and marginal to good foraging habitat for adult white sucker (Table A.1). However, shallow water depths coupled with moderate water transparency in Bagsverd Creek result in this habitat being marginal for juvenile and adult walleye (Table A.1) such that it is likely used mainly during pre- (adult) and post- (larvae/YOY) hatch. No spawning habitat and very poor adult foraging habitat occurs for burbot in Bagsverd Creek, although rocky habitat associated with higher gradient areas of the creek provides a marginal amount of good habitat for rearing juvenile burbot (Table A.1).

Good spawning and rearing/foraging habitat for golden shiner (Table A.1) is provided in Bagsverd Creek as a result of a good diversity and high abundance of aquatic plants. Sand

Table A.1.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Bagsverd Creek, 2012 and 2013.

a) Minnow Trapping

Area / Year	Species	Total Caught	CPUE (# of fish/trap*d)
Lower Bagsverd Creek 2012	northern pike	1	0.03
	yellow perch	1	0.03
	Total	**2**	**0.06**
Upper Bagsverd Creek 2012	northern pike	2	0.11
Unnamed Stream to Bagsverd Creek 2013	blacknose shiner	5	0.79
	central mudminnow	1	0.16
	finescale dace	25	3.97
	golden shiner	1	0.16
	northern pike	2	0.32
	nothern redbelly dace	4	0.64
	Total	**38**	**6.04**

b) Seining

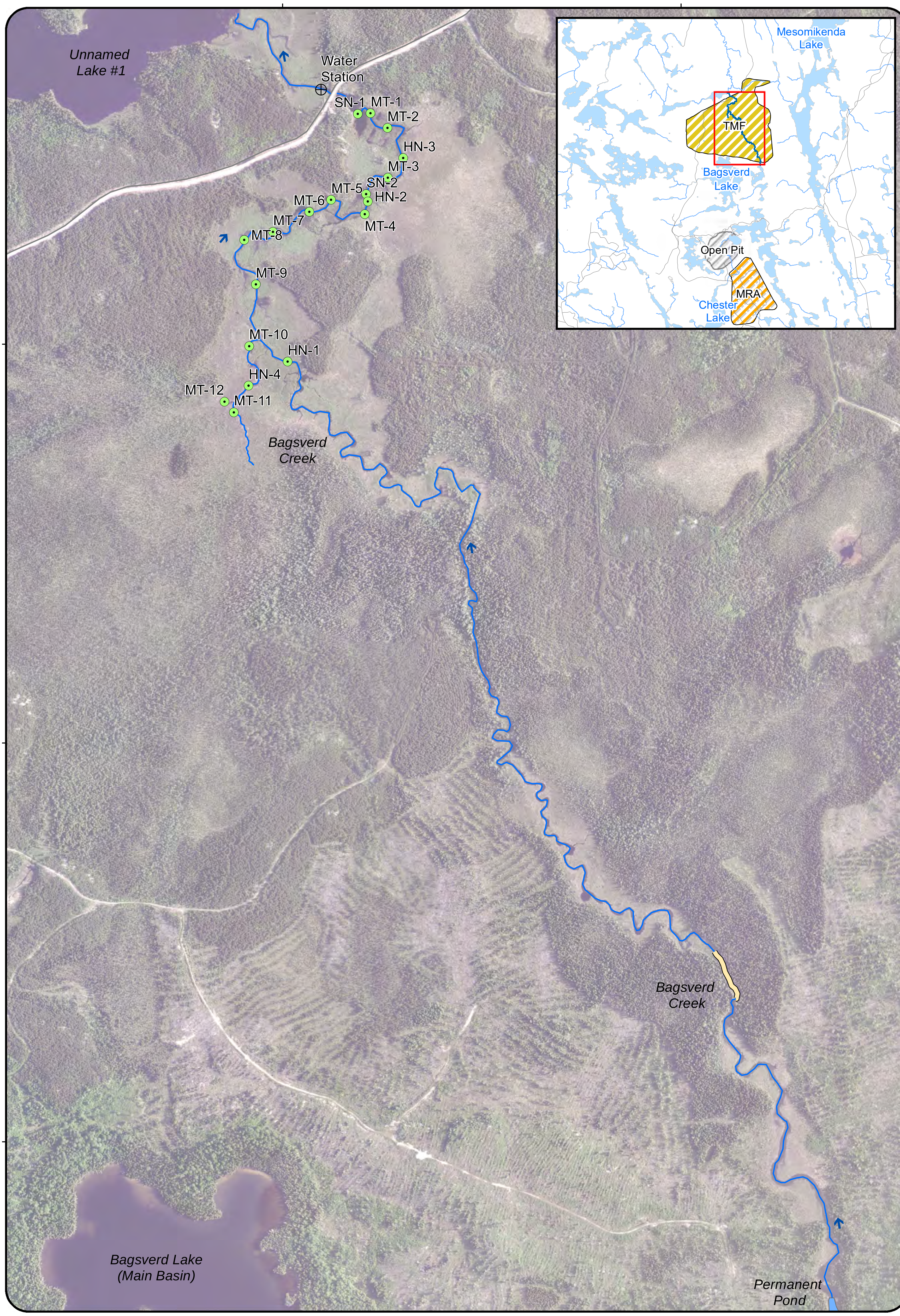
Area / Year	Species	Total Caught	CPUE (# of fish/m^2)
Lower Bagsverd Creek 2012	golden shiner	2	0.003
	northern pike	2	0.003
	yellow perch	25	0.031
	Total	**29**	**0.036**
Upper Bagsverd Creek 2012	golden shiner	1	0.006
	northern pike	1	0.006
	Total	**2**	**0.011**
Unnamed Stream to Bagsverd Creek 2013	blacknose shiner	6	0.027
	central mudminnow	6	0.027
	finescale dace	10	0.044
	Total	**22**	**0.098**

c) Large Hoop Netting

Area / Year	Species	Total Caught	CPUE (# of fish/trap*d)
Lower Bagsverd Creek 2012	northern pike	8	0.79
	white sucker	1	0.10
	yellow perch	14	1.38
	Total	**23**	**2.27**
Upper Bagsverd Creek 2012	central mudminnow	1	0.28
	northern pike	16	4.47
	white sucker	2	0.56
	yellow perch	1	0.28
	Total	**20**	**5.59**

d) Backpack Electrofishing

Area / Year	Species	Total Caught	CPUE (# of fish/hr)
Lower Bagsverd Creek 2012	burbot	4	22.86
	Iowa darter	1	5.71
	longnose dace	16	91.43
	northern pike	2	11.43
	Total	**23**	**131.43**
Upper Bagsverd Creek 2012	burbot	1	4.26
	central mudminnow	1	4.26
	longnose dace	32	136.17
	white sucker	1	4.26
	Total	**35**	**148.94**



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
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Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station
- Backpack Electrofishing Zone

Other Feature:
- Water Flow Direction

Figure A.1.3: Upper Bagsverd Creek Sampling Locations

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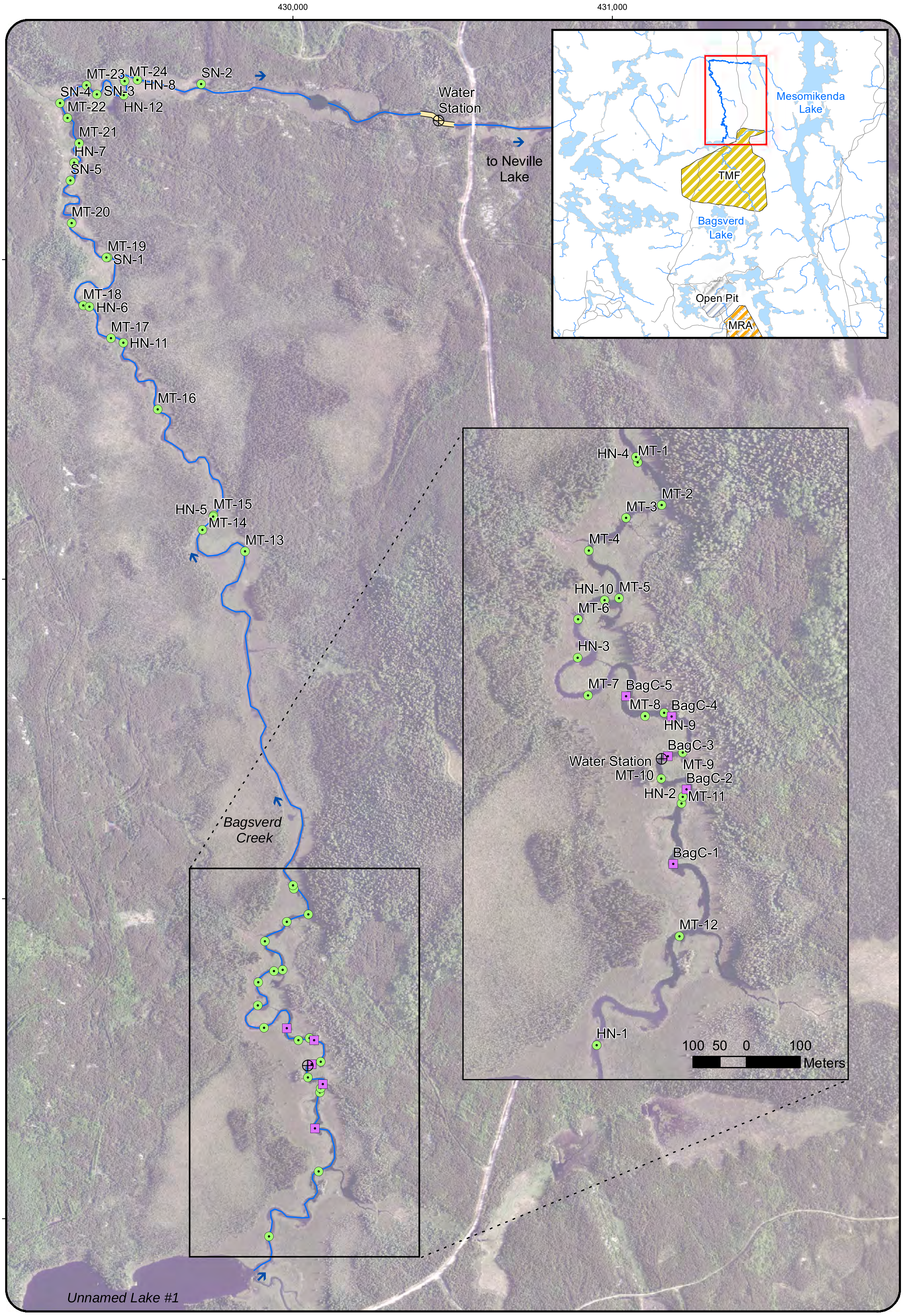

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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Minnow Trap and Hoop Net
- 2013 Seine, Minnow Trap and Hoop Net
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station
- Backpack Electrofishing Zone

Other Feature:
- Water Flow Direction

Figure A.1.4: Lower Bagsverd Creek Sampling Locations

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minnow
environmental inc.

substrate suitable found in moderate-gradient areas of Bagsverd Creek provides good spawning habitat for blacknose shiner, with the combination of dense aquatic vegetation and sandy to muddy substrate providing good rearing and foraging habitat for this species throughout Bagsverd Creek (Table A.1). Coarse sand and gravel at moderate- to high-gradient areas of Bagsverd Creek provide longnose dace with excellent spawning habitat and rearing habitat, with boulder and cobble substrate in riffles and rapids of high-gradient areas providing good foraging habitat for adults. Good spawning and rearing/foraging habitat for central mudminnow is provided by the extensive wetland areas and dense coverage aquatic vegetation (Table A.1). Finally, extensive wetland areas, overhanging vegetation and dense coverage of rooted macrophytes provide good spawning, rearing and foraging habitat for Iowa darter at moderate- to low-gradient areas of Bagsverd Creek (Table A.1.1 and Figures A.1.1 and A.1.2).

A.1.2 Unnamed Stream to Bagsverd Creek

A.1.2.1 Habitat Description

The habitat of this stream was surveyed in its entirety (approximately 1,200 m) in the fall of 2013. The stream originates in a bog wetland area located approximately one kilometre upstream of the road crossing (near fishing stations; Figure A.1.5). Vegetation present in this area included *Sphagnum* moss, sedges, grasses, cinquefoil and scattered alder, willow with black spruce and eastern larch closer to the edges of the wetland (Figure A.1.5). Two large beaver dams located at the western end of the wetland create a small pond (Figure A.1.5). The area of the pond is approximately 20 by 60 m, water depth was estimated to reached one metre. From the beaver pond, water flows into a forested area of alders, black spruce, balsam fir (*Abies balsamea*) and white birch for approximately 150 m. The gradient within this section is greater resulting in riffle habitat with very small pools. A large cascade exists approximately 65 m downstream of the beaver dam which was 10 to 15 m in length where water flowed over exposed bedrock (Figure A.1.5). The cascade is a barrier to upstream migration of any fish species present within the downstream reach. Downstream of the cascade and still within the forested reach, the average channel width is approximately 2 to 3 m with an average depth of 0.2 m. The substrate consists of cobble/gravel embedded in sand with an abundance of woody debris. Exiting the forested area the stream flows into another wetland area with a large beaver pond (water depth = 0.85 m upstream of dam) at the furthest downstream point. The open water measured approximately 30 by 56 m with the total length of this area measuring 211 m. Vegetation within the pond/wetland area was dominated by sedges. Downstream of the beaver pond the channel continues to meander through the open wetland area approximately 350 m until it reaches the road crossing (Figure A.1.5). Sedges line the banks of the channel which averaged 1.2 m in width and 0.3 m in depth. Substrate was predominantly fines with cobble and

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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

River Habitat Topography:
- Habitat Not Completed
- Deep Pool
- High-Gradient
- Moderate Gradient
- Low-Gradient

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap

Habitat Features:
- Beaver Dam
- Beaver Lodge
- Water Flow Direction
- Wetland

Figure A.1.5: Unnamed Stream Habitat Features and Sampling Locations

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the occasionally boulder. Cobble and boulder substrate increased with proximity of the road. Immediately upstream of the road, culverts pooled water creating water depths were greater than one metre with substrate dominated by fines. The wetland area averaged 100 m in width with vegetation including sedges, grasses, various shrubs such as bog laurel, sheep laurel (*Kalmia angustifolia*), bog rosemary (*Andromeda polifolia*), leatherleaf and sweet gale. Some small black spruce and alder were also present.

A.1.2.2 Fish Community Composition

The unnamed stream fish community, assessed at downstream end of the stream near the road crossing included six species (Table A.1.1, Figure A.1.5 and Appendix Table F.1). The only large-bodied fish captured were juvenile northern pike. Although no yellow perch or white sucker were caught, there is no reason to suggest that they would not be able to use the habitat within this stream as they are found downstream within Bagsverd Creek (Table A.1.1). The small-bodied fish community included finescale dace, blacknose shiner (*Notropis heterolepis*), northern redbelly dace (*Chrosomus eos*), golden shiner and central mudminnow (Table A.1.1). No COSEWIC (2013) listed endangered, threatened or special concern fish species were observed at unnamed stream in 2013.

A.1.2.3 Fish Habitat Evaluation

Moderate rearing habitat for juvenile northern pike is provided in unnamed stream associated with overhanging vegetation, instream vegetation and woody debris to provide good cover (Table A.1). Moderate spawning habitat is provided by the overhanging vegetation along the banks and excellent spawning habitat is available if northern pike are present upstream of the first beaver pond within the wetland by the abundant vegetation within the ponded portion of the wetland (Table A.1 and Figure A.1.5). Poor adult foraging habitat is provided due to the small nature of the stream and limited over wintering habitat (Table A.1 and Figure A.1.5). Moderate, spawning, rearing and foraging habitat is available for yellow perch through the vegetation found and the open water areas provided by the beaver ponds (Table A.1). White sucker rearing and foraging is available, especially in the large beaver pond, and some spawning habitat is available within the high gradient section; however access for adult white sucker to this area would be limited (Figure A.1.5).

Unnamed stream provides moderate to good spawning, rearing and foraging habitat for dace (Table A.1) as a result of woody debris, good cover through overhanging vegetation and the open water provided by the beaver ponds (Figure A.1.5). Poor habitat was observed for golden shiner through the lack of dense macrophytes (Table A.1). Limited sand substrate was observed for spawning blacknose shiner, however overhanging vegetation, woody debris in the channel and the beaver ponds would provide adequate habitat for rearing and foraging (Table A.1). Lastly, good spawning and foraging habitat for central mudminnow is provided through the sedge banks that would flood in the spring and the overhanging vegetation, instream woody debris and the open water ponds (Table A.1).

A.1.3 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

A.2 BAGSVERD LAKE

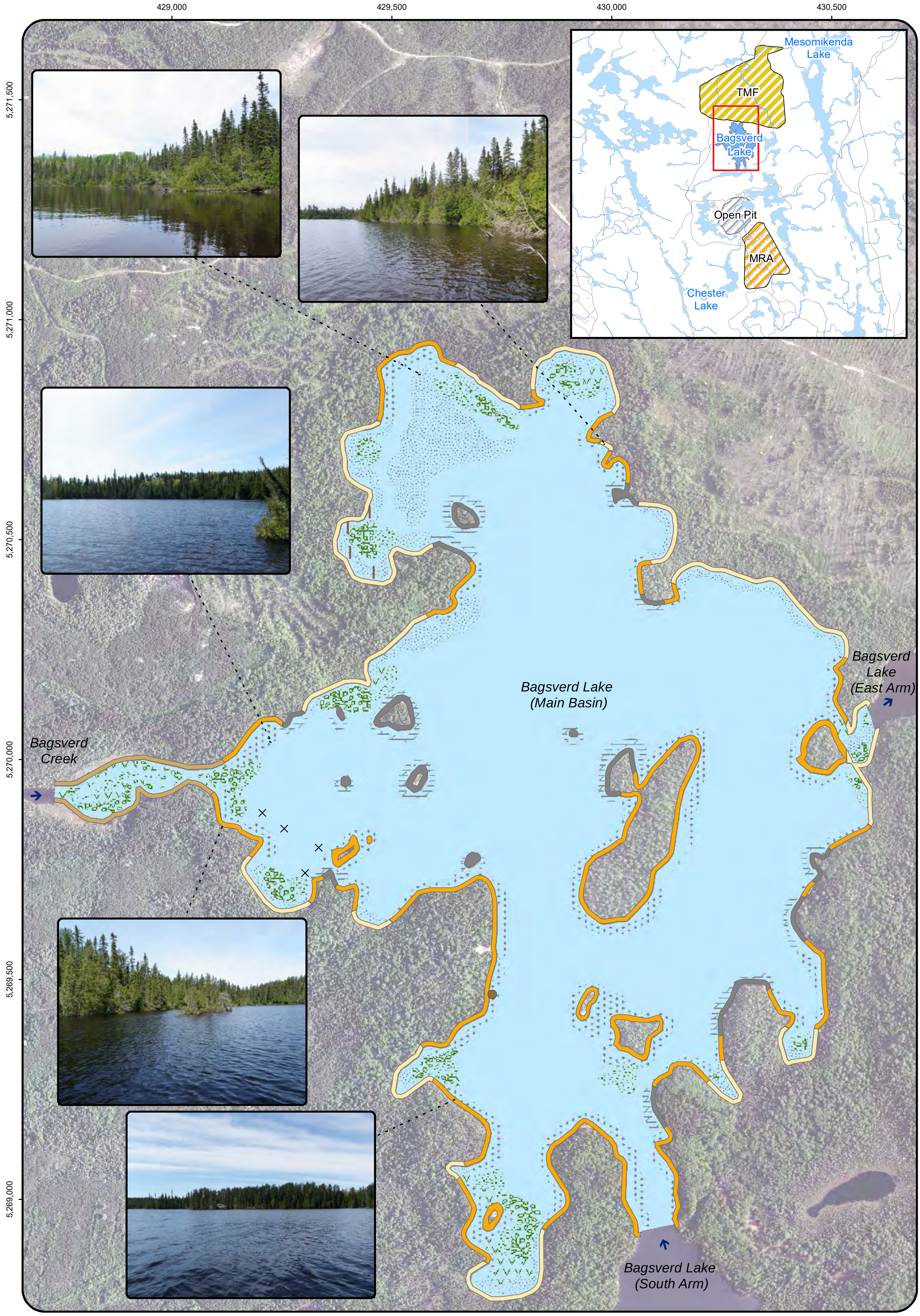
Bagsverd Lake is located within the Neville Lake watershed approximately 1 km north of the proposed Côté Gold open pit (Figures A.2.1 and A.1). The lake has a surface area of 215 ha lake with the total estimated volume of 7.69 x 10^6 m^3 based on the annual average water level. The lake has two main basins that each reach a maximum depth of approximately 8 to 10 m (Figure A.2.2) and is characterized by complex basin morphology that includes several islands and rocky shoals, two main stream inlets, three intermittent stream inlets, and two large 'arms' located to the south and east of the lake (South and East Arms, respectively). The mean depth of Bagsverd Lake is approximately 3.6 m. The primary inflow to the lake is Bagsverd Creek which enters Bagsverd Lake on the west side of the main basin and discharges through the northern part of the East Arm where it flows north to Neville Lake (Figure A.2.1).

This section describes the physical habitat and fish communities of Bagsverd Lake Main Basin and the East Arm of Bagsverd Lake based on field surveys undertaken in July 2012 in the East Arm and in June and September of 2013 in the Main Basin of the lake. In addition, a small Permanent Pond (Figure A.2.3) located at the outflow of Bagsverd Lake is included in the discussion of the East Arm. Bagsverd Lake South Arm is described in Appendix A.3. Bagsverd Lake South Arm will be influenced by the watercourse realignment for the Mollie River which will include removing the South Arm from Bagsverd Lake. Furthermore, the discharge from Bagsverd Lake (Bagsverd Creek just north of Permanent Pond) will be removed and the outflow will be relocated to the Main Basin of the lake and flow north to Unnamed Lake #2 to accommodate the development of the Tailings Mining Facility (TMF; Figure A.1).

A.2.1 Bagsverd Lake Main Basin

A.2.1.1 Habitat Description

The main section of Bagsverd Lake is approximately 142.3 ha with a number of islands, rocky shoals and shallow bays (Figures A.2.1 and A.2.2). Two basins occur in the main section of the lake and reach a maximum of 8 to 10 m for each basin (Figures A.2.1 and A.2.2). Thermal stratification was apparent in Bagsverd Lake Main Basin during both June and September 2013 with the hypolimnion developing at an approximate depth of 5 m in the spring and 7 m in the fall (Appendix Table C.2). Hypoxia (i.e., dissolved oxygen < 1 mg/L) occurred at depths greater than 7 m in the fall (Appendix Table C.2). Surface water pH was generally neutral (6.85 to 7.54). Slight changes in pH and specific conductance with depth in Bagsverd Lake were likely associated with lower dissolved oxygen concentrations causing reducing conditions within the



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MAP INFORMATION
Map Projection: NAD 1983
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Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Rock
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.2.1: Bagsverd Lake (Main Basin) Habitat Features

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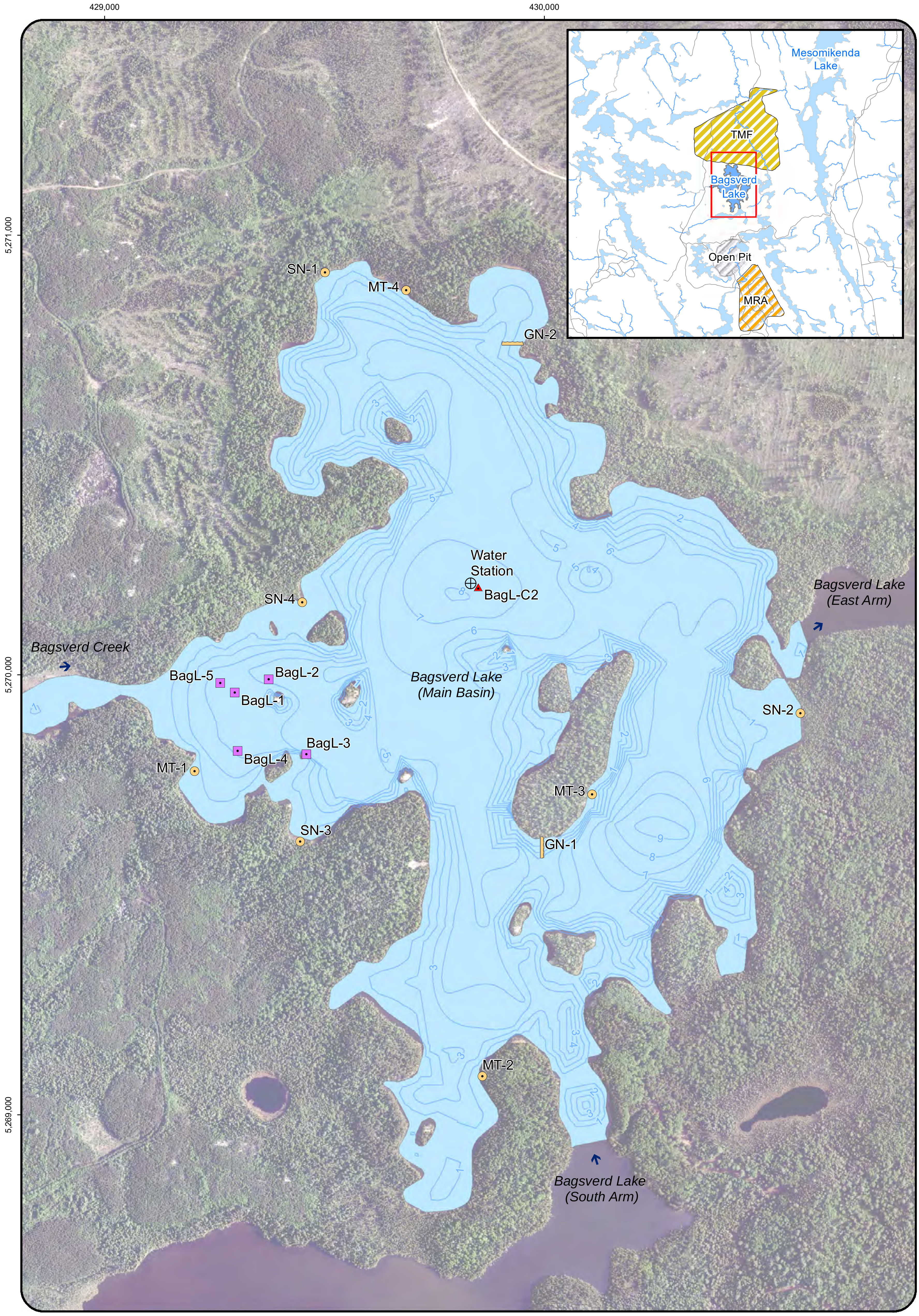

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Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Coring Site
- Benthic Site
- Water Quality Station

Other Features:
- Bathymetry (1 m intervals)
- Water Flow Direction

Figure A.2.2: Bagsverd Lake (Main Basin) Bathymetry and Sampling Locations

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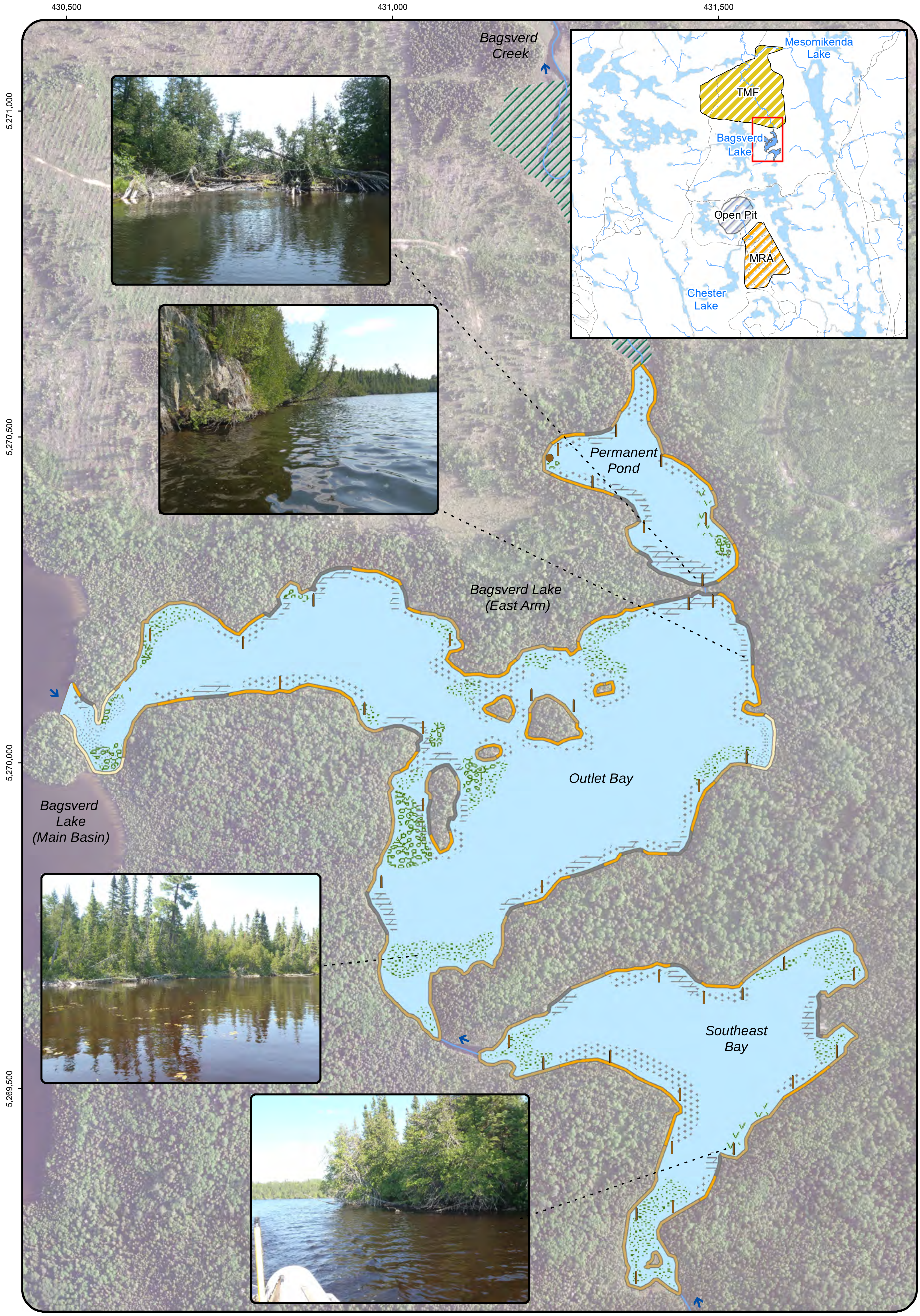

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MAP INFORMATION
Map Projection: NAD 1983
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Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.2.3: Bagsverd Lake (East Arm) Habitat Features

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hypolimnion. Bagsverd Lake water was slightly coloured with relatively high clarity (Secchi depth = 3.2 m in spring and = 2.1 m in the fall; Appendix Table C.2).

Shallow littoral substrate is predominantly sand, cobble and gravel transitioning to silt at depths varying from 2 to 4 m around the lake. The substrate in deep littoral areas (i.e., > 4 m) consists of silt with moderately high organic content. Aquatic vegetation is generally found within the small bays and surrounding the inlet from Bagsverd Creek (Figure A.2.1). Macrophytes consist of submergent beds of tape grass (*Vallisneria americana*), burred (*Sparganium* sp.), water shield (*Brasenia schreberi*), large-leaved pondweed (*Potamogeton amplifolius*) and/or bladderwort *(Utricularia* sp.).

The shoreline of Bagsverd Lake (Main Basin) is dominated by cobble and/or gravel with scattered boulders embedded in silty sand (Figure A.2.1). Granitic bedrock is commonly found on the smaller islands and along the south western shore or sandy silt shoreline around the lake perimeter (Figure A.2.1). The Main Basin is treed to the shoreline with black spruce (*Picea mariana*) and eastern white cedar (*Thuja occidentalis*), but white birch (*Betula papyrifera*) and trembling aspen (*Populus tremuloides*) are present in lower numbers (Figure A.2.1). Leatherleaf (*Chamaedaphne calyculata*) commonly overhangs the shoreline with the cedar trees in addition to other common understory species such as sedges (*Carex* sp.), sweet gale (*Myrica gale*), bog laurel (*Kalmia polifolia*) and speckled alder (*Alnus incana*). No wetlands were found adjacent to the main section of Bagsverd Lake.

A.2.1.2 Fish Community Composition

The Bagsverd Lake Main Basin fish community consisted of five large-bodied fish species and one small-bodied fish species in the spring survey of 2013 (Table A.2.1 and Appendix Table F.2). The large-bodied fish community included moderate numbers of northern pike (*Esox lucius*), white sucker (*Catostomus commersonii*) and walleye (*Sander vitreus*) and lower abundance of lake whitefish (*Coregonus clupeaformis*) and yellow perch (*Perca flavescens*; Table A.2.1). Only Iowa darters (*Etheostoma exile*) were caught in the spring of 2013 representing the small-bodied fish community within the Main Basin of the lake. It is likely that they other small-bodied fish species sampled in the East and South Arm also inhabit the Main Basin (Tables A.2.1 and A.3.1). These include blacknose shiner (*Notropis heterolepis*), fathead minnow (*Pimephales promelas*), golden shiner (*Notemigonus crysoleucas*), and spottail shiner (*Notropis hudsonius*). The difference in fish catch composition is likely due to variability in habitats sampled. No COSEWIC (2013) listed endangered, threatened or special concern fish species were observed in Bagsverd Lake Main Basin during the 2013 field survey.

Table A.2.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Bagsverd Lake (Main and East Arm), 2012 and 2013.

a) Gill Netting

Area / Year	Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
Main 2013	lake whitefish	6	0.31
	northern pike	12	0.61
	walleye	7	0.36
	white sucker	10	0.51
	yellow perch	4	0.20
	Total	**39**	**1.98**

b) Minnow Trapping

Area / Year	Species	Total Caught	CPUE (# of fish/trap*d)
East Arm 2012	yellow perch	8	0.78
Main 2013	Iowa darter	1	0.05
	yellow perch	6	0.31
	Total	**7**	**0.37**

c) Seining

Area / Year	Species	Total Caught	CPUE (# of fish/m^2)
Main 2013	Iowa darter	2	0.001
	yellow perch	4	0.001
	Total	**6**	**0.002**

d) Hoop Netting

Area / Net Size / Year	Species	Total Caught	CPUE (# of fish/trap*d)
East Arm (medium hoop net) 2012	northern pike	5	2.73
	white sucker	9	4.91
	yellow perch	13	7.10
	Total	**27**	**14.74**
East Arm (small hoop net) 2012	blacknose shiner	1	0.65
	fathead minnow	2	1.30
	golden shiner	2	1.30
	spottail shiner	1	0.65
	white sucker	3	1.95
	yellow perch	23	14.95
	Total	**32**	**20.80**

A.2.1.3 Fish Habitat Evaluation

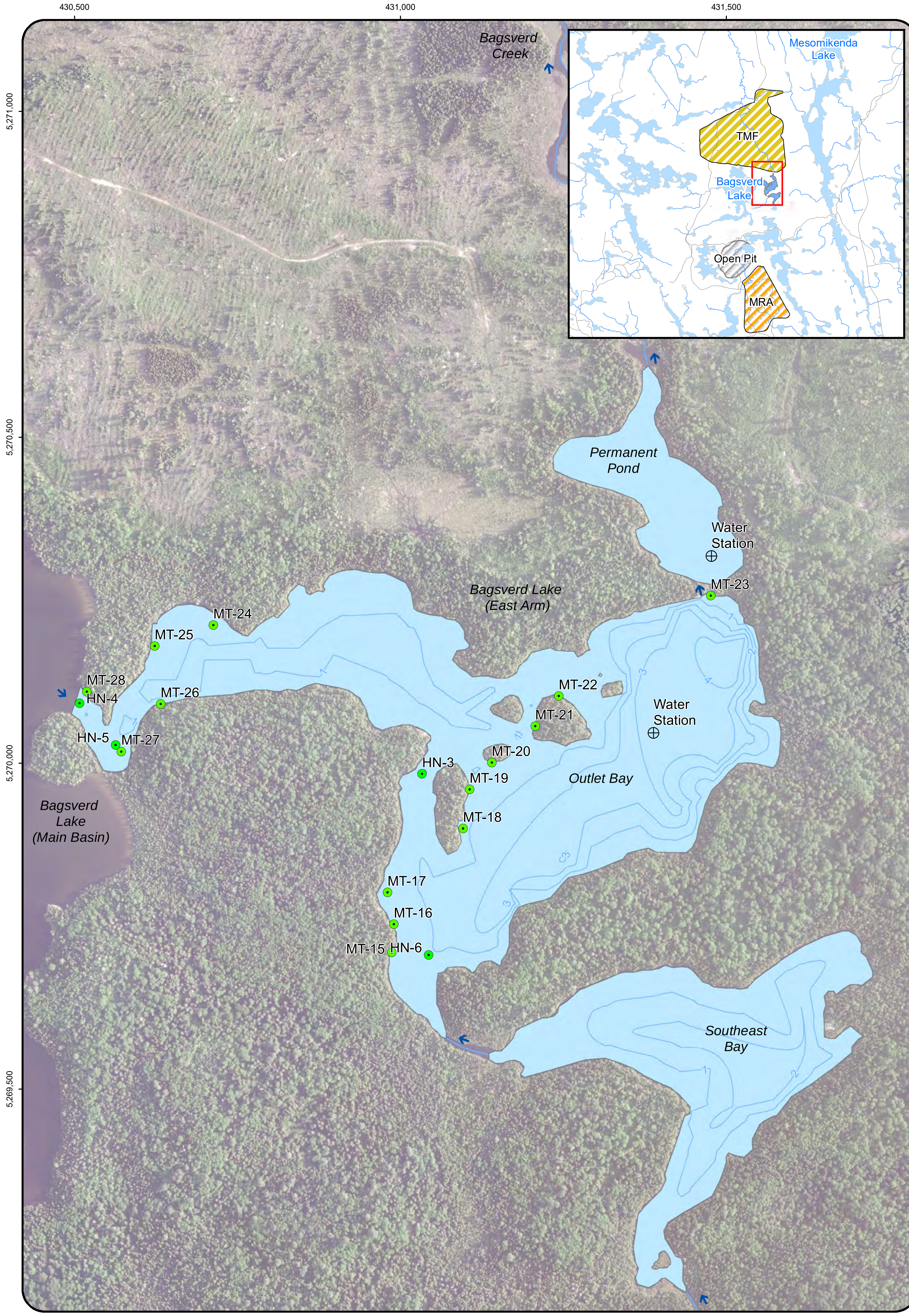
Good spawning, rearing and foraging/cover habitat for northern pike and yellow perch was found in the Main Basin through the shallow vegetated bays and excellent habitat for these species was observed surrounding the inlet of Bagsverd Creek (Table A.1 and Figure A.2.1). Optimal walleye and white sucker spawning habitat is found in streams over gravel substrate (Table A.1). It is likely that both white sucker and walleye from Bagsverd Lake spawn somewhere upstream within Bagsverd Creek. However, within the lake itself marginal spawning habitat for these species is represented by rocky shoals, hard sand-bottom areas and steep rocky shorelines (Table A.1). An abundance of this habitat is found in the Main Basin of Bagsverd Lake (Figure A.2.1). Excellent rearing and foraging/cover for these species in found through the combination of submergent vegetation within the small bays, rocky habitat, open-water areas with silt and sand substrate. Good to excellent spawning and rearing habitat for lake whitefish is available in association with rocky to sandy shoal and shoreline substrate. The deeper areas of the main basin will also provide the cooler water temperatures necessary in the summer for adult whitefish (Table A.1 and Figure A.2.2).

Only Iowa darters were captured in the Main Basin of Bagsverd Lake, which likely reflects the fishing gear employed, time of sampling and/or sampling locations used (Table A.2.1 and Figure A.2.2). Good spawning habitat is provided for this species by overhanging vegetation, woody debris or floating vegetation (Table A.1 and Figure A.2.1). Rearing and foraging is found in the shallow bay areas with mud to sand bottom with organic debris and rooted vegetation (Table A.1 and Figure A.2.2). Excellent spawning habitat is provided for blacknose and spottail shiner in areas with sandy to rocky substrate with good to excellent rearing and foraging habitat offered by the weedy areas and open-water areas (Table A.1 and Figure A.2.1). A marginal amount of spawning and rearing/foraging habitat for golden shiner was present in the shallow weedy bay area’s of the Main Basin (Table A.1 and Figure A.2.1). Although no fathead minnow were captured in the main section of Bagsverd Lake, good spawning, rearing and foraging habitat was found through the rocky shorelines and weedy areas (Table A.1 and Figure A.2.1).

A.2.2 East Arm Bagsverd Lake

A.2.2.1 Habitat Description

The East Arm of Bagsverd Lake is approximately 42.7 ha with two small basins; the Southeast Bay and the Outlet Bay which are connected by a shallow, narrow, channel (10 m wide; Figure A.2.4). In addition to flow from the Main Basin of Bagsverd Lake, an unnamed stream that drains a small headwater pond directly south of the East Arm also discharges to the Southeast Bay of Bagsverd Lake (Figure A.2.3). Discharge from the East Arm of Bagsverd Lake occurs



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Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Features:
- Bathymetry (1 m intervals)
- Water Flow Direction

Figure A.2.4: Bagsverd Lake (East Arm) Bathymetry and Sampling Locations

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over a raised bedrock face (approximately 1.2 m) at the extreme north-east end, and flows into Permanent Pond then north into Bagsverd Creek (see Appendix A.1).

The morphology of the Southeast Bay is simple, with no notable structural features and shallow water depths (generally less than 2 m) throughout (Figure A.2.4). Whereas, the outlet bay of the East Arm has a relatively diverse morphology, including small islands, sand-clay shallow areas, and rocky shoals (Figure A.2.3). The outlet bay reaches a maximum depth of approximately 4 m, with much of the area less than 2 m deep. No thermal stratification was evident in the Outlet Bay at the time of the survey (July 2012; Figure A.2.4) and the water column was well oxygenated (i.e., > 7.5 mg/L; Appendix Table C.2). The pH was slightly basic (7.73 at the surface), with no substantial change from surface to bottom (Appendix Table C.2). A Secchi depth of 3.1 m indicated moderate water clarity and light penetration throughout the water column.

Substrate in littoral areas of both the Southeast and Outlet bays of the East Arm consists primarily of soft silt with high organic content. Exceptions include an area dominated by hard, compact fine sand at the far west end of the Outlet Bay and areas of cobble-boulder associated with shoals off points and adjacent to islands in the Outlet Bay. In general, cobble, boulder and bedrock extend only 0.5 to 1 m offshore before transitioning to silt substrate along most of the perimeter. Macrophytes in the Southeast Bay were generally sparse to dense consisting of submergent burreed (*Sparganium* sp.), pondweed (mainly fern pondweed (*Potamogeton robbinsii*), but also other species), bladderwort and in some cases, quillwort (*Isoetes* sp.) occurred at deeper embayments and near the inlet and outlet of the bay (Figures A.2.3 and A.2.4). Macrophytes in the Outlet Bay were generally sparse, although a green algal mat was found on the surface of the deeper littoral (i.e., 2 to 3 m depth) substrate (Figure A.2.3). Emergent plants were rare in both the Southeast and Outlet bays, with limited growth of broadleaf arrowhead (*Sagittaria latifolia*) and sedge observed near the shore.

The shoreline of the East Arm of Bagsverd Lake consists primarily of cobble/boulder, with a moderate amount of bedrock and limited amount of sand and organics (Figure A.2.3). The shoreline is generally treed to the waterline, with fallen trees and logs commonly contributing cover in the shallow littoral areas. Eastern white cedar often lines the immediate shoreline (Figure A.2.3), with black spruce and white birch occurring co-dominantly and/or as the dominant shoreline tree species. The occasional white pine (*Pinus strobus*), red pine (*Pinus resinosa*) and larch (*Larix laricina*) can also be found in the forest overstory. Understory immediately adjacent to the shoreline is generally sparse, but when present, includes a mixture of sweet gale, leatherleaf, bog rosemary (*Andromeda polifolia*) and willow (*Salix* sp.) shrubs as well as sparse growth of sedges. Notably, exposed bedrock, occasionally occurring as steep rock faces, often results in the forest edge beginning several meters away from the waterline (Figure A.2.3). No substantial wetland areas were found along the border of the East Arm.

Permanent Pond

Permanent Pond extends 455 m downstream and varies in width from 270 m at its widest point to 20 m near the outlet. The pond has simple basin morphology, reaching a maximum depth of almost 5.0 m near the inlet (at the water quality station; Figure A.2.4). Thermal stratification was evident in Permanent Pond at the time of the survey (July 2012; Appendix Table C.1) around 3 m, with hypoxia conditions near bottom (4.7 m, dissolved oxygen less than 2 mg/L; Appendix Table C.1). The pH was slightly basic at surface (7.66) to slightly acidic at bottom (6.79; Appendix Table C.2). A Secchi depth of 4.5 m indicated moderate water clarity and light penetration throughout the water column.

Substrate at deep littoral areas of the pond includes mostly silt- to clay-sized fines with high organic content. At shallow littoral and shoreline areas, including the entire outlet portion of the pond, bedrock, boulder and cobble are the predominant substrate, with sand or silty-sand typically found interstitially. Sand and/or silty sand are generally found with progression from the shallow to deep littoral zone as well. Macrophytes are relatively scarce throughout the pond, and limited to patchy distribution of emergent cattail (*Typha* sp.), horsetail (*Equisetum* sp.) and/or burreed, as well as to sparse growth of floating vegetation represented by yellow pond lily (*Nuphar variegatum*; Figure A.2.3). Numerous fallen trees and other large woody debris, including logs and beaver lodges, provide cover in shallow littoral areas of the pond. Riparian areas of the pond generally include a narrow zone of sedges and shrubs such as sweet gale and leatherleaf before transitioning to mixed boreal forest consisting predominantly of black spruce, but with some white birch, jack pine (*Pinus banksiana*), trembling aspen and, closer to shore, eastern white cedar.

A.2.2.2 Fish Community Composition

Although only seven species (northern pike, white sucker, yellow perch, fathead minnow, blacknose, golden and spottail shiner) of fish were captured in the East Arm of Bagsverd Lake during the July 2012 field survey, it is likely that three additional species (walleye, lake whitefish and Iowa darter) captured in Bagsverd Main and in the South Arm also inhabit the East Arm (Tables A.2.1, A.3.1 and Appendix Table F.2). The difference in fish catch composition is likely due to variability in habitats sampled (Figures A.2.2 and A.2.4 and Appendix Table F.2). No fishing was conducted in Permanent Pond and it is assumed that a similar fish community would inhabit this area as the East Arm. No COSEWIC (2013) listed endangered, threatened or special concern fish species were observed during the July 2012 field survey.

A.2.2.3 Fish Habitat Evaluation

Good spawning, rearing and adult foraging/cover habitat for northern pike and yellow perch was found in the East Arm (Table A.1), primarily associated with shallow vegetated areas of the Southeast Bay and to a lesser extent, the entrance to the East Arm. Similar to the Main Basin, only marginal spawning habitat for white sucker and walleye was found (Table A.1), present mainly as rocky shoals, hard sand-bottom areas, and steep rocky shorelines that may have gravel associated with them. However, the combination of submergent vegetation, rocky habitat and open-water areas with silt substrate provides good to excellent habitat for juvenile and adult white sucker (Table A.1). Similarly, good juvenile walleye rearing habitat is available at rocky/sandy areas with nearby vegetative cover, and excellent foraging habitat for adult walleye is provided by similar habitat as well as the shallow to deep rocky areas (Table A.1). While lake whitefish were captured during the July 2012 field survey (Table A.2.1), good spawning and rearing habitat is available for these species in association with rocky to sandy shoal and shoreline substrates. Although these areas may also provide good juvenile habitat for lake whitefish, the lack of significant deep water habitat may limit adult lake whitefish use of the East Arm during the summer months.

Marginal amounts of good quality habitat in the form of dense macrophyte growth are available for golden shiner, primarily in the Southeast Bay of the East Arm (Table A.1). Good spawning habitat is provided for blacknose and spottail shiner at areas with sandy to rocky substrate, with good rearing and foraging habitat offered by the combination of sparse aquatic vegetation and open-water areas (Table A.1). No Iowa darters were collected during the July 2012 field survey, which likely reflected the fishing gear employed and/or habitats of the locations sampled (Table A.2.1 and Figure A.2.4). Marginal amounts of overhanging vegetation, woody debris or floating vegetation mats were found, thus indicating marginal spawning habitat for Iowa darter. However, shallow littoral areas with mud bottom containing organic debris and some rooted vegetation would provide rearing/foraging habitat for this species (Table A.1).

Permanent Pond offers limited spawning, marginal rearing and foraging/cover habitat for northern pike and yellow perch, associated with the fallen woody debris and sparse macrophytes within the pond (Table A.1 and Figure A.2.4). No white sucker spawning habitat was observed, however marginal to good rearing and foraging habitat exists through the sand-silt substrate with high organic content. It is unlikely that walleye or lake whitefish would use this habitat due to the access from the East Arm. Limited habitat is available for golden shiner due to the lack of macrophyte growth (Table A.1). Moderate spawning habitat is provided for blackknose and spottail shiner in areas of sand and rocky substrate with good rearing and foraging habitat (Table A.1). Marginal habitat for Iowa darter spawning, foraging and rearing exist through the presence of woody debris and limited macrophytes within the pond (Table A.1).

A.2.3 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

A.3 BAGSVERD LAKE SOUTH ARM

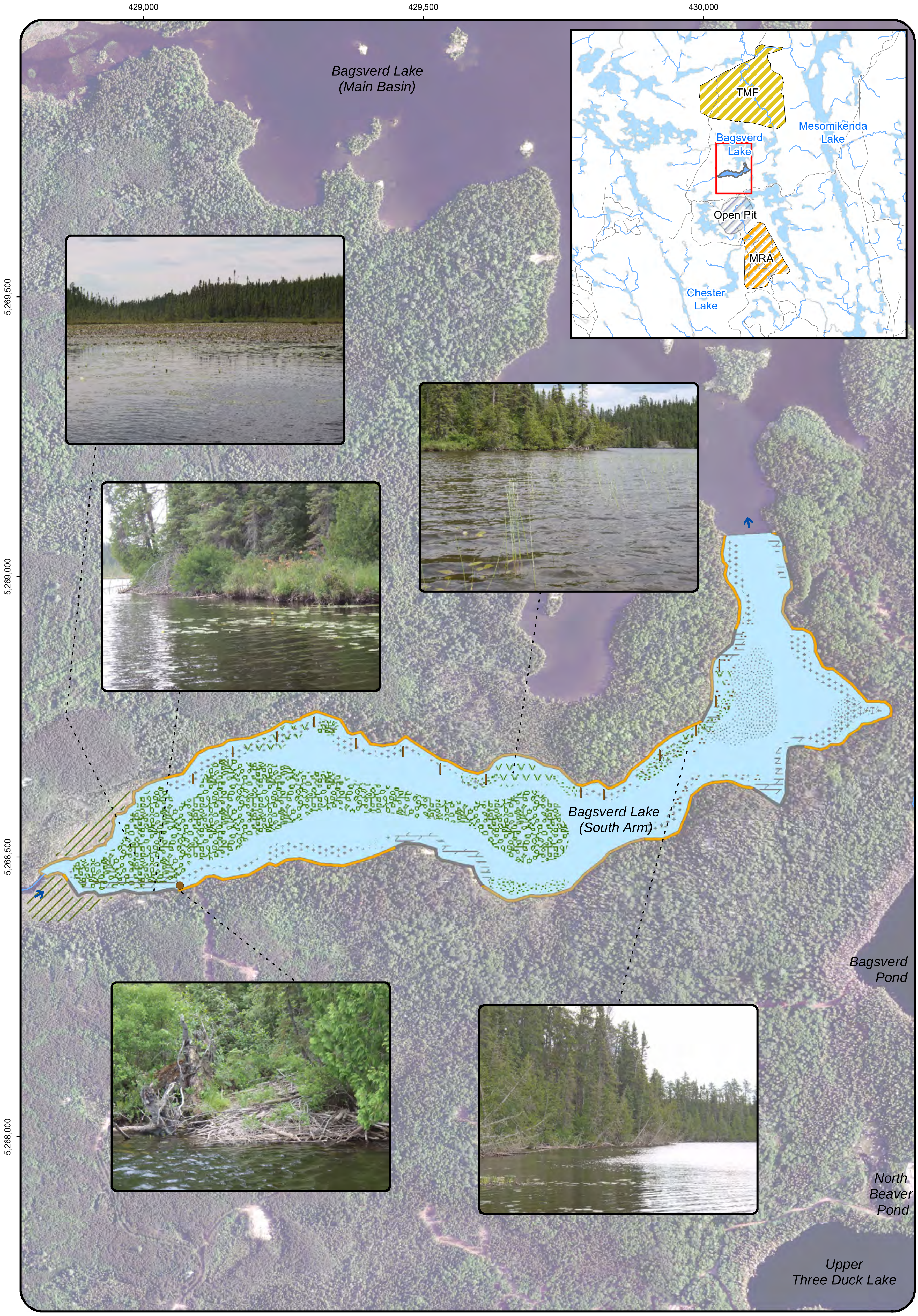
Bagsverd Lake South Arm is part of Bagsverd Lake which is located within the Neville Lake watershed. Bagsverd Lake is approximately 215 ha lake located about 1 km north of the proposed Côté Gold open pit (see Appendix A.2 and Figure A.3.1). Bagsverd Lake Main Basin and the East Arm are discussed in Appendix A.2. The South Arm of Bagsverd Lake extends east-west approximately 1,600 m as a narrow (100 to 280 m wide) depression with a surface area of approximately 30 ha and a maximum depth of approximately 5 m (Figures A.3.1 and A.3.2). The South Arm is fed by two inlet streams; 1) from the west that carries the flow from West Beaver Pond and likely the water from Little Clam Lake which discharges intermittently north through a wetland depression that has no defined channel (Figure A.3.3) and 2) an intermittent stream from the southeast that originates at Bagsverd Pond (Figure A.3.4). The habitat of all three areas (South Arm Bagsverd Lake and both inlet streams) are discussed in this section.

The physical habitat and fish community characterization in the South Arm of Bagsverd Lake was largely collected during the July 2012 study, whereas the sediment quality and benthic invertebrate community was characterized during the June and September surveys in 2013. Habitat characterization of the inlets was conducted during the 2013 fall survey. Bagsverd Lake South Arm will be influenced by the watercourse realignment to accommodate the open pit. Specifically, a dam will be constructed between the main basin of Bagsverd Lake and the south arm. The south arm will receive flow from Clam Lake and water from the South Arm will flow from the South Arm to Bagsverd Pond, east to Weeduck Lake and south into Three Duck Lakes within the Mollie River watershed (Figure A.1). During operations the South Arm of Bagsverd Lake will be part of the Mollie River watershed but following closure and filling of the open pit, the dam on the South Arm will be removed and the original watershed will be reconnected.

A.3.1 South Arm Bagsverd Lake

A.3.1.1 Habitat Description

The South Arm has a single basin approximately 5 m deep located at its east end (Figure A.3.2). A narrow trough is located adjacent to the south-central shore (3 to 5 m deep), however much of the South Arm is less than 2 m deep (Figure A.3.2). Thermal stratification was observed both in the spring and fall of 2013, where both the temperature and dissolved oxygen concentrations dropped abruptly near bottom (Appendix Table C.2). The pH of the water was varied at different times of the year from slightly acidic in the spring (6.67 at surface) to basic in the fall (8.06 at surface), with no substantial change from surface to bottom at any monitoring



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Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.3.1: Bagsverd Lake (South Arm) Habitat Features

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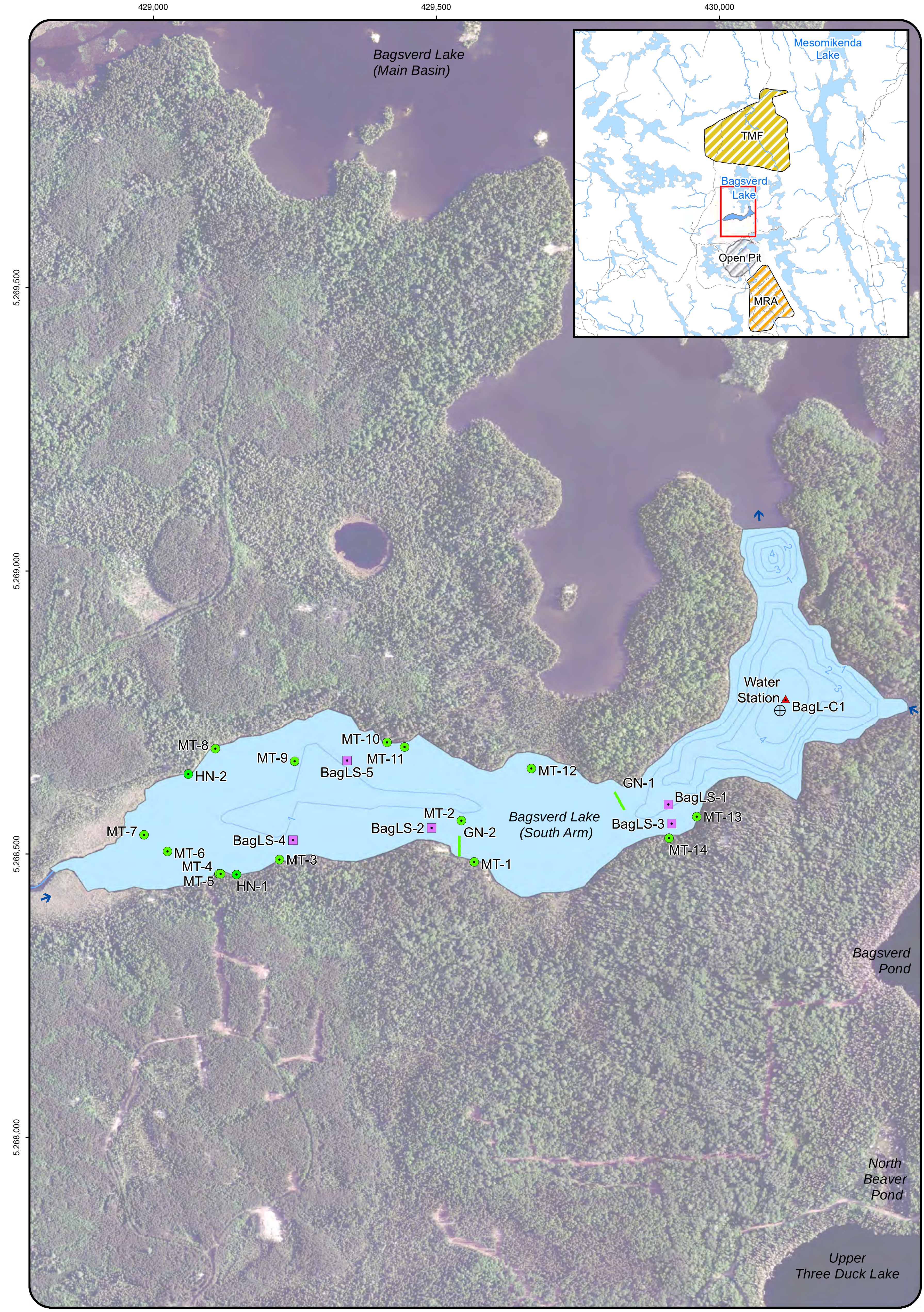

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Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Features:
- Bathymetry (1 m intervals)
- Water Flow Direction

Figure A.3.2: Bagsverd Lake (South Arm) Bathymetry and Sampling Locations

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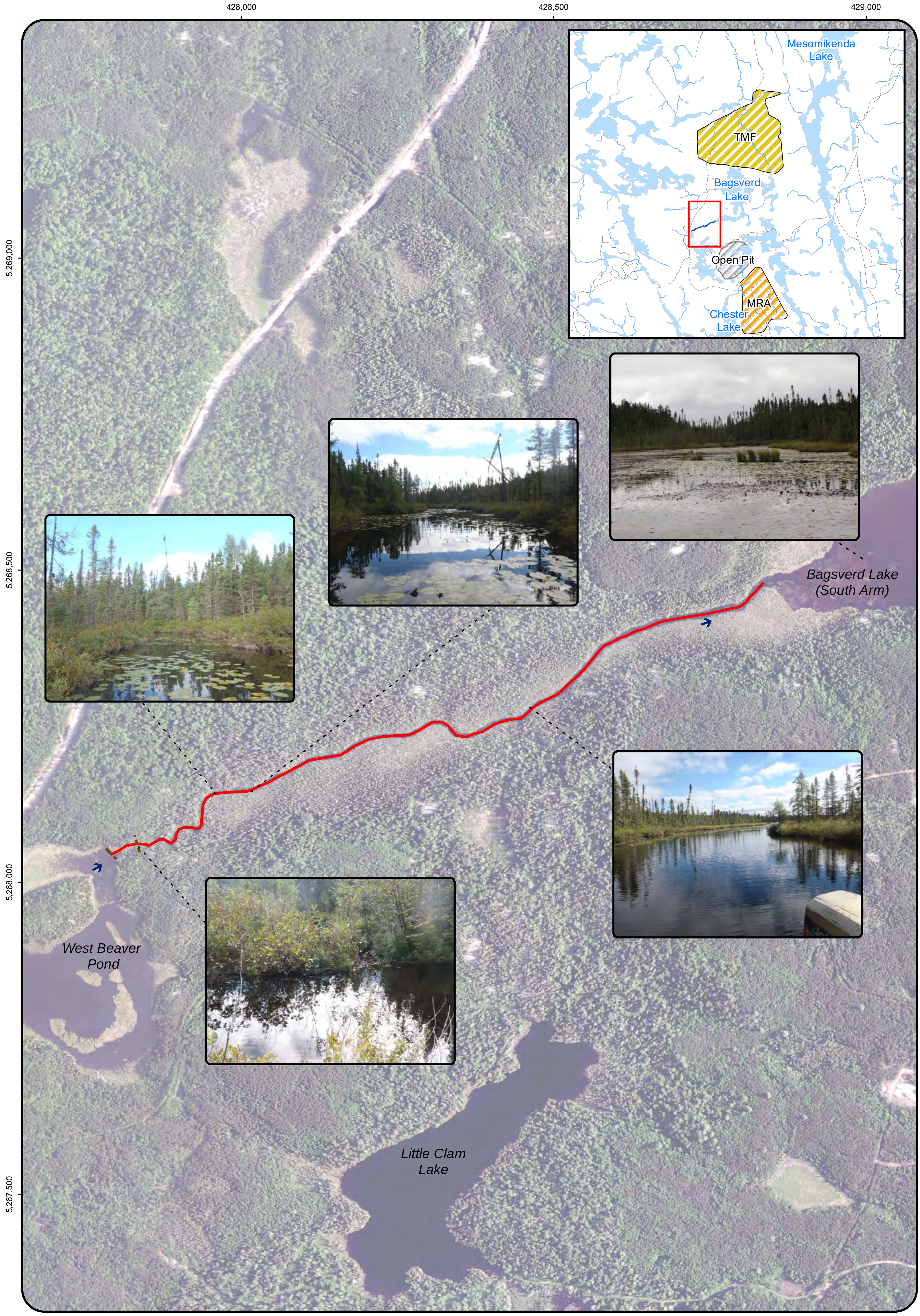

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River Habitat Topography:
- Deep Pool
- High-Gradient
- Moderate Gradient
- Low-Gradient

Habitat Features:
- Beaver Dam
- Water Flow Direction

Figure A.3.3: Stream from West Beaver Pond to Bagsverd Lake (South Arm) Habitat Features

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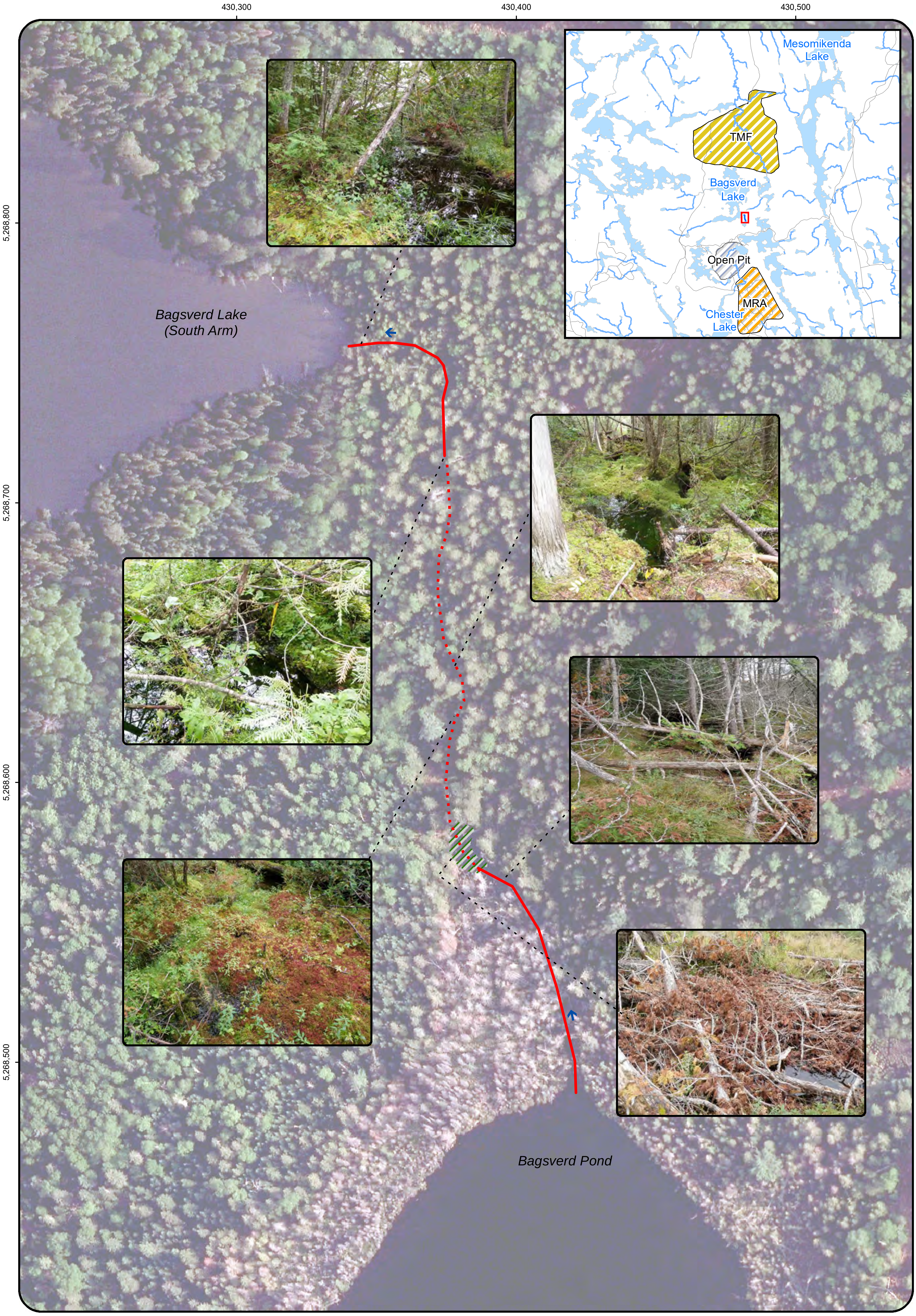

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Project No.: 2496

River Habitat Topography:
- Deep Pool
- High-Gradient
- Moderate Gradient
- Low-Gradient
- Intermittent Low-Gradient Channel

Habitat Features:
- Water Flow Direction
- Wetland

Figure A.3.4: Stream from Bagsverd Pond to Bagsverd Lake (South Arm) Habitat Features

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period (Appendix Table C.2). A mean Secchi depth of 2.5 m indicated moderate water clarity and light penetration throughout the water column.

Substrate in the littoral areas generally consists of soft silt with high organic content, although areas dominated by compact fine sand are found in deeper areas near the opening to the main body of Bagsverd Lake (Figure A.3.1). Near the shoreline, cobble, boulder and bedrock may extend approximately 1 to 2 m offshore before transitioning to silt and/or sand substrate (Figure A.3.1). Aquatic vegetation included very dense floating and submergent macrophyte growth of fragrant white water lily (*Nymphaea odorata*), water shield (*Brasenia schreberi*) yellow pond lily (*Nuphar variegatum*), mermaid's hair (*Scirpus subterminalis*), burreed (*Sparganium* sp.) and large-leaved pondweed (*Potamogeton amplifolius*; Figure A.3.1). An extensive macrophyte bed containing a combination of all these species was found near the inlet at the west end, with floating vegetation represented mainly by fragrant white water lily. This floating macrophyte bed was bordered to the east by an emergent stand of hardstem bulrush (*Scirpus acutus*) as well as submergent pondweed patches (Figure A.3.1). With the exception of the hardstem bulrush indicated above, emergent vegetation was limited to only a few small broad-leaved arrowhead (*Sagittaria latifolia*). Very little aquatic vegetation was found through the east portion of the South Arm including areas near the outlet to the Main Basin of the lake.

The shoreline consists primarily of cobble/boulder, with some exposed bedrock and organic areas (Figure A.3.1). Shoreline areas are generally forested, with eastern white cedar (*Thuja occidentalis*) often providing nearshore cover in the form of overhanging boughs, recently fallen trees, submerged logs and/or other woody debris. Black spruce (*Picea mariana*) and jack pine (*Pinus banksiana*) comprise the dominant forest species, with white birch (*Betula papyrifera*) and lesser amounts of trembling aspen (*Populus tremuloides*), larch (*Larix laricina*) and red pine (*Pinus resinosa*) comprising the overstory. These species, as well as larch, are the dominant species observed at wetland areas that border the South Arm.

A.3.1.2 Fish Community Composition

Seven species of fish were captured in the South Arm of Bagsverd Lake during the July 2012 field survey (Table A.3.1 and Appendix Table F.2). The large-bodied fish community included moderate to high numbers of northern pike (*Esox lucius*), white sucker (*Catostomus commersonii*), yellow perch (*Perca flavescens*) and walleye (*Sander vitreus*). Additionally, lake whitefish (*Coregonus clupeaformis*) were caught in the Main Basin of Bagsverd Lake and may use the habitat within the South Arm (Table A.2.1). The small-bodied fish community was represented by a relatively low abundance of golden shiner (*Notemigonus crysoleucas*), blacknose shiner (*Notropis heterolepis*) and fathead minnow (*Pimephales promelas*; Table

Table A.3.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Bagsverd Lake (South Arm), 2012.

a) Gill Netting

Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
northern pike	31	1.65
walleye	28	1.49
white sucker	42	2.24
yellow perch	49	2.61
Total	**150**	**7.99**

b) Minnow Trapping

Species	Total Caught	CPUE (# of fish/trap*d)
fathead minnow	1	0.08
northern pike	1	0.08
yellow perch	8	0.62
Total	**10**	**0.77**

c) Small Hoop Netting

Species	Total Caught	CPUE (# of fish/trap*d)
blacknose shiner	2	1.03
golden shiner	5	2.57
white sucker	2	1.03
yellow perch	38	19.54
Total	**47**	**24.17**

A.3.1). Spottail shiner (*Notropis hudsonius*) and Iowa darter (*Etheostoma exile*), which were observed in other areas of Bagsverd Lake (Table A.2.1), may also use habitat of the South Arm. No COSEWIC (2013) listed endangered, threatened or special concern fish species were observed in the South Arm of Bagsverd Lake during the July 2012 field survey.

A.3.1.3 Fish Habitat Evaluation

Excellent spawning and rearing habitat for northern pike was found in the South Arm of Bagsverd Lake as a result of the extensive wetland area and presence of moderately to very dense aquatic macrophyte beds (Table A.1 and Figure A.3.1). The extensive floating macrophyte bed and moderately dense submergent vegetation combined with deeper water near the middle of the arm, also provide good foraging/cover habitat for adult northern pike. The dense to moderately dense aquatic vegetation and woody debris found throughout the South Arm combined with open areas of rockier substrate provide excellent spawning, rearing and foraging habitat for yellow perch (Table A.1 and Figure A.3.1), which likely contributed to the numerical dominance of this species during the July 2012 field survey (Table A.3.1). Although no gravel habitat suitable for white sucker and walleye spawning was observed, the combination of relatively dense mixed aquatic vegetation, shoreline woody debris, large areas of shallow mud bottom to the west that borders open, deeper rocky areas to the east, provides good to excellent rearing and/or foraging/cover habitat for these species. No suitable spawning habitat for lake whitefish was observed in the South Arm, but the limited combination of the deeper rock- and hard sand-bottom areas, steep rocky shorelines may provide marginal to good foraging habitat for juvenile and adult lake whitefish when waters are colder (Table A.1).

The relatively clear, shallow water together with dense macrophyte growth provides good spawning and rearing/foraging habitat for golden shiner (Table A.1). Although these habitat features also provide good juvenile rearing and adult foraging opportunities for blacknose and spottail shiner, the limited areas of sandy substrate along the east shore suggests marginal to limited habitat for spawning (Table A.1 and Figure A.3.1). No Iowa darter were collected in July 2012 (Table A.3.1); however, overhanging vegetation, woody debris and floating vegetation mats at wetland areas may provide spawning habitat for Iowa darter. Shallow littoral areas with mud bottom containing organic debris and plentiful rooted vegetation provide good rearing/foraging habitat for this species (Table A.1).

A.3.2 Unnamed Inlet from West Beaver Pond

A.3.2.1 Habitat Description

The unnamed inlet from West Beaver Pond discharges from the north end of the pond and travels approximately 1.2 km before reaching the far western portion of the South Arm of Bagsverd Lake (Figure A.3.3). This reach is characterized by low-gradient, slow flow, deep glide habitat where wetted channel widths range from 6 m closer to West Beaver Pond to 17 m near the South Arm of Bagsverd Lake (Figure A.3.3). Average wetted width was approximately 6 to 8 m and water depth generally ranged from 0.5 to 1.2 m deep. Substrate within this reach is composed of silt with high organic content and varying degree of woody debris within the channel. Instream vegetation was moderate throughout the channel, with 10 % to 50 % coverage. Vegetation predominantly included yellow pond lily with patches of tape grass (*Vallisneria americana*), burreed and coontail (*Ceratophyllum demersum*). A small band of wetland area bordered each bank of the inlet with the exception of the most upstream 50 m (Figure A.3.3). The vegetation was generally dominated by a combination of sedges (*Carex* sp.), sweet gale (*Myrica gale*), leatherleaf (*Chamaedaphne calyculata*), small black spruce with scattered larch. Speckled alder (*Alnus incana*) were present within the first 50 m of the stream surrounding the small beaver dams close to West Beaver Pond. Forest adjacent to the reach primarily included coniferous species such as black spruce, jack pine, larch and red pine in low abundance.

A.3.2.2 Fish Habitat Evaluation

Although no fishing was conducted within the inlet from West Beaver Pond, it was assumed that similar species would inhabit the channel as were found within West Beaver Pond and the South Arm of Bagsverd Lake (Tables A.3.1 and A.25.1). Moderate numbers of small-bodied fish were observed during the habitat survey.

Excellent spawning and rearing habitat for northern pike and excellent rearing and foraging habitat for yellow perch was found in the stream based on the presence of abundant shallow wetland areas adjacent to the shoreline and/or shallow vegetated areas within the reach (Table A.1 and Figure A.3.3). Northern pike foraging habitat is limited within this stream because water depths tend to be shallow and high summer water temperatures may seasonally reduce the quality of habitat for larger adults. No walleye, or white sucker spawning habitat was observed (Table A.1). Shallow water depths and general clarity of water within this reach limit any juvenile and adult walleye habitat. However, areas within this section of stream provide good white sucker rearing and marginal adult foraging habitat (Table A.1).

The clear, shallow water together with moderate macrophyte growth provides good spawning and rearing/foraging habitat for golden shiner (Table A.1). These habitat features also provide good juvenile rearing and adult foraging opportunities for finescale dace (*Chrosomus neogaeus*), fathead minnow, central mudminnow (*Umbra limi*), blacknose and spottail shiner, however lack of sandy substrate suggests limited spawning habitat for blacknose and spottail shiner (Table A.1 and Figure A.3.3). Overhanging vegetation, woody debris and floating vegetation would provide spawning habitat for Iowa darter as well as good rearing/foraging habitat for this species (Table A.1).

A.3.3 Unnamed Inlet from Bagsverd Pond

A.3.3.1 Habitat Description

The unnamed inlet from Bagsverd Pond discharges into the far eastern portion of the South Arm of Bagsverd Lake (Figure A.3.4). This shallow stream flows from the north end of Bagsverd Pond approximately 280 m before reaching the South Arm. The unnamed stream has an intermittent channel with visible flow for its entirety at the time of survey (September 2013). This reach is characterized by low-gradient, shallow habitat where wetted channel widths range from 2.6 m closer to Bagsverd Pond to 2.4 m near the South Arm of Bagsverd Lake. After leaving Bagsverd Pond the unnamed inlet travels through forest dominated by eastern white cedar for approximately 60 m until it flows into a small open wetland area (approximately 20 m by 50 m). Recent activity in the wetland area had bulldozed all the trees over and most were overlaying the defined channel (Figure A.3.4). Downstream of the open wetland area, the channel was undefined for approximately 100 m and water flowed around and subsurface through the cedar and moss vegetation (Figure A.3.4). The remaining 130 m of stream prior to flowing into the South Arm of Bagsverd Lake has a defined channel of approximate 2.4 m wetted width and water depth of 0.24 m. Bottom substrate was completely composed of fines and organics. Stream banks were lined with moss and the riparian vegetation dominated by eastern white cedar and scattered speckled alder and balsam fir (*Abies balsamea*).

A.3.3.2 Fish Habitat Evaluation

Although no fishing was conducted within the inlet from Bagsverd Pond, it was assumed that similar species would inhabit the channel as were found within Bagsverd Pond and the South Arm of Bagsverd Lake (Tables A.3.1 and A.25.1). A few small-bodied fish were observed during the habitat survey within the furthest upstream section of the unnamed inlet.

Limited large-bodied fish habitat exists within this 280 m stream due to the lack of water depth and intermittent channel. White sucker juveniles may use the stream habitat for rearing (Table

A.1). Limited to marginal habitat does exist for small-bodied species, especially near the inflow from Bagsverd Pond or the outflow to the South Arm of Bagsverd Lake. Species that could use this habitat include brook stickleback (*Culaea inconstans*), Iowa darter, dace sp. (*Chrosomus* sp.). No overwintering habitat was found within this stream, therefore any fish residing within it would migrate either upstream to Bagsverd Pond or downstream to Bagsverd Lake for overwintering (Figure A.3.4).

A.3.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

A.4 BAGSVERD POND

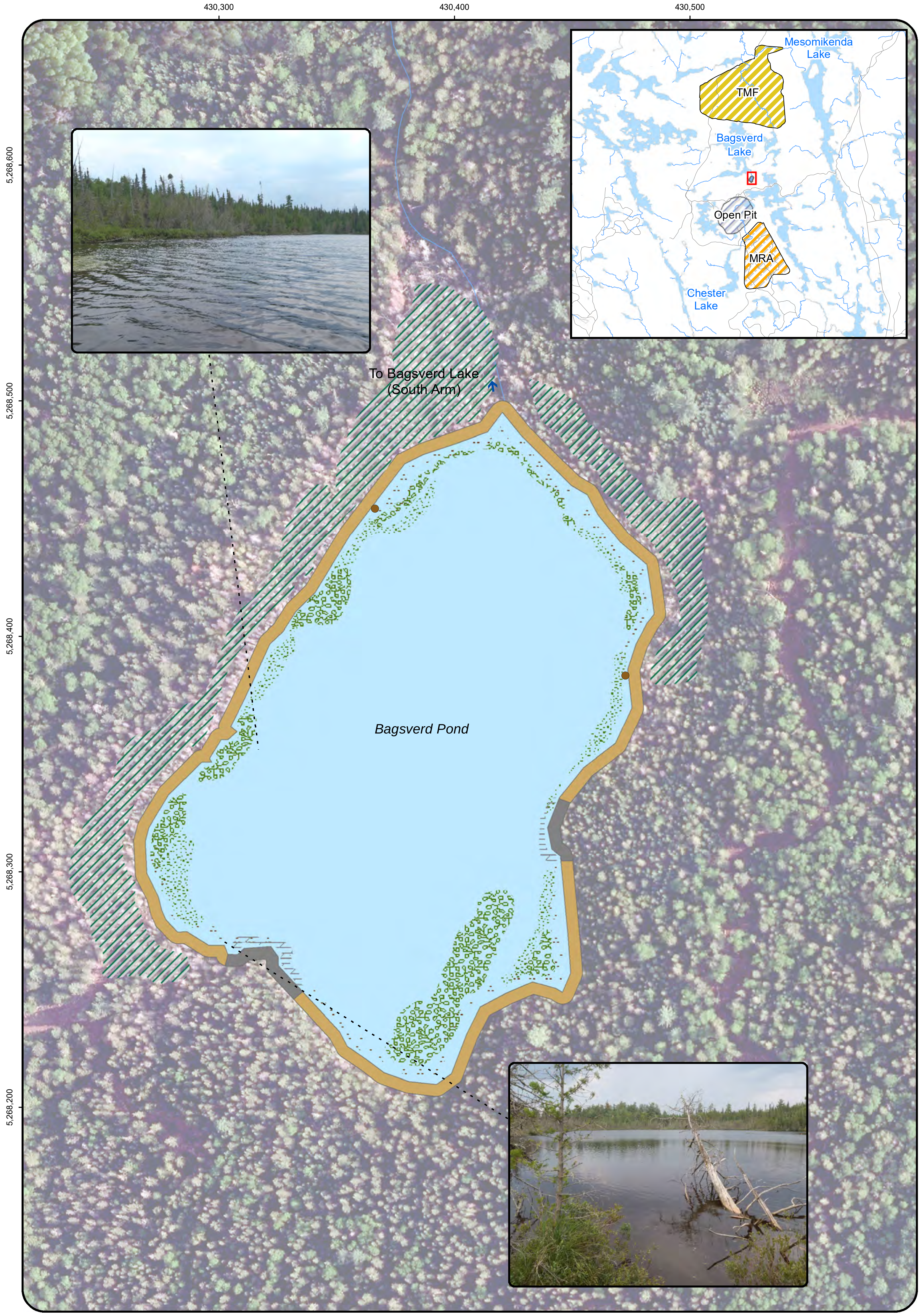
Bagsverd Pond is located within the Neville Lake watershed, immediately south of the South Arm of Bagsverd Lake and about 750 m north of the Côté Gold proposed open pit (Figures A.4.1 and A.4.2). The pond is a headwater pond with a surface area of approximately 3.5 ha. No tributaries discharge into Bagsverd Pond and discharge from the pond is via a small channel with intermittent flow located at the north end of the pond. This channel drains into the far eastern portion of the South Arm of Bagsverd Lake (Figure A.4.1).

Bagsverd Pond will be influenced by the watercourse realignment for the Mollie River which will include reversing the original flow direction from Bagsverd Pond to Bagsverd Lake South Arm. In addition, a channel will be constructed so the water will then flow east towards Weeduck Lake and subsequently south into Three Duck Lakes then into the Mollie River watershed (Figures A.4.1 and A.1).

A.4.1 Habitat Description

Bagsverd Pond has a simple oblong basin that is approximately 270 m long by 140 m wide and with mean and maximum depths of approximately 2 and 2.5 m, respectively. The waters of Bagsverd Pond are dark brown in colour, suggesting high carbon content associated with drainage from damp forest soils. Very warm mid-column water temperatures (25.4 °C) were observed during July 2012 (Figure A.4.2); but mid-column dissolved oxygen concentrations were relatively high (7.46 mg/L) and well above the Provincial Water Quality Objective of 5.0 mg/L (Appendix Table C.3). Water of Bagsverd Pond had a near neutral pH (6.74; Appendix Table C.3).

The littoral substrate of Bagsverd Pond is represented almost entirely by organic silt (Figure A.4.1). Sparse growth of aquatic macrophytes occurs in the water body, consisting mostly of floating yellow pond lily (*Nuphar variegatum*) and, to a much lesser extent, submergent burreed (*Sparganium* sp.). The shoreline is also entirely organic, with abundant standing deadwood together with sweet gale (*Myrica gale*) and leatherleaf (*Chamaedaphne calyculata*) lowland shrubbery. Eastern white cedar (*Thuja occidentalis*) often overhangs the shoreline, with numerous fallen trees, logs and wood debris occurring within the shallow littoral zone of the lake (Figure A.4.1). Beyond the immediate shoreline, steep topography is forested with primarily black spruce (*Picea mariana*). Jack pine (*Pinus banksiana*), white birch (*Betula papyrifera*) and trembling aspen (*Populus tremuloides*) are also found. White pine (*Pinus strobus*) is occasionally present.



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features
- Beaver Lodge
- Logs and Fallen Trees
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.4.1: Bagsverd Pond Habitat Features

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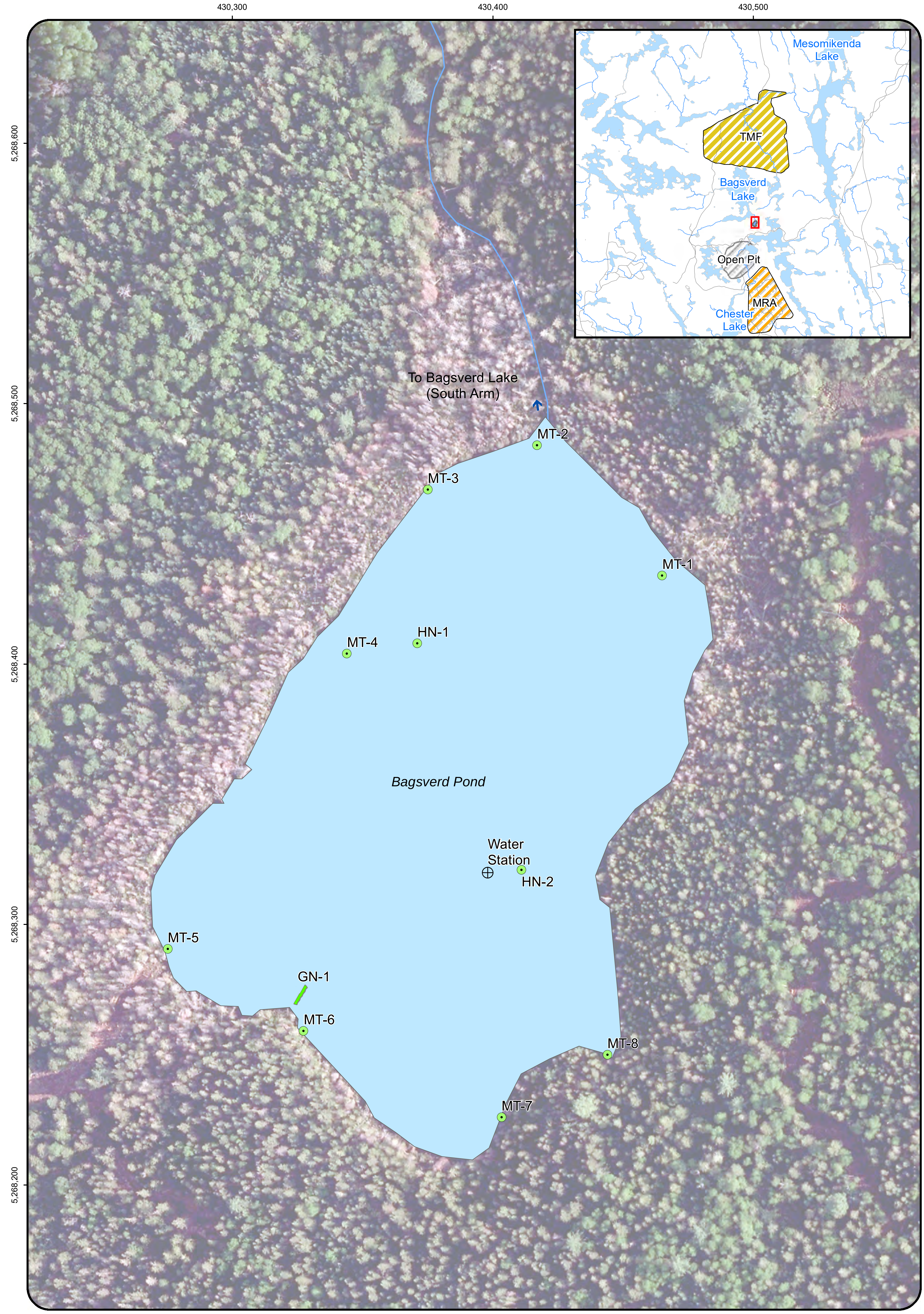

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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Feature:
- Water Flow Direction

Figure A.4.2: Bagsverd Pond Sampling Locations

Created by:
minnow environmental inc.

A.4.2 Fish Community Composition

The Bagsverd Pond fish community consisted of one large-bodied species (white sucker) and five small-bodied species (Table A.4.1 and Appendix Table F.3). A single white sucker (*Catostomus commersonii*) was caught in an overnight gill net set, suggesting that any large-bodied fish were present only in low abundance (Table A.4.1 and Figure A.4.2). Furthermore, a small-bodied fish community that included very high numbers of fathead minnow (*Pimephales promelas*), finescale dace and northern redbelly dace (*Chrosomus neogaeus* and *C. eos*, respectively), moderate numbers of central mudminnow (*Umbra limi*) and low numbers of Iowa darter (*Etheostoma exile*; Table A.4.1 and Appendix Table F.3) suggested that large predatory fish were not likely present in Bagsverd Pond. No endangered, threatened or special concern fish species (COSEWIC 2013) were observed in Bagsverd Pond during the July 2012 survey.

A.4.3 Fish Habitat Evaluation

No white sucker spawning habitat was observed in Bagsverd Pond (Table A.1), and therefore white sucker likely colonized the lake historically by migrating upstream from Bagsverd Lake as YOY or juveniles. The outlet creek may be used for spawning by Bagsverd Pond resident white sucker. Overall, marginal rearing and foraging habitat is available in Bagsverd Pond for white sucker juveniles and adults.

The presence of very large numbers of fathead minnow, finescale and northern redbelly dace suggests excellent habitat for spawning, rearing and foraging (Tables A.4.1 and A.1). Lower numbers of Iowa darter and central mudminnow may be related to limited access to suitable spawning habitat (i.e., ponded areas of rivers or fibrous root beds for Iowa darter, and weedy stream channels/brooks for central mudminnow; Table A.1).

A.4.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

Table A.4.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Bagsverd Pond, 2012.

a) Gill Netting

Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
central mudminnow	1	0.12
white sucker	1	0.12
Total	**2**	**0.24**

b) Minnow Trapping

Species	Total Caught	CPUE (# of fish/trap*d)
central mudminnow	30	5.22
fathead minnow	33	5.74
finescale dace	37	6.44
Iowa darter	2	0.35
northern redbelly dace	86	14.96
Total	**188**	**32.71**

c) Small Hoop Netting

Species	Total Caught	CPUE (# of fish/trap*d)
central mudminnow	20	12.39
fathead minnow	>1,000	619.35
finescale dace	>1,000	619.35
Iowa darter	1	0.62
northern redbelly dace	>1,000	619.35
Total	**>3,021**	**>1,871**

A.5 BEAVER POND

Beaver Pond is located within the Mollie River watershed within the footprint of the proposed Côté Gold open pit (Figures A.5.1 and A.5.2). This area will be completely lost with the construction of the open pit. This pond was originally formed as a result of beaver activity and road construction. During the 2012 habitat survey the pond was present; however in the summer of 2013 the Ministry of Natural Resources installed a culvert in the road which drained Beaver Pond, leaving a small channel meandering through the existing wetland.

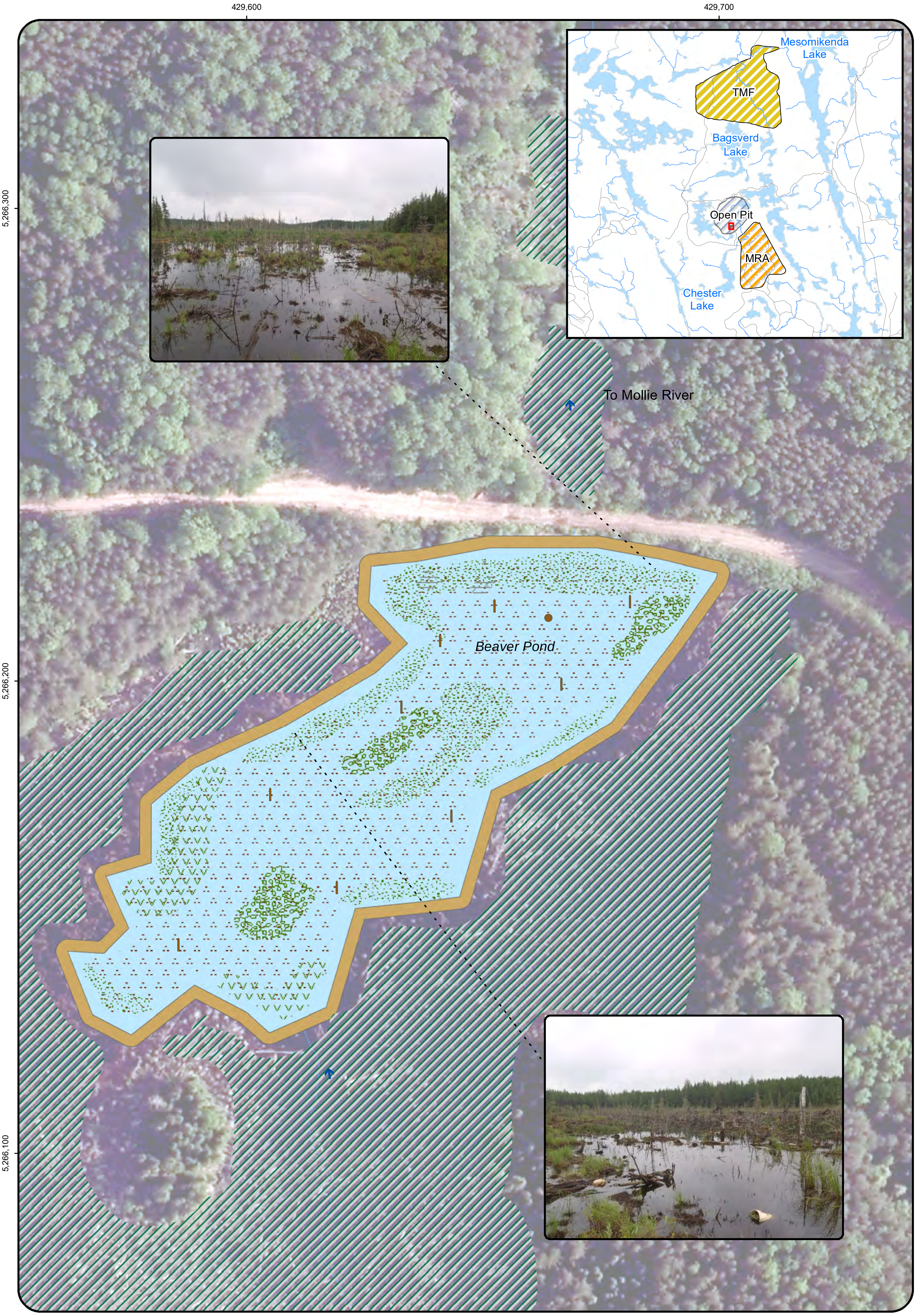
A.5.1 Habitat Description

Since the installation of a culvert at the road crossing at the north end of the pond, water flows through this wetland area via a small defined channel (Figure A.5.3). No pooled water exists within the 3.4 ha wetland area. The wetland area receives intermittent discharge originating from the south, at Unnamed Pond and discharge occurs at the north end through the culvert. Water continues to flow north into a small, defined channel that drains approximately 300 m into the Mollie River just upstream of the Clam Creek confluence (Figures A.5.3 and A.15.1). The water of Beaver Pond was near neutral (pH = 6.51), warm (22.2 °C), stained dark yellow-brown, and had low dissolved oxygen (5.19 mg/L) near the Provincial Water Quality Objective minimum of 5.0 mg/L during July 2012 (Figure A.5.2 and Appendix Table C.4).

Littoral substrate and shoreline areas in the pond did not change after draining (Figures A.5.1 and A.5.3). Substrate consists almost entirely of relatively compact organics that overly till, with gravel occurring along the north shoreline associated with road construction. Dense growth of aquatic macrophytes occurred within Beaver Pond and likely remain within the channel, represented mainly by submergent bladderwort (*Utricularia* sp.) and emergent sedges (*Carex* sp.) and cattail (*Typha* sp.), as well as some burreed (*Sparganium* sp.) and yellow pond lily (*Nuphar variegatum*). The wetland contains abundant standing and fallen deadwood in addition to cattail, sedges and alder (*Alnus* sp.), with willow (*Salix* sp.) and raspberry (*Rubus* sp.) shrubs and jewelweed (*Impatiens capensis*) herbs common along the northern shoreline. Coniferous forest, consisting of black spruce (*Picea mariana*) and jack pine (*Pinus banksiana*), border the wetland.

A.5.2 Fish Community

In 2012 five small-bodied fish species were captured in Beaver Pond (Figure A.5.2, Table A.5.1 and Appendix Table F.4). Very high numbers of fathead minnow (*Pimephales promelas*), finescale dace (*Chrosomus neogaeus*), northern redbelly dace (*Chrosomus eos*) and pearl dace (*Margariscus nachtriebi*) occurred in Beaver Pond, with Iowa darter (*Etheostoma exile*) also



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.5.1: Beaver Pond Habitat Features before a Culvert was Installed (July 2012)

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environmental inc.

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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

River Habitat Topography:
- Deep Pool
- High-Gradient
- Moderate Gradient
- Low-Gradient
- Habitat Not Completed

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Direction of Flow
- Culvert
- Wetland

Figure A.5.2: Beaver Pond Habitat Features after Culvert Installed (September 2013)

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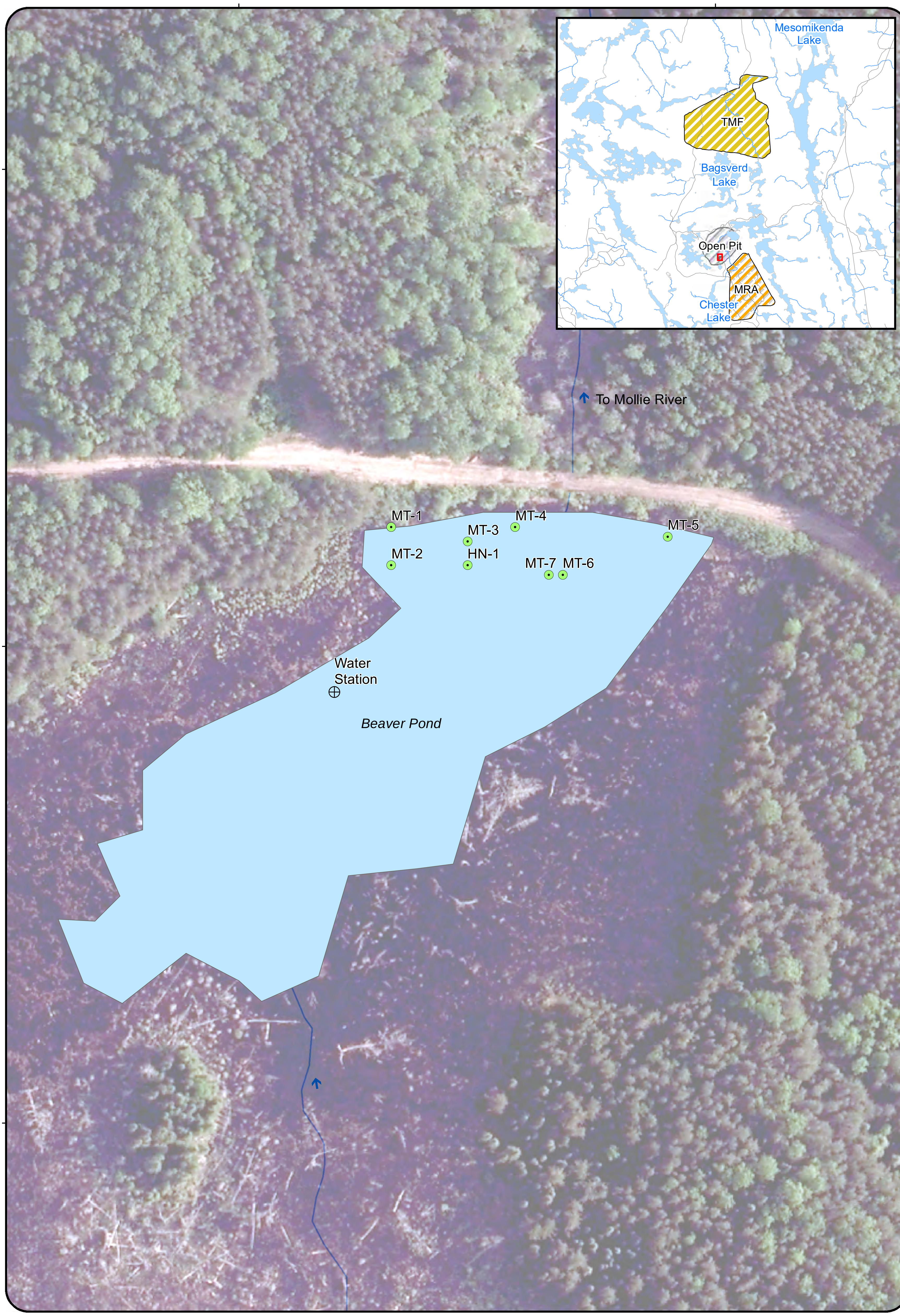
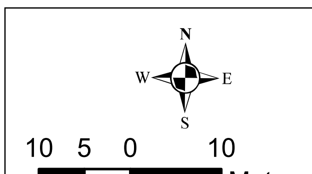
environmental inc.





MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Feature:
- Water Flow Direction

Figure A.5.3: Beaver Pond Sampling Locations (July 2012)

Created by:
minnow environmental inc.

Table A.5.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Beaver Pond, 2012.

a) Minnow Trapping

Species	Total Caught	CPUE (# of fish/trap*d)
fathead minnow	356	42.34
finescale dace	50	5.95
Iowa darter	3	0.36
northern redbelly dace	194	23.07
pearl dace	12	1.43
Total	**615**	**73.14**

b) Small Hoop Netting

Species	Total Caught	CPUE (# of fish/trap*d)
fathead minnow	>10,000	12,576
finescale dace	>10,000	12,576
northern redbelly dace	>10,000	12,576
pearl dace	>10,000	12,576
Total	**>40,000**	**>50,306**

captured in relatively low abundance (Table A.5.1). These fish species are characteristic of cool to warm headwater areas. No COSEWIC (2013) listed endangered, threatened or special concern fish species were observed at Beaver Pond during the July 2012 survey.

A.5.3 Habitat Evaluation

Optimal habitat (spawning, rearing and foraging) for fathead minnow, finescale dace, northern redbelly dace and pearl dace existed within Beaver Pond demonstrated through the abundance of fish captured during the survey in 2012 (Tables A.5.1 and A.1). Presumably these fish would still be found within this area, perhaps in lower densities. Good habitat for spawning, rearing and foraging currently exists within the small channel and pooled water (Figure A.5.3); however limited overwintering habitat would be present.

A.5.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

A.6 CHESTER LAKE

Chester Lake is located within the Mollie River watershed approximately 1 km south of the proposed Côté Gold open pit (Figures A.6.1 and A.6.2). The lake has a surface area of approximately 98 ha with the total estimated volume of 1.36 x 10^6 m^3, a mean depth of 1.88 m based on the annual average water level and a maximum depth of approximately 4 m (Figures A.6.3 and A.6.4). Chester Lake is characterized by long narrow crescent moon shape, with three small first order streams discharging to it and one very small island (Figures A.6.1 and A.6.3). Chester Lake discharges north into the Mollie River (Figure A.6.1). The primary inflow to Chester Lake is via an unnamed Lake which is connected to Chester Lake by a narrow opening located at the west end of the lake (Figure A.6.2). The unnamed Lake is another long narrow lake approximately 48 ha (Figure A.6.2). As there is no obvious break between these lakes the habitat of both lakes is described in this section.

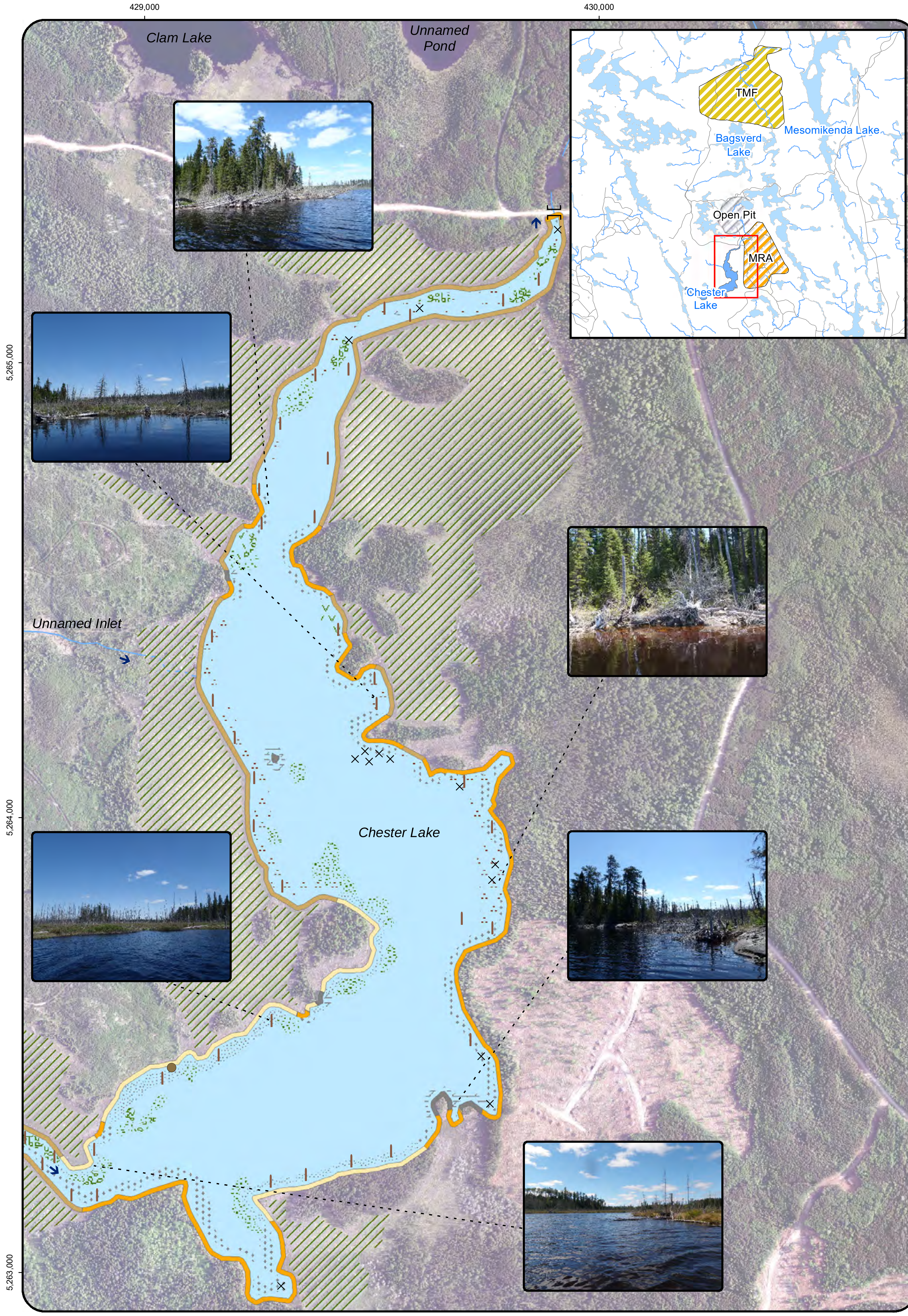
The description of physical habitat within Chester Lake, the unnamed lake upstream, and the unnamed inlet to Chester Lake is based on field surveys completed during the spring and fall of 2013. The fish community of Chester Lake was evaluated in the spring of 2013. With the construction of the open pit a section of the Mollie River will be lost and water will be redirected around the pit. The proposed realignment channel will flow north from Chester Lake following the path of the unnamed inlet (Figures A.6.5 and A.1) to Clam Lake which will affect direction of water flow (unnamed inlet) and increase the water level in Chester Lake and the upstream unnamed lake.

A.6.1 Chester Lake

A.6.1.1 Habitat Description

Chester Lake is a shallow, narrow lake. Thermal stratification was apparent during the June 2013 field survey; however it's not surprising that is was not thermally stratified in the fall due to the shallow water depth (Appendix Table C.5). In June the hypolimnion was only present near the bottom (2.5 m depth; Appendix Table C.5). The water was generally well oxygenated throughout the water column, surface water pH was neutral (7.01 to 7.72) and varied little with depth (Appendix Table C.5). Chester Lake water was coloured with an average Secchi depth reading of 1.55 m indicating light penetrates throughout the entire water column (Appendix Table C.5).

Substrate in the littoral areas generally consists of silt with sand, soft silt with high organic content or sand. In general more organic material exists at the upstream narrow (western) end of the lake and near the discharge at the north end of the lake (Figures A.6.1 and A.6.2). Near



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

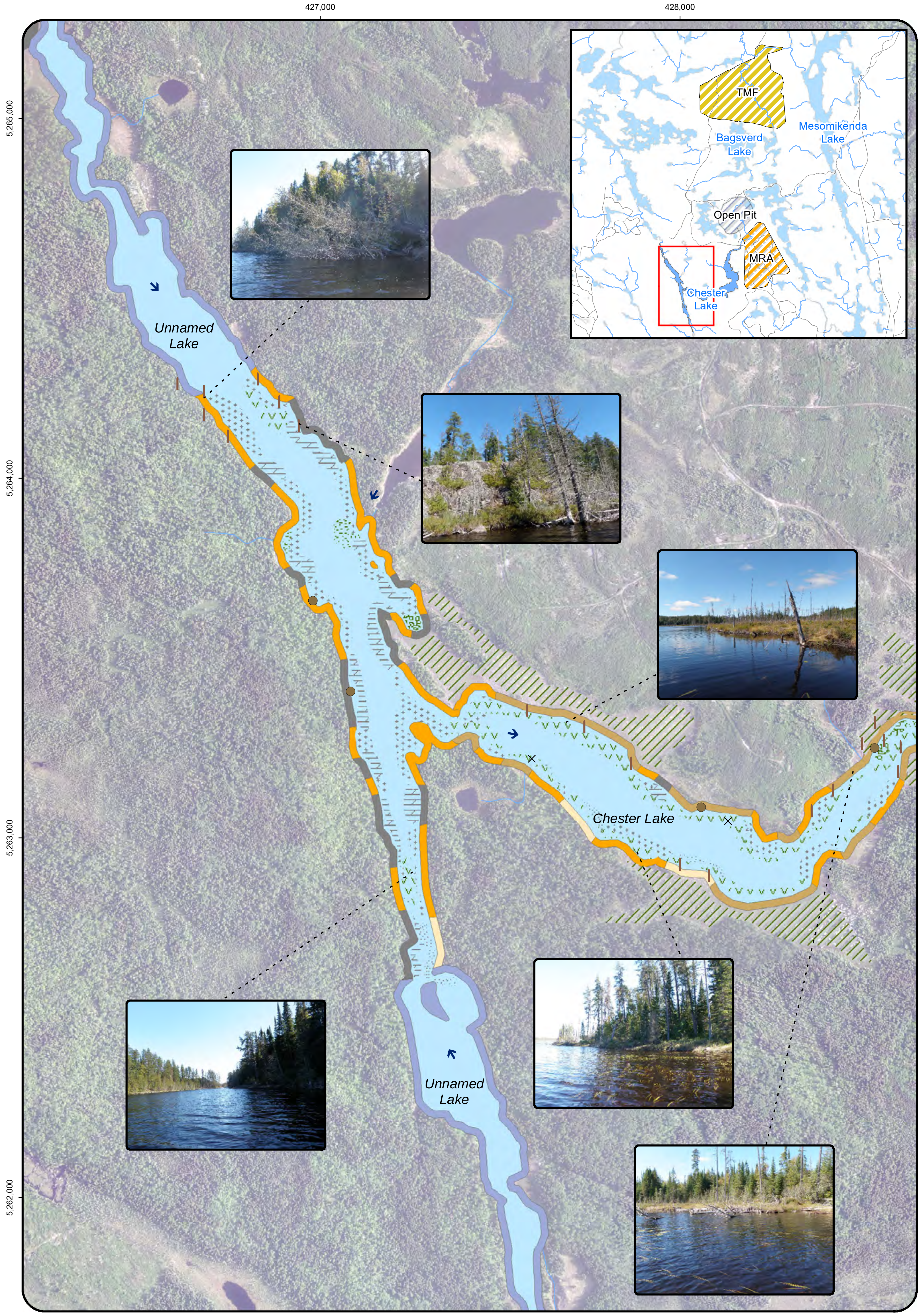
Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Rock
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.6.1: Chester Lake Habitat Features

Created by:
minnow environmental inc.



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock
- Habitat Not Completed

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Rock
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.6.2: Chester Lake and Unnamed Lake Habitat Features

Created by:
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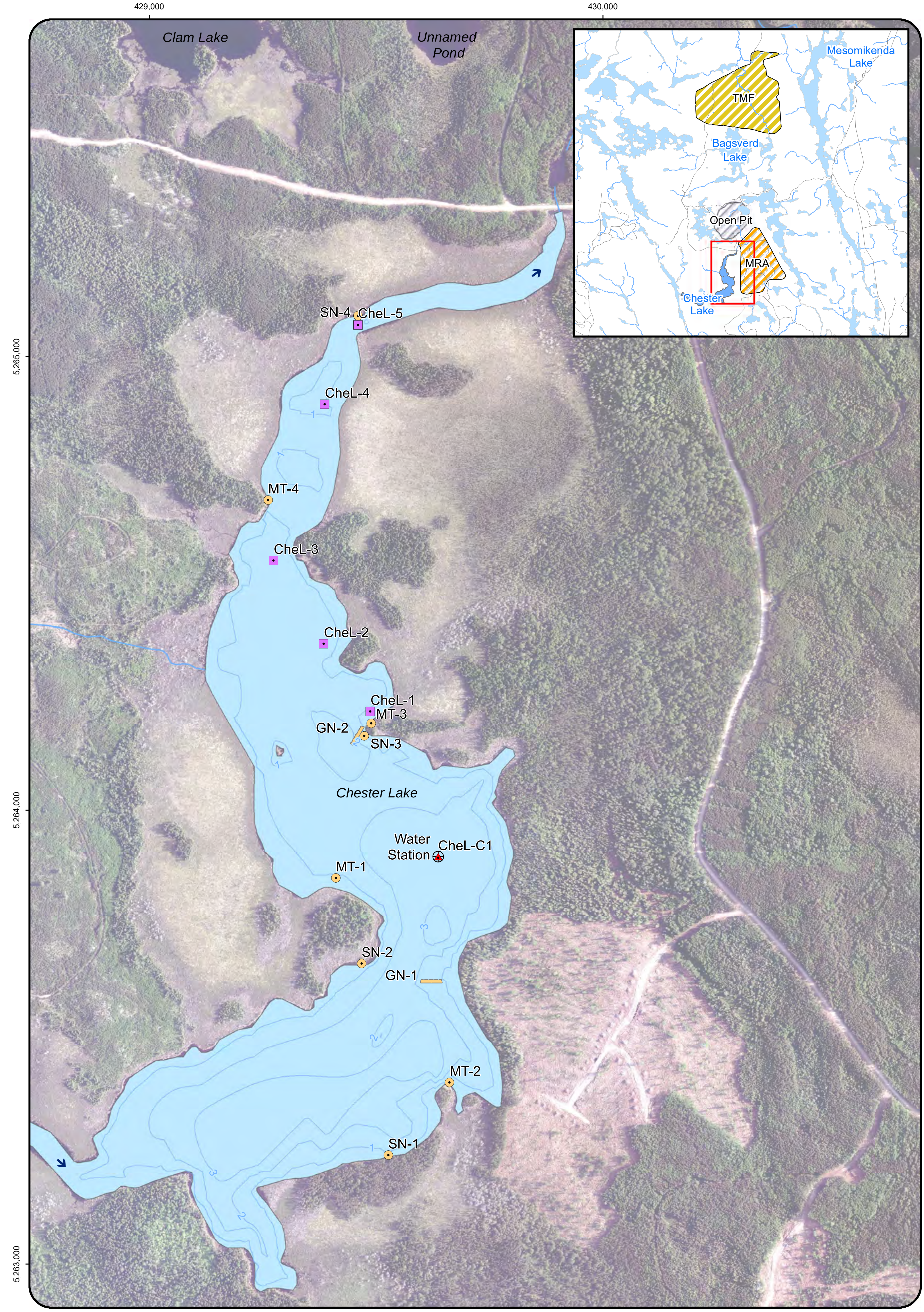

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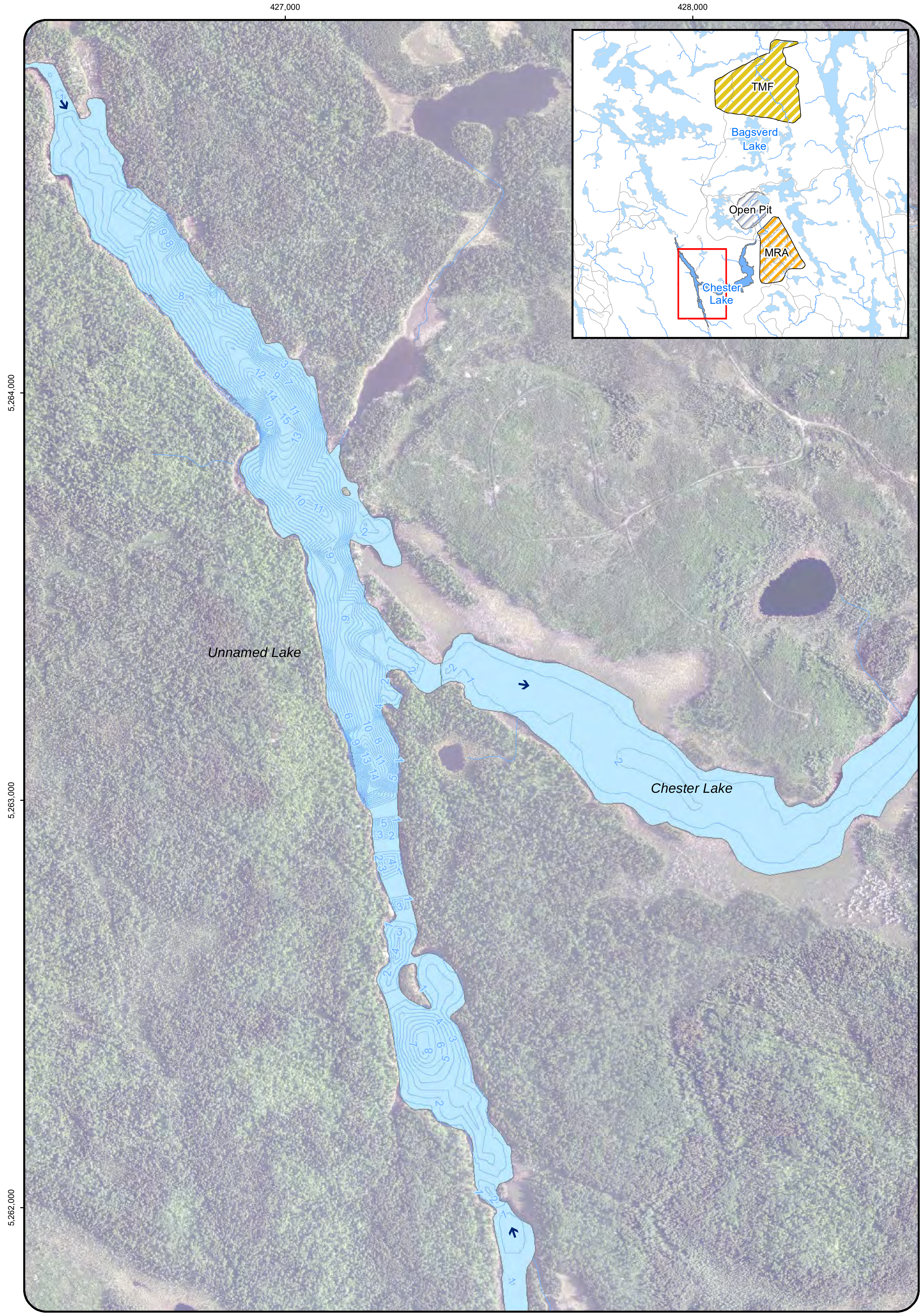
MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Features:
- Bathymetry (1 m intervals)
- Water Flow Direction

Figure A.6.3: Chester Lake Bathymetry and Sampling Locations

Created by:
minnow environmental inc.



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Features:
Bathymetry (1 m intervals)
Water Flow Direction

Figure A.6.4: Chester Lake and Unnamed Lake Bathymetry

Created by:
minnow
environmental inc.

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Meters

MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

River Habitat Topography:

- Deep Pool
- High-Gradient
- Moderate Gradient
- Low-Gradient
- Habitat Not Completed

Habitat Features:

- Beaver Dam
- Logs and Fallen Trees
- Water Flow Direction
- Wetland

Figure A.6.5: Unnamed Inlet to Chester Lake Habitat Features

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minnow environmental inc.

the shoreline, cobble, boulder may extend approximately 1 m off shore before transitioning to silt or sand-silt substrate (Figures A.6.1 and A.6.2). Very little bedrock is found along the shoreline of Chester Lake (Figure A.6.1). An abundance of fallen trees are located along the shoreline around the lake (Figures A.6.1 and A.6.2). Aquatic vegetation is generally found in the areas of the lake which are narrower (especially the north and west end of the lake; Figures A.6.1 and A.6.2). Aquatic vegetation included eel grass (*Vallisneria americana*), yellow pond lily (*Nuphar variegatum*), burreed (*Sparganium* sp.), sparse white water lily (*Nymphaea odorata*), and bladderwort *(Utricularia* sp.). Very little emergent vegetation was observed and was limited to scattered sightings of arrowhead (*Sagittaria* sp.).

The shoreline consists primarily of sand organic mixture, cobble/boulder or sand areas (Figures A.6.1 and A.6.2). Chester Lake is split between two different shoreline types with areas that are treed and areas of wetland. The treed shoreline typically consist of black spruce (*Picea mariana*), jack pine (*Pinus banksiana*) and eastern white cedar (*Thuja occidentalis*), with few white birch (*Betula papyrifera*) and trembling aspen (*Populus tremuloides*; Figures A.6.1 and A.6.2). Leatherleaf (*Chamaedaphne calyculata*) commonly overhangs the shoreline with the cedar trees in addition to other common understory species such as sedges (*Carex* sp.), sweet gale (*Myrica gale*), bog laurel (*Kalmia polifolia*) and speckled alder (*Alnus incana*). The wetlands areas found adjacent to the lake consisted of sedges, sweet gale, bog laurel and scattered speckled alder and an abundance of standing deadwood logs and fallen trees.

Unnamed Lake

Unnamed Lake has a number of small inlet streams and the main inlet is from Attach Lake. Total volume is estimated to be approximately 1.83×10^6 m^3 based on annual average water levels reaches a maximum depth of approximately 16 m (Figures A.6.2 and A.6.4) and has a mean depth of approximately 6 m. The habitat in the portion of the lake that is expected to be affected by changes in water levels associated with the watercourse realignments was surveyed in 2013.

Within the area surveyed, the near shoreline substrate consists of cobble, boulder, and bedrock that extend approximately 1 to 2 m offshore before transitioning to silt and or sand substrate (Figure A.6.2). Aquatic vegetation can typically be found along certain areas of the shoreline and is largely comprised of eel grass, burreed, white water lily, and some scattered pondweed (*Potamogeton* sp.; Figure A.6.2). Emergent vegetation is limited and consists of arrowhead and bulrushes (*Cyperaceous* sp.).

The shoreline consists primarily of cobble/boulder with exposed bedrock (Figure A.6.2). Shoreline areas are generally forested with eastern white cedar often providing nearshore cover in the form of overhanging boughs, recently fallen trees, submerged logs and/or other woody debris. Black spruce and jack pine comprise the dominant forest species, with white birch and lesser amounts of trembling aspen comprising of the overstory. Sedges and shrubs, including leatherleaf, sweet gale, bog laurel and/or bog rosemary (*Andromeda glaucophylla*), are the predominant understory species along the shoreline in wetland areas. An abundance of dead standing trees are also present.

A.6.1.2 Fish Community Composition

Nine species were captured in Chester Lake during the June 2013 field survey (Table A.6.1, Appendix Table F.5). The large-bodied fish community included moderate to high numbers of lake whitefish (*Coregonus clupeaformis*), northern pike (*Esox lucius*), white sucker (*Catostomus commersonii*), and yellow perch (*Perca flavescens*; Table A.6.1). The small-bodied fish community was represented by relatively low abundance of blacknose shiner (*Notropis heterolepis*), golden shiner (*Notemigonus crysoleucas*), trout-perch (*Percopsis omiscomaycus*) and Iowa darter (*Etheostoma exile*; Table A.6.1). No COSEWIC (2013) listed endangered, threatened or special concern fish species were observed in Chester Lake during the June 2013 field survey.

A.6.1.3 Fish Habitat Evaluation

Moderate to good foraging habitat for lake whitefish was found in Chester Lake through the sandy-silt substrate (Table A.1). The shallow depth might suggest that these species move during warmer summer months to the deeper, cooler water in the upstream unnamed lake. Optimal spawning habitat for lake whitefish occurs over hard or stoney bottom but can occur over sand. Thus, spawning could potentially occur off some of the cobble points in either Chester or the unnamed lake or over the sand found in Chester Lake (Table A.1, Figures A.6.1 and A.6.2). Good to excellent spawning and rearing habitat for northern pike was found in Chester Lake especially around the wetland areas and in the narrow northern and western sections where more macrophytes were found (Table A.1, Figures A.6.1 and A.6.2). The vegetation and woody debris found along the shoreline of Chester Lake combined with the open areas of sand substrate provide excellent spawning, rearing and foraging habitat for yellow perch (Table A.1, Figures A.6.1 and A.6.2), which likely contributed to the higher catch-per-unit-effort for this species for both seining and gill netting (Table A.6.1). White sucker spawning within Chester or the unnamed lake is limited to the lake margins; however, spawning habitat may exist further upstream of the unnamed lake or at any of the inlets around the lake (Table A.1 and Figures A.6.1 and A.6.2). Good to excellent rearing and foraging for juvenile and adult

Table A.6.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Chester Lake, 2013.

a) Gill Netting

Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
golden shiner	1	0.07
lake whitefish	17	1.18
northern pike	12	0.83
spottail shiner	1	0.07
trout-perch	1	0.07
white sucker	12	0.83
yellow perch	27	1.88
Total	**71**	**4.94**

b) Minnow Trapping

Species	Total Caught	CPUE (# of fish/trap*d)
yellow perch	6	0.39

c) Seining

Species	Total Caught	CPUE (# of fish/m^2)
blacknose shiner (adult)[a]	9	0.06
blacknose shiner (juvenile)[a]	8	0.05
Iowa darter	24	0.15
yellow perch	121	0.74
Total	**162**	**0.99**

[a] Fish were classified as adults unless otherwise specified in the field to be juveniles.

white sucker can be found through the aquatic vegetation, shoreline woody debris and the large areas of shallow sand-silt bottom within Chester Lake (Table A.1 and Figures A.6.1 and A.6.2).

The mixture of habitat around Chester and the unnamed Lake provide excellent spawning and rearing/foraging habitat for spottail (*Notropis hudsonius*) and blacknose shiner. Good habitat was also provided for golden shiner spawning and rearing/foraging in areas where macrophytes were more abundant (Figures A.6.1 and A.6.2). The overhanging vegetation, woody debris and vegetation would provide excellent habitat for spawning Iowa darter as well as excellent rearing and foraging habitat through the shallow littoral areas with sand-silt bottom (Table A.1). Moderate trout-perch spawning habitat was found along the rocky shoreline around the lake with moderate foraging and rearing habitat (Table A.1 and Figures A.6.1 and A.6.2).

A.6.2 Unnamed Inlet to Chester Lake

A.6.2.1 Habitat Description

The habitat of the first 400 m of this inlet stream was surveyed in the fall of 2013 although Ontario Ministry of Natural Resources basemap data (2004) indicates that the stream extends approximately 900 to 1,000 m upstream of Chester Lake (Figure A.6.5). The first 250 m of this stream meanders through a wetland area with many dead standing and fallen trees. The mean wetted channel width was approximately 1.2 m, and water depth was 16 cm with visible flow. The substrates were completely composed of fines and organics and the banks were predominantly lined with a sedge grass mixture (Figure A.6.5). Instream vegetation was largely eel grass often growing the entire width of the channel. A small old beaver dam was located approximately 250 m upstream of Chester Lake, after which the channel was not as well defined with standing pools and multiple channels. Further upstream the flow was again visible, channel width was 1.2 m (wetted) and depth mean depth was approximately 50 cm. The channel within this section of the reach was largely overgrown with sedges, grasses (*Poaceae* sp.), and speckled alders. Substrates were composed of 100% fines with organics and filamentous algae were observed within the channel. Larger overstory trees such as larch and black spruce were present.

A.2.2.2 Fish Habitat Evaluation

Limited large-bodied fish habitat exists within this unnamed inlet due to the lack of water depth, especially upstream of the first beaver dam where multiple channels exist and flow was not always visible. White sucker juveniles may use the stream habitat for rearing as the first 250 m of the stream offers excellent habitat for this with an abundance of cover and instream vegetation and soft sediments (Table A.1 and Figure A.6.5). Marginal to good juvenile rearing is offered within this section for northern pike through the abundance of cover and instream vegetation (Table A.1). With distance from Chester Lake habitat for large-bodied fish decreases substantially due to the lack of depth, flow and overwintering habitat (Table A.1 and Figure A.6.5).

Marginal habitat does exist for small-bodied species, especially within the first 250 m of Chester Lake. Species that could use this habitat include brook stickleback (*Culaea inconstans*), Iowa darter and dace species (*Chrosomus* sp.; Table A.1). No overwintering habitat was found within the reach, therefore any fish residing within the inlet stream would have to migrate downstream to overwinter in Chester Lake (Figure A.6.5).

A.6.3 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

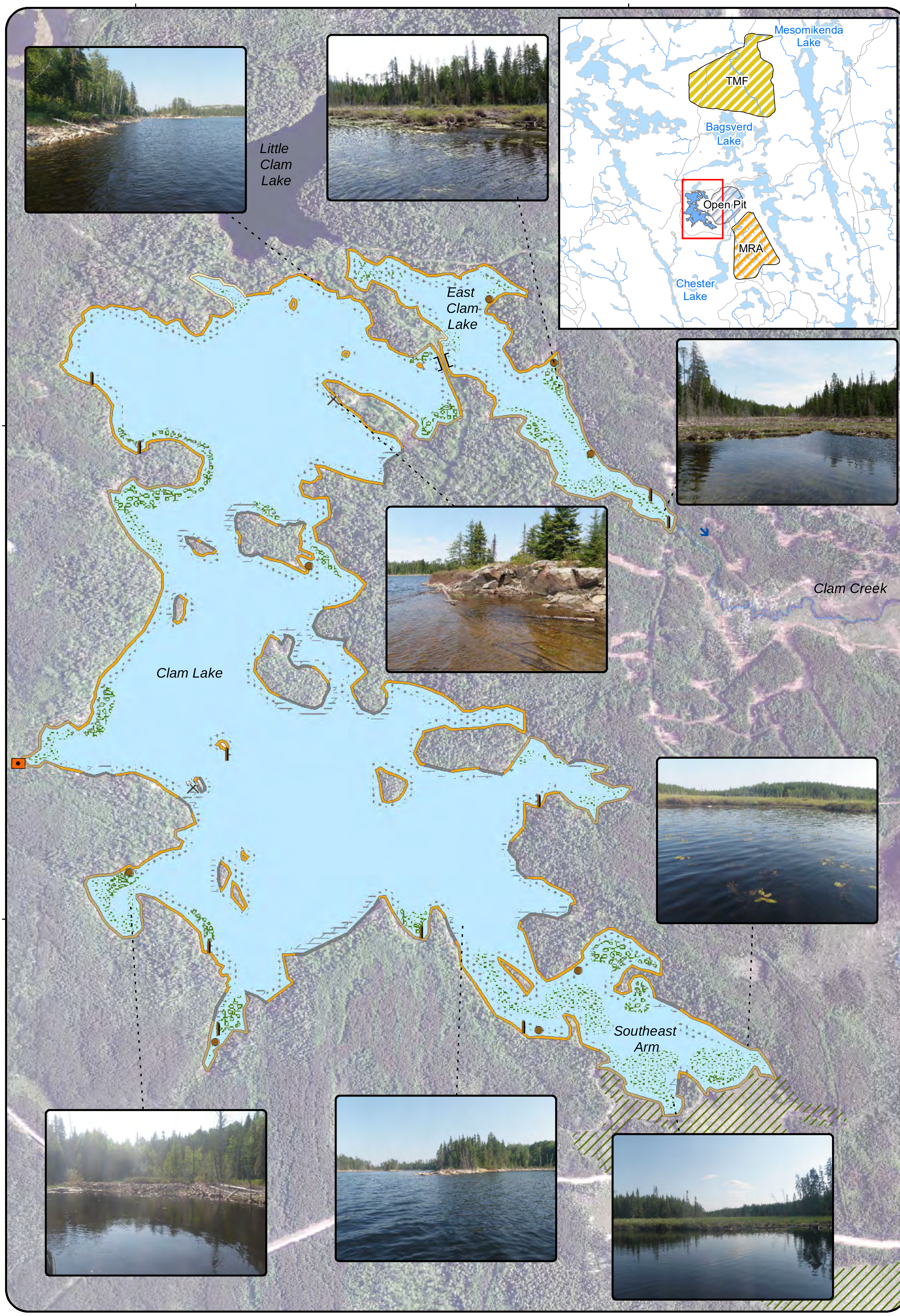
A.7 CLAM LAKE

Clam Lake is a headwater lake located within the Mollie River watershed with eastern portions of the lake situated on the border of the proposed Côté Gold open pit (Figures A.7.1 and A.1). The lake has a surface area of approximately 80.5 ha, a total estimated volume of 3.83 x 10^6 m^3 with an average depth of 4.8 m based on the annual average water level (Figure A.7.2). Clam Lake is fed by intermittently from an unnamed stream that discharges from Unnamed Pond into the Southeast Arm of Clam Lake (Figure A.1). This intermittent stream has surface discharge to Clam Lake only during spring freshet and/or during extreme rainfall events (see Appendix A.22). Clam Lake discharges from East Clam Lake (northeast arm of Clam Lake) east into the Mollie River via Clam Creek (see Appendix A.15 for details on Clam Creek). Minimal flow was observed at the outlet of East Clam Lake during the July 2012 field survey, suggesting an intermittent discharge. Absence of discharge from East Clam Lake during late summer was also reported by AMEC (2011).

The physical habitat and fish community characterization in Clam Lake was largely collected during the July 2012 study whereas the sediment quality and benthic invertebrate community was characterized during the June and September surveys in 2013. Clam Lake will be influenced by the watercourse realignments to accommodate the open pit. Specifically, five dams will be constructed along the eastern perimeter of the lake, removing sections of the lake. In addition, the water from Clam Lake will flow from Clam Lake north to Little Clam Lake and west to West Beaver Pond (Figure A.1). Water from West Beaver Pond will then flow to the South Arm of Bagsverd Lake, south to Bagsverd Pond, east to Weeduck Lake and south into Three Duck Lakes within the Mollie River watershed (Figure A.1). During operations water will flow around the pit through the South Arm of Bagsverd Lake but following closure and filling of the open pit, water from Clam will be reconnected to the open pit and flow through to Upper Three Duck Lake.

A.7.1 Habitat Description

Clam Lake has three basins that each reach a depth of greater than 10 m, with numerous islands, rocky shoals and shallow bays (Figures A.7.1 and A.7.2). The Northeast Arm is connected to the main body of the lake by two large culverts installed during the historical construction of a gravel berm that allowed access to a mine shaft located on the eastern shoreline of Clam Lake (Figure A.7.1). Historical mining activities have resulted in some alteration of littoral and shoreline features of Clam Lake. Two old mine shafts, one on the east shore and another, completely submerged near the west shore, are associated with small waste



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Drilling Platform
- Mine Shaft
- Water Flow Direction
- Culvert
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.7.1: Clam Lake Habitat Features

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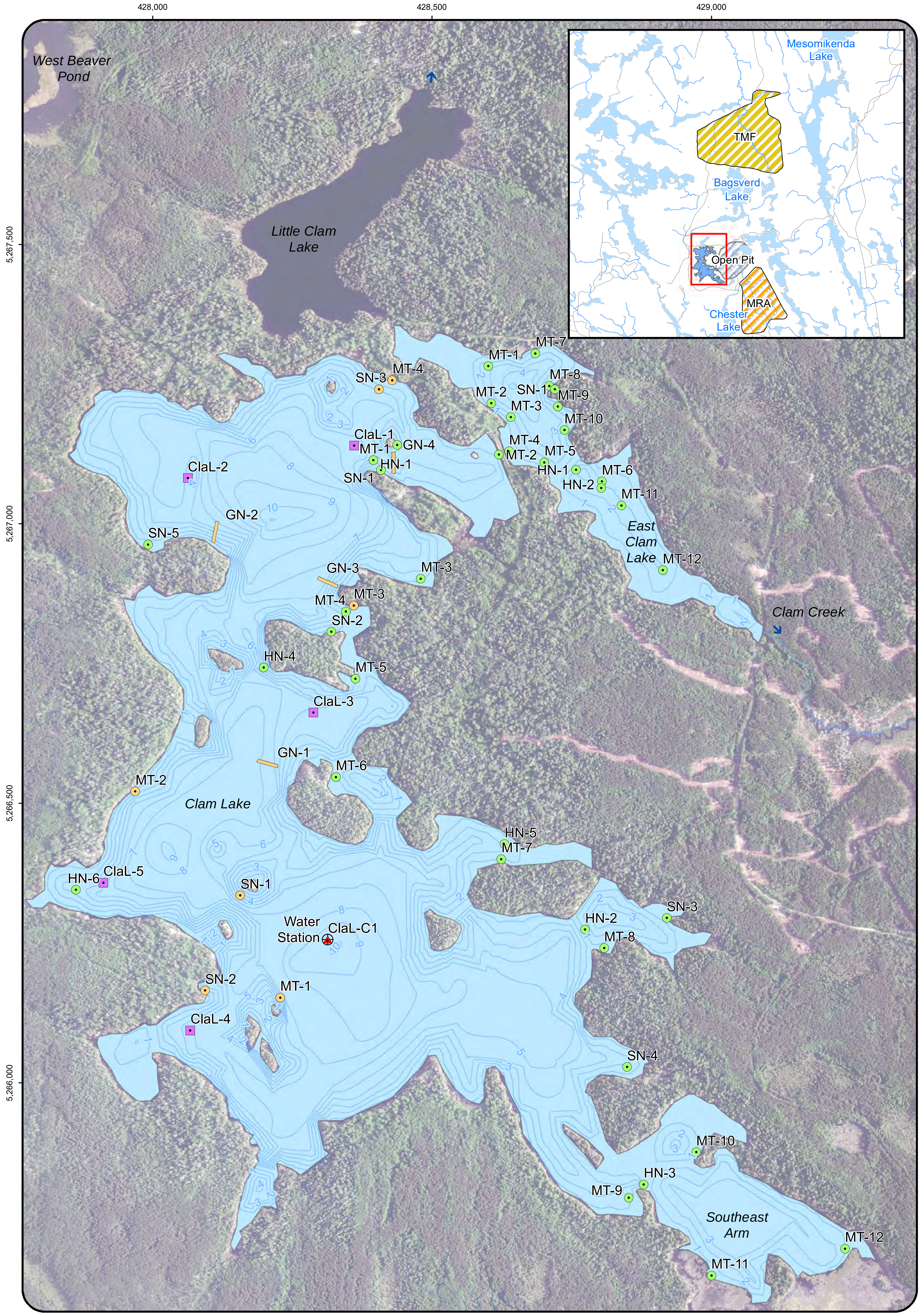

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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Features:
- Bathymetry (1 m intervals)
- Water Flow Direction

Figure A.7.2: Clam Lake Bathymetry and Sampling Locations

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environmental inc.

rock piles that occur directly on the shoreline of Clam Lake (Figure A.7.1). In addition, a more recent drilling platform was observed on the west shoreline of Clam Lake (Figure A.7.1).

Thermal stratification was apparent in Clam Lake during all the field surveys, with the hypolimnion developing anywhere between 3 and 7 m depending on the time of the year (Appendix Table C.6) and hypoxia (i.e., dissolved oxygen ≤ 2 mg/L) occurring at depths as shallow as 6 m (Figure A.7.2 and Appendix Table C.6). Surface water pH was generally neutral, but became slightly acidic with depth (Appendix Table C.6). Slight changes in pH and specific conductance with depth in Clam Lake were likely associated with lower dissolved oxygen concentrations causing reducing conditions at greater depth. Similar changes in *in-situ* water quality measurements were observed with depth at Clam Lake in late summer by AMEC (2011). Clam Lake water was slightly yellow-brown, with relatively high clarity (mean Secchi depth = 3.38 m; Appendix Table C.6).

The substrate in deep littoral areas (i.e., ≥ 2 m) of Clam Lake consists of silt with moderate to high organic content. Shallow littoral substrate is more variable, and generally comprised of gravel, cobble and bedrock transitioning to silt at depths of approximately 1 m and deeper (Figure A.7.1). Macrophytes are relatively sparse in Clam Lake. Aquatic vegetation was generally limited to individual yellow pond lily (*Nuphar variegatum*) plants, except at the southeast arm and a small embayment on the west shoreline, where submergent beds of burreed (*Sparganium* sp.), large-leaved pondweed (*Potamogeton amplifolius*) and/or bladderwort (*Utricularia* sp.) occurred. East Clam Lake also had emergent cattail (*Typha* sp.) together with yellow pond lilies, and the submergent plants listed above (Figure A.7.1).

The shoreline of Clam Lake is dominated by cobble and/or boulder embedded in silty-sand (Figure A.7.1). Historical mine waste rock piles were also found along the shoreline near the old mine shafts. Granitic bedrock is commonly found along island and lake perimeters, with silt or sand shorelines generally found in areas with limited fetch (Figure A.7.1). Clam Lake is generally treed to the shoreline, with black spruce (Picea *mariana*) and jack pine (*Pinus banksiana*) the dominant species, but white birch (Betula papyrifera) and lower numbers of trembling aspen (*Populus tremuloides*), eastern white cedar (*Thuja occidentalis*) and/or red pine (*Pinus resinosa*) were also present. With the exception of the Southeast Arm and East Clam Lake, no wetlands were found adjacent to Clam Lake (Figure A.7.1). The Southeast Arm and East Clam Lake each had a substantial marsh/bog wetland area bordering the shoreline that contain cattail, sedges (*Carex* sp.) and shrubs such as leatherleaf (*Chamaedaphne calyculata*), sweet gale (*Myrica gale*), alder (*Alnus incana*) and/or bog laurel (*Kalmia polifolia*).

A.7.2 Fish Community Composition

The Clam Lake fish community included a total of nine species (Table A.7.1 and Appendix Table F.6). The large-bodied fish community was dominated by smallmouth bass (*Micropterus dolomieu*), with moderate abundance of northern pike (*Esox lucius*) and low abundance of white sucker (*Catostomus commersonii*) and burbot (*Lota lota*). Yellow perch (*Perca flavescens*) were also very common, but almost all of the individuals captured were young-of-the-year (YOY). Blacknose shiner (*Notropis heterolepis*) were the most abundant small-bodied fish species encountered, with moderate relative abundance of golden shiner (*Notemigonus crysoleucas*) and low relative abundance of spottail shiner (*Notropis hudsonius*), Iowa darter (*Etheostoma exile*) and johnny darter (*Etheostoma nigrum*; Table A.7.1). No endangered, threatened or special concern fish species (COSEWIC 2013) were captured at Clam Lake in 2013, 2012 or during the previous 2010 survey by AMEC (2011).

A.7.3 Fish Habitat Evaluation

Clam Lake contains excellent habitat for all life stages of smallmouth bass (Table A.1). Specifically, an abundance of sandy-silt, gravel or rocky substrate throughout the littoral areas provides excellent spawning habitat, whereas the complex morphology of the lake, including rocky shoreline and shoal areas, and combination of shallow bays and deep water that provides refuge from warm summer water temperatures, provide excellent juvenile rearing and adult foraging habitat. Excellent spawning habitat for northern pike is present through the wetland areas adjacent to the Southeast Arm and East Clam Lake (Figure A.7.1 and Table A.1). Dense aquatic vegetation in the Southeast Arm and East Clam Lake provide good juvenile rearing habitat for northern pike, whereas the combination of deeper water habitat and lack of macrophyte beds in the main basin suggests relatively marginal foraging/cover habitat for large adult northern pike (Table A.1 and Figure A.7.1). Near-shore aquatic vegetation in the Southeast Arm and East Clam Lake also provide good yellow perch spawning and rearing habitat, with good adult yellow perch foraging habitat available in the vegetated areas and the open water (Table A.1 and Figure A.7.1). Inlet and outlet creeks of Clam Lake do not provide small cobble or gravel riffle suitable for white sucker spawning, and therefore, the cobble and gravel shorelines or shoals of Clam Lake may provide this species with marginal spawning habitat (Table A.1). However, the occurrence of sand-gravel in shallow littoral areas and mixed substrates in shallow/deep littoral areas likely provides marginal to good rearing habitat and good foraging habitat for juvenile and adult white sucker, respectively (Table A.1 and Figure A.7.1). Good burbot spawning habitat was observed in gravel-rocky shoals for this species. The mixture of rocky shoreline and littoral areas as well as deep areas that offer cooler summer

Table A.7.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Clam Lake, 2012 and 2013.

a) Gill Netting

Area / Year	Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
Clam Lake 2013	northern pike	8	0.24
	smallmouth bass	2	0.06
	Total	**10**	**0.30**

b) Minnow Trapping

Area / Year	Species	Total Caught	CPUE (# of fish/trap*d)
Clam Lake 2012	smallmouth bass	4	0.27
	yellow perch	61	4.12
	Total	**65**	**4.39**
East Clam Lake 2012	Iowa darter	1	0.08
	yellow perch	4	0.34
	Total	**5**	**0.42**
Clam Lake 2013	smallmouth bass	15	1.14
	yellow perch	15	1.14
	Total	**30**	**2.28**

c) Seining

Area / Year	Species	Total Caught	CPUE (# of fish/m^2)
Clam Lake 2012	blacknose shiner	22	0.02
	Iowa darter	22	0.02
	smallmouth bass	53	0.05
	yellow perch	571	0.57
	Total	**668**	**0.66**
East Clam Lake 2012	blacknose shiner	258	1.11
	golden shiner	7	0.03
	Iowa darter	5	0.02
	Johnny darter	4	0.02
	yellow perch	21	0.09
	Total	**295**	**1.27**
Clam lake 2013	Iowa darter	4	0.03
	northern pike (adult)[a]	1	0.01
	northern pike (YOY)[a]	3	0.02
	spottail shiner	39	0.29
	yellow perch	2	0.01
	Total	**49**	**0.36**

[a] Fish were classified as adults unless otherwise specified in the field to be young-of-the-year (YOY).

d) Hoop Netting

Area / Net Size / Year	Species	Total Caught	CPUE (# of fish/trap*d)
Clam Lake (small hoop net) 2012	northern pike	3	1.77
	smallmouth bass	19	11.24
	spottail shiner	3	1.77
	white sucker	2	1.18
	yellow perch	1	0.59
	Total	**28**	**16.56**
Clam Lake (medium hoop net) 2012	burbot	1	0.30
	northern pike	1	0.30
	smallmouth bass	74	22.04
	white sucker	1	0.30
	yellow perch	2	0.60
	Total	**79**	**23.53**
East Clam Lake (small hoop net) 2012	blacknose shiner	16	10.97
	golden shiner	33	22.63
	northern pike	4	2.74
	yellow perch	3	2.06
	Total	**56**	**38.40**

water temperatures also provides good juvenile rearing and adult foraging habitat for burbot (Table A.1 and Figure A.7.1).

Clam Lake appeared to have good spawning and rearing/foraging habitat for golden shiner, particularly in the Northeast Arm and East Clam Lake where weedy habitat was present (Table A.1 and Figure A.7.1). Sandy-rocky areas provide some good spawning substrate for both blacknose and spottail shiners, whereas good rearing/foraging habitat is provided by weedy areas and cooler water habitat (Table A.1). Good spawning habitat is available for Iowa darter and johnny darter through floating vegetation mats and rocky substrate, respectively (Table A.1). The loose organic substrate coupled with abundant rooted aquatic vegetation in the shallow littoral areas of the Southeast Arm and East Clam Lake provide good rearing/foraging habitat for Iowa darter. Whereas, the abundant sand/gravel habitat present provides excellent rearing and foraging for Johnny darter (Table A.1).

A.7.4 References

AMEC (AMEC Americas Limited. Earth & Environmental Division). 2011. Phase II Baseline Aquatics Report Chester Project. Chester Township, District of Sudbury, Ontario. Prepared for Trelawney Mining and Exploration Inc., July 2011.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

A.8 CÔTÉ LAKE

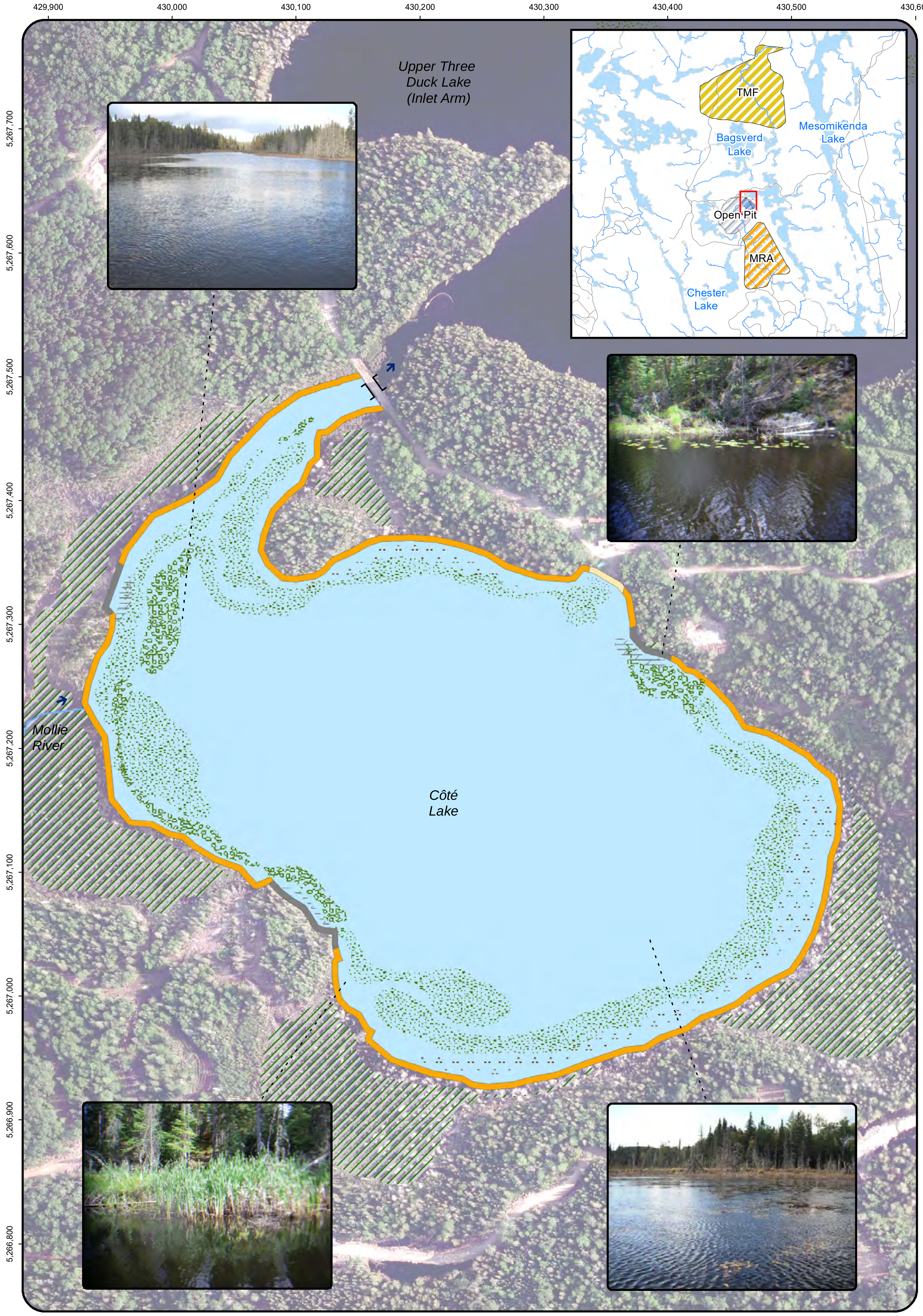
Côté Lake is located within the Mollie River watershed along the northern border of the proposed Côté Gold open pit (Figure A.8.1). This lake will be completely lost with the construction of the open pit. The lake which has a surface area of 19.4 ha, and a volume of 463,000 m^3, has a single, central basin with a maximum depth of approximately 4.3 m and contains no notable structural features (Figures A.8.1 and A.8.2). The habitat description provided below is based on the field survey conducted in July 2012. In addition to documenting fish habitat, fish community data was collected and a population study for northern pike (*Esox lucius*) and white sucker (*Catostomus commersonii*) was conducted within Côté Lake.

A.8.1 Habitat Description

Côté Lake is one of several lakes that occur as a chain along the Mollie River, with the river inlet located at the west end of the lake and the outflow located approximately 125 m away at the northwest end of the lake where it discharges into the Inlet Arm of Upper Three Duck Lake (Figure A.8.1). Flow from the Mollie River represents the main input to Côté Lake, with no other perennial watercourses discharging into the lake. Although no thermal stratification was apparent in Côté Lake, dissolved oxygen concentrations near 0 mg/L were observed at a depth of 3 m during the July 2012 field survey (Appendix Table C.7), which was consistent with observations in August 2010 by AMEC (2011). The water of Côté Lake was neutral to slightly acidic (pH = 7.05 at surface to 6.43 at depth; Appendix Table C.7), yellow-brown in colour, and has moderate clarity allowing light to penetrate to the bottom of the lake (Secchi depth = 2.2 m; Appendix Table C.7).

Substrate appeared to consist almost exclusively of silt- and clay-sized fines with high organic content. Moderately dense submergent macrophyte growth was found at depths less than one metre throughout the entire lake, with the macrophyte community generally progressing from large-leaved pondweed (*Potamogeton amplifolius*) and bladderwort (*Utricularia* sp.) to mermaid's hair (*Scirpus subterminalis*) and/or burreed (*Sparganium* sp.) from deeper to shallow water (Figure A.8.1). Sparse growth of floating macrophytes was present largely represented by yellow pond lily (*Nuphar variegatum*, Figure A.8.1).

The shoreline of Côté Lake consists almost entirely of organic muck, with limited amounts of bedrock (Figure A.8.1). Wetlands, with sedges (*Carex* sp.) and sparse to patchy growth of cattail (*Typha latifolia*), together with shrubs such as sweet gale (*Myrica gale*), speckled alder (*Alnus incana*) and, to a lesser extent, leatherleaf (*Chamaedaphne calyculata*) and meadowsweet (*Spiraea* sp.), were found bordering the water line. These plants often occur as



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Water Flow Direction
- Culvert
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.8.1: Côté Lake Habitat Features

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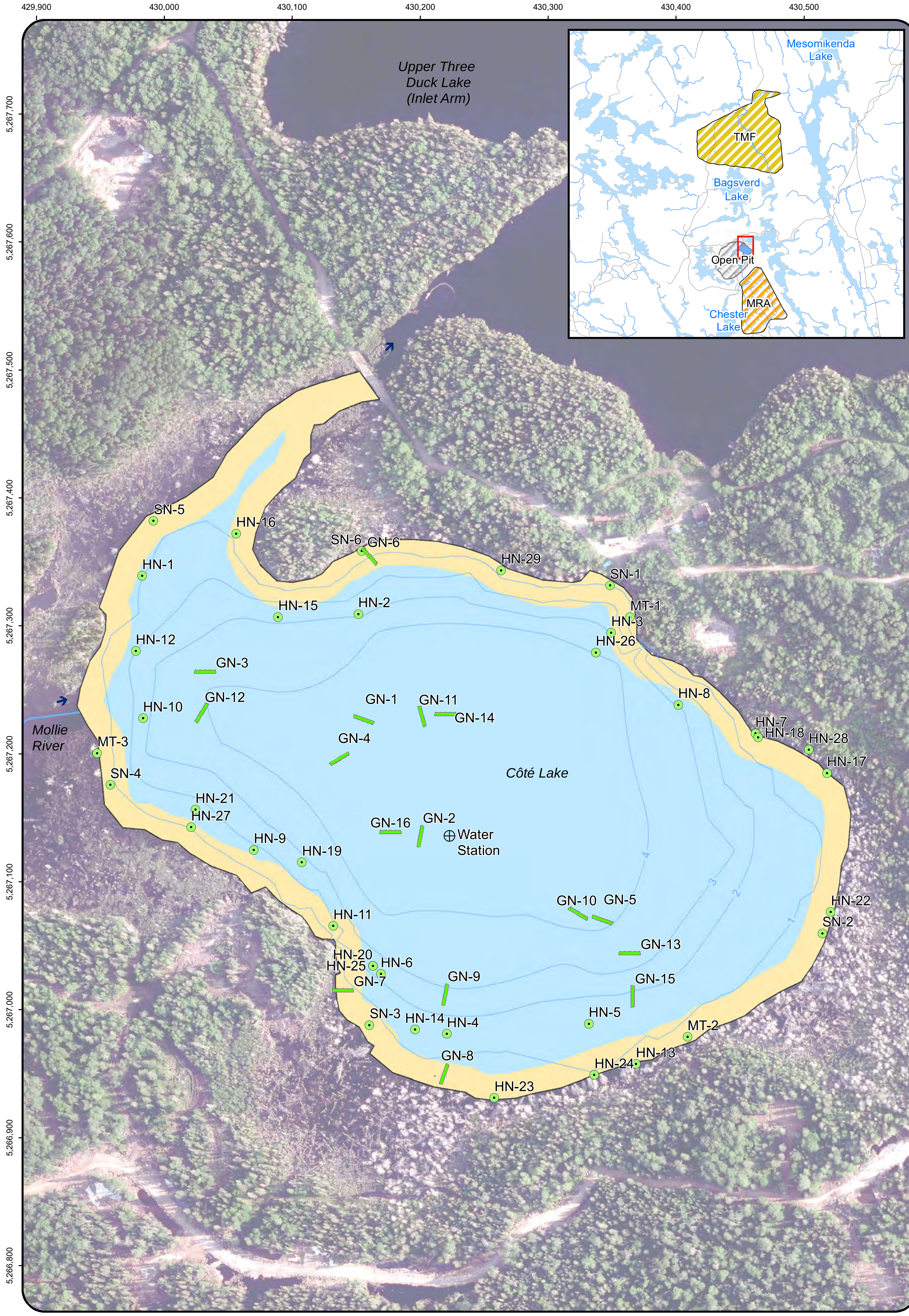

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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station
- Boat Electrofished Zone

Other Features:
- Bathymetry (1 m intervals)
- Water Flow Direction

Figure A.8.2: Côté Lake Bathymetry and Sampling Locations

Created by:
minnow environmental inc.

floating vegetation mats, particularly near the Mollie River inlet and eastern lake shoreline. Standing deadwood was found around much of the shoreline, but particularly along the eastern and northern shorelines (Figure A.8.1). The occurrence of standing deadwood in Côté Lake likely reflects historical road construction/beaver activity near the lake outlet which resulted in raised water levels. Mixed forest, dominated by black spruce (*Picea mariana*) and trembling aspen (*Populus tremuloides*), with some jack pine (*Pinus banksiana*) and white birch (*Betula papyrifera*) in well-drained areas surrounds the lake.

A.8.2 Fish Community and Population

Community Composition

The Côté Lake fish community includes a total of eight fish species (Table A.8.1; Appendix Table F.7). The large-bodied fish community was dominated by yellow perch (*Perca flavescens*) and northern pike, with moderate abundance of white sucker and lake whitefish (*Coregonus clupeaformis*) and low numbers of burbot (*Lota lota*; Table A.8.1 and Appendix Table F.7). The small-bodied fish community included moderate numbers of golden shiner (*Notemigonus crysoleucas*) and blacknose shiner (*Notropis heterolepis*). Fish community data from 2010 indicated that walleye (*Sander vitreus*) can also be present in Côté Lake (AMEC 2011). With the exception of the absence of walleye, the Côté Lake fish community was similar between 2012 and 2010 (Table A.8.1). Interestingly, despite preferring cool water habitat typical of larger and/or deeper lakes that thermally stratify (i.e., from 8 °C to 14 °C; McPhail 2007), lake whitefish were observed in Côté Lake in both 2012 and 2010 (Table A.8.1). No endangered, threatened or special concern fish species (COSEWIC 2013) were observed at Côté Lake in 2012 or during the previous survey by AMEC (2011).

Species Population Characteristics

The northern pike population in Côté Lake was estimated to be 442 individuals with an average density of 22.3 northern pike per hectare (Table A.8.2). Cargill Lake, a 20.9 ha northern Ontario lake sampled using similar collection gear and mark-recapture methods, exhibited a similar estimated population density (27.6 northern pike/ha; Table A.8.2). Northern pike population density estimates for Minnesota lakes of comparable surface areas and at a similar latitude to Côté Lake averaged 23.9 northern pike/ha (range from 7.5 – 46.9; Table A.8.2; Pierce 1997, Pierce and Tomcko 2003). Therefore, the northern pike population density at Côté Lake in July 2012 was within a range considered typical for lakes of comparable size and geographic latitude.

Table A.8.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Côté Lake, 2012.

a) Gill Netting

Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
lake whitefish	11	5.78
northern pike	19	9.98
white sucker	20	10.50
yellow perch	34	17.86
Total	**84**	**44.11**

b) Minnow Trapping

Species	Total Caught	CPUE (# of fish/trap*d)
yellow perch	7	0.11

c) Seining

Species	Total Caught	CPUE (# of fish/m^2)
blacknose shiner	14	0.04
golden shiner	96	0.26
northern pike	13	0.03
yellow perch	944	2.54
Total	**1,067**	**2.87**

d) Large Hoop Netting

Species	Total Caught	CPUE (# of fish/trap*d)
burbot	1	0.04
northern pike	57	2.10
white sucker	42	1.55
yellow perch	77	2.83
Total	**177**	**6.52**

e) Boat Electrofishing

Species	Total Caught	CPUE (# of fish/hr)
blacknose shiner	1	0.07
golden shiner	1	0.07
northern pike	80	5.72
white sucker	11	0.79
yellow perch	333	23.81
Total	**426**	**30.45**

Table A.8.2: Population estimates for northern pike and white sucker at Côté Lake compared to other North American lakes of similar surface area and/or latitude.

Species	Lake	Surface Area (ha)	Mean Depth (m)	Maximum Depth (m)	Population Size [a]	Fish Density (No. / ha)	Source
Northern Pike	Côté Lake	19.4	n/a	4.3	442 [294 - 689]	22.3	Minnow 2013 (2012 survey)
	Forest Lake	15.3	n/a	9.0	151	9.4	Pierce and Tomcko 2003
	Camerton Lake	28.3	n/a	3.0	1,672	59.0	
	Sand Lake	47.8	n/a	11.0	1,534	32.1	
	Snaptail Lake	59.1	n/a	21.0	1,148	19.9	
	Cargill Lake	20.8	3.0	12.0	575 [b]	27.5	Connors et al. 2011
White Sucker	Côté Lake	19.4	n/a	4.3	906 [271 - 5,101]	46.7	Minnow 2013 (2012 survey)
	Red Chalk	38.0	14.2	56.9	4,206 [3,302 - 5,360]	73.9	Trippel and Harvey 1987
	Dickie Lake	12.0	5.0	92.3	7,670 [6,202 - 9,483]	82.3	
	Pocasset Lake (2002)	244.8	4.8	6.0	4,310 [3,061 - 5,590]	18	Mower et al. 2011
	Pocasset Lake (2003)				17,140 [6,561 - 27,718]	71	
	Pocasset Lake (2004)				2,838 [2,396 - 3,281]	11	
	Cargill Lake	20.8	3.0	12.0	132 [b]	6.3	Connors et al. 2011

[a] - Population estimate [lower 95% confidence limit, upper 95% confidence limit]

[b] - Actual population was determined as part of fish removal program

The Côté Lake white sucker population was estimated to be 906 individuals with a population density of 46.7/ha (Table A.8.2). This population density was moderate based on comparison to published literature values, which ranged from 11 to 82 white sucker/ha in natural, un-impacted lakes that were generally larger and deeper than Côté Lake (Table A.8.2).

A.8.3 Fish Habitat Evaluation

Vegetation associated with wetlands on the east and west shorelines of Côté Lake likely provide a moderate amount of spawning habitat for northern pike (Figure A.8.1 and Table A.1). Abundant submerged aquatic vegetation throughout Côté Lake likely provides excellent juvenile rearing and good adult foraging and cover habitat for northern pike. An abundance of aquatic and overhanging vegetation in Côté Lake also provides yellow perch with excellent spawning, rearing (juveniles) and foraging/cover (juveniles/adults) habitat, and likely accounts for the numerical dominance of this species in the lake (Tables A.8.1 and A.1). A general lack of cobble, gravel and sand substrate in Côté Lake suggests very limited habitat for white sucker, walleye, lake whitefish and burbot spawning (Table A.1 and Figure A.8.1). Nevertheless, the combination of submergent vegetation and open-water habitat provides good to excellent habitat for juvenile/adult white sucker and walleye rearing/foraging. In general, the quality of habitat is considered marginal for lake whitefish and burbot, both of which are considered cold-water species (Table A.1 and Figurer A.8.1). However, the presence of adult lake whitefish in both 2012 and 2010 indicates some suitable foraging habitat exists.

Excellent spawning and rearing/foraging habitat is available for golden shiner (Table A.1) as a result of the variety and general abundance of aquatic vegetation present in the lake. Sand substrate suitable for blacknose shiner spawning is generally lacking in Côté Lake, but aquatic vegetation found along the lake perimeter provides good rearing and foraging/cover habitat for this species (Table A.1 and Figure A.8.1).

A.8.4 References

AMEC (AMEC Americas Limited. Earth & Environmental Division). 2011. Phase II Baseline Aquatics Report Chester Project. Chester Township, District of Sudbury, Ontario. Prepared for Trelawney Mining and Exploration Inc., July 2011.

Connors, K., Russel, C., and Munnoch, K. 2011. Moving a small boreal lake – what is involved? Application of a whole lake compensation plan under the Federal *Fisheries Act*. Poster at 2011 Canadian Conference for Fisheries Research.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

McPhail, J.D. 2007. The Freshwater Fishes of British Columbia. The University of Alberta Press, Edmonton, Alberta.

Mower, B.F., Munkittrick, K.R., McMaster, M.E., and Ven Beneden, R.J. 2011. Response of white sucker (*Catostomus commersoni*) to pulp and paper mill effluent in the Androscoggin River, Maine, USA. Environ. Tox. Chem. 30(1):142-153.

Pierce, R.B. 1997. Variable Catchability and Bias in Population Estimates for Northern Pike. Trans. Amer. Fish. Soc. 126: 658-664.

Pierce, R.B. and Tomcko, C.M. 2003. Interrelationships among production, density, growth and mortality of northern pike in seven north-central Minnesota lakes. Trans. Amer. Fish. Soc. 132:143–153.

Trippel, E.A. and Harvey, H.W. 1986. Abundance, growth, and food supply of white suckers (*Catostomus commersoni*) in relation to lake morphmetry and pH. Can. J. Zool. 65:558-564.

A.9 DELANEY LAKE

Delaney Lake is located within the Mollie River watershed approximately 3 km south of the proposed Côté Gold open pit (Figure A.9.1). The lake has a surface area of approximately 27 ha with the total estimated volume of 331,822 m^3 based on the annual average water level. Delaney Lake is relatively shallow with a maximum depth of approximately 3 m and contains no notable structural features (Figures A.9.1 and A.9.2). The primary inflow to Delaney Lake is from an unnamed stream located to the south at the western end of the lake (Figure A.9.1). Discharge from Delaney to the Mollie River watershed occurs at the southeastern end of the lake (Figure A.9.1).

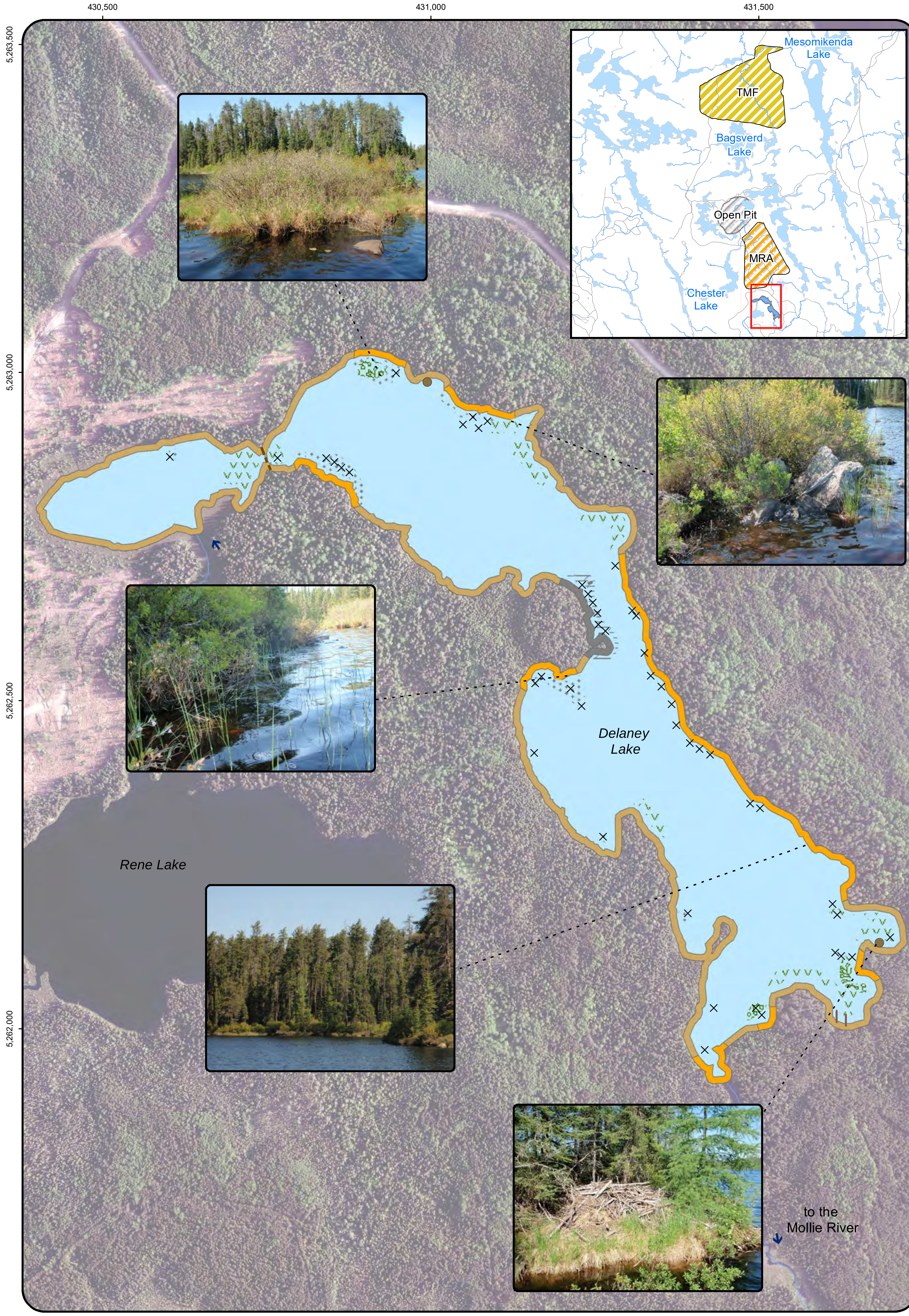
Delaney Lake will potentially be influenced by the construction of and drainage from the Mine Rock Area (MRA; Figure A.1). The habitat description provided below is based on field surveys conducted in the spring and fall of 2013.

A.9.1 Habitat Description

Delaney Lake is a relatively narrow, shallow lake with simple basin morphology (Figure A.9.2). No thermal stratification was apparent during either 2013 field survey (Appendix Table C.8). The water was generally well oxygenated throughout the water column with dissolved oxygen meeting Provincial Water Quality Objectives (Appendix Table C.8). Surface specific conductivity and water pH varied from the spring and fall survey (specific conductivity = 23.3 and 46 µS/cm, respectively and pH = 6.01 and 7.80, respectively); however measurements changed very little with depth at each sampling period (Appendix Table C.8). Delaney Lake water was stained yellow-brown with an average Secchi depth of 90 cm indicating light penetrates throughout the water column (Appendix Table C.9).

Substrate in the littoral areas generally consists of silt with high organic content. A layer of filamentous algae (*Chlorophyta*) on the surface of the sediment was noted during spring sediment collection. Near the shoreline, cobble, boulder may extend approximately 1 m off shore before transitioning to silt substrate (Figures A.9.1 and A.9.2). Very little bedrock was observed along the shoreline and limited to one section in the narrowing of Delaney Lake on the south side (Figure A.9.1). Macrophytes are sparse and generally confined to the shoreline (Figure A.9.1). Few yellow pond lilies (*Nuphar variegatum*) were observed along with burreed (*Sparganium* sp.) and cattails (*Typha* sp.).

The shoreline consists primarily of cobble/boulder or organic areas (Figure A.9.1). The treed shoreline comprised of black spruce (*Picea mariana*), jack pine (*Pinus banksiana*), with few eastern white cedar (*Thuja occidentalis*) and trembling aspen (*Populus tremuloides*; Figure



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Dam
- Beaver Lodge
- Logs and Fallen Trees
- Rock
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.9.1: Delaney Lake Habitat Features

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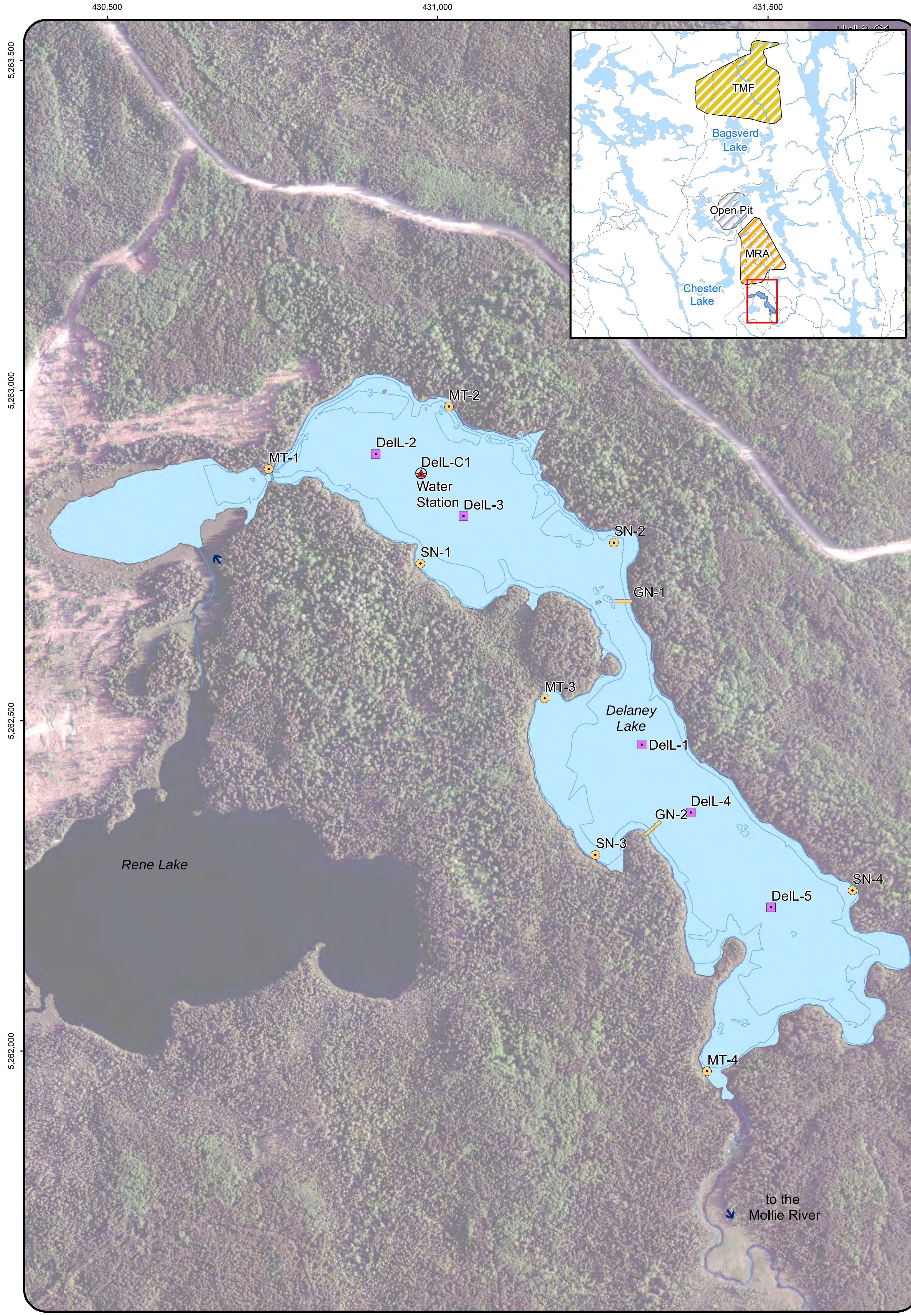
minnow environmental inc.



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MAP INFORMATION
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Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Features:
- Bathymetry (1 m intervals)
- Water Flow Direction

Figure A.9.2: Delaney Lake Bathymetry and Sampling Locations

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A.9.1). Leatherleaf (*Chamaedaphne calyculata*) commonly overhangs the shoreline, in addition to other common understory species such as sedges (*Carex* sp.), sweet gale (*Myrica gale*), bog laurel (*Kalmia polifolia*) and speckled alder (*Alnus incana*). Very little wetland area is present. A small area primarily confined to the north western end of the lake exists around in the inlet from the southern unnamed lake.

A.9.2 Fish Community Composition

Four species were captured in Delaney Lake during the June 2013 field survey (Table A.9.1, Figure A.9.2 and Appendix Table F.8). The large-bodied fish community included moderate numbers of yellow perch (*Perca flavescens*), northern pike (*Esox lucius*) and few white sucker (*Catostomus commersonii*; Table A.9.1). The small-bodied fish community was solely represented by golden shiner (*Notemigonus crysoleucas*; Table A.6.1). No endangered, threatened or special concern fish species (COSEWIC 2013) were observed in Delaney Lake during the June 2013 field survey.

A.9.3 Fish Habitat Evaluation

Good spawning and rearing habitat for northern pike was found in Delaney Lake through the overhanging shoreline vegetation and presence of sedges (Table A.1 and Figure A.9.1). The overhanging vegetation along the shoreline of Delaney Lake combined with the open areas provides good spawning, rearing and foraging habitat for yellow perch (Table A.1 and Figure A.9.1). White sucker spawning within Delaney is limited to the lake margins; however spawning habitat may exist further upstream at the inlet (Table A.1 and Figure A.9.1). Good to excellent rearing and foraging for juvenile and adult white sucker can be found through the large areas of shallow silty bottom within Delaney Lake (Table A.1 and Figure A.9.1).

The presence of very large numbers of golden shiner suggests relatively good habitat (spawning, rearing and foraging) was present even though large macrophyte beds were scarce (Figure A.9.1 and Table A.1). Filamentous algae were observed during the spring survey and would provide excellent spawning habitat for golden shiner spawning (Table A.1). Cover could be provided by overhanging vegetation (Figure A.9.1).

A.9.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

Table A.9.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Delaney Lake, 2013.

a) Gill Netting

Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
golden shiner	6	0.40
northern pike	9	0.60
white sucker	4	0.26
yellow perch	12	0.79
Total	**31**	**2.05**

b) Minnow Trapping

Species	Total Caught	CPUE (# of fish/trap*d)
yellow perch	1	0.08

c) Seining

Species	Total Caught	CPUE (# of fish/m^2)
golden shiner	1,391	1.795
northern pike	3	0.004
yellow perch	293	0.378
Total	**1,687**	**2.177**

A.10 EAST BEAVER POND

The East Beaver Pond includes a series of four small ponds that are located within the Mollie River watershed approximately 1 km southeast of the Côté Gold open pit and immediately east of the Mollie River near the outlet of Chester Lake (Figures A.10.1 Figure A.1). East Beaver Pond collectively has an open water surface area of approximately 4.7 ha. No defined tributaries flow into East Beaver Pond, with intermittent discharge draining to the west of the ponds into an undefined wetland that borders the Mollie River. The assessment of habitat and fish community for East Beaver Pond is based on a field survey conducted in July 2012. East Beaver Pond will be lost with the construction of the Mine Rock Area (MRA; Figure A.1).

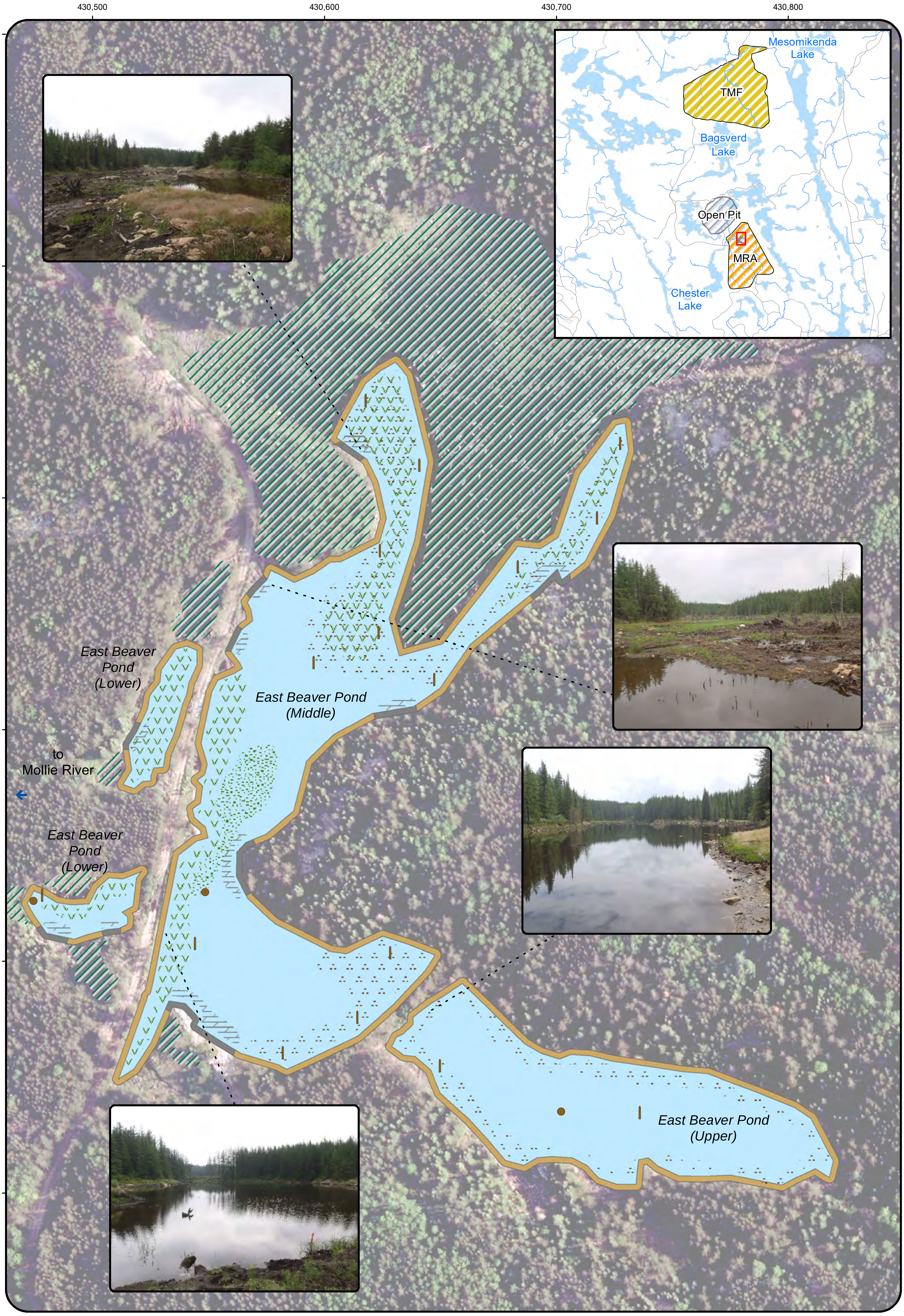
A.10.1 Habitat Description

The ponds have been formed as a result of the combination of beaver activity and road construction, and include an upper pond approximately 180 m long and 40 m wide, a large, curved middle pond approximately 240 m long and 70 m wide, and two smaller lower ponds approximately 45 m long and 30 m wide (Figure A.10.1). Water levels had recently fallen considerably in the middle and lower ponds, resulting in substantial areas of exposed substrate. No water depths were taken at East Beaver Pond during the July 2012 field survey (Figure A.10.2). The middle East Beaver Pond was stained dark yellow-brown and very turbid (clarity approximately 0.1 m), with warm water temperature (23.4°C), moderate surface dissolved oxygen (6.20 mg/L) and near neutral pH (6.60) measured at the surface during the July 2012 field survey (Appendix Table C.9).

The littoral and shoreline substrate of ponds consists mostly of thick organic muck over cobble/boulder and till. Bedrock was also present at some areas of the upper and middle ponds (Figure A.10.1). Aquatic plant growth generally consisted of very sparse naiad (*Najas* sp.) growth with some stonewort (*Chara* sp.), and small, isolated patches of emergent sedge (*Carex* sp.) and arrowhead (*Sagittaria* sp.). Stumps, logs and standing deadwood occur frequently in the upper and middle ponds, providing some cover for fish (Figure A.10.1). The ponds are generally treed to the edge of the former pond shorelines (i.e., prior to water levels dropping), with the surrounding coniferous forest dominated by jack pine (*Pinus banksiana*) and, to a lesser extent, black spruce (*Picea mariana*).

A.10.2 Fish Community Composition

The fish community included three small-bodied species: fathead minnow (*Pimephales promelas*), finescale dace and northern redbelly dace (*Chrosomus neogaeus* and *C. eos*, respectively), all found in high abundance (Table A.10.1, Figure A.10.2 and Appendix Table



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MAP INFORMATION
Map Projection: NAD 1983
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Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.10.1: East Beaver Pond Habitat Features

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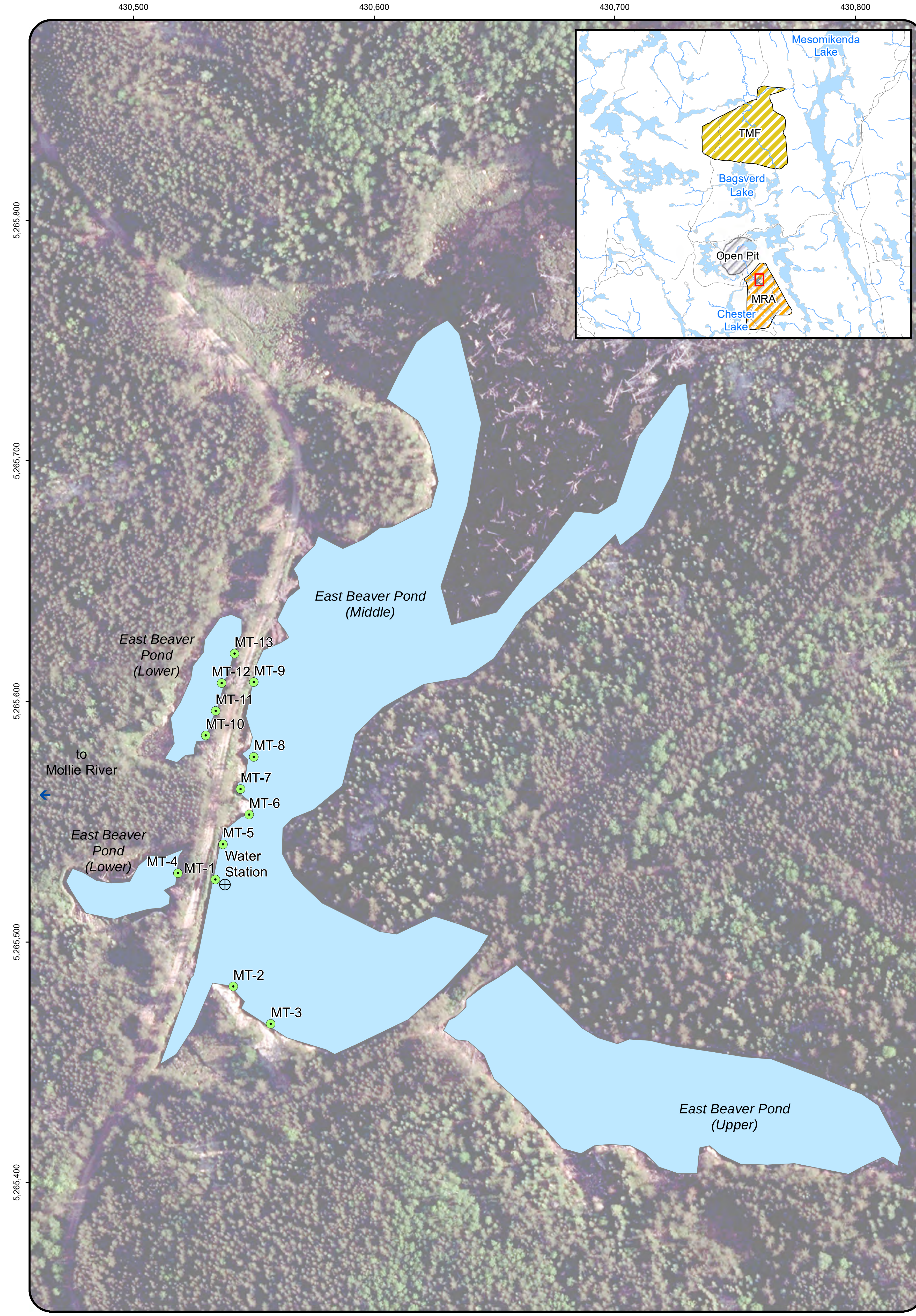

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MAP INFORMATION
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Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Feature:
- Water Flow Direction

Figure 10.2: East Beaver Pond Sampling Locations

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Table A.10.1: Summary of fish catches and catch-per-unit-effort (CPUE) in East Beaver Pond, 2012.

a) Minnow Trapping

Species	Total Caught	CPUE (# of fish/trap*d)
fathead minnow	1,101	97.27
finescale dace	844	74.57
northern redbelly dace	360	31.81
Total	**2,305**	**203.64**

F.9). These species are characteristic of headwater systems in Northern Ontario. No COSEWIC (2013) listed endangered, threatened or special concern fish species were observed at East Beaver Pond during the July 2012 survey.

A.10.3 Fish Habitat Evaluation

The presence of very large numbers of fathead minnow, finescale and northern redbelly dace suggests excellent habitat for spawning, rearing and foraging (Tables A.10.1 and A.1).

A.10.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

A.11 LITTLE CLAM LAKE

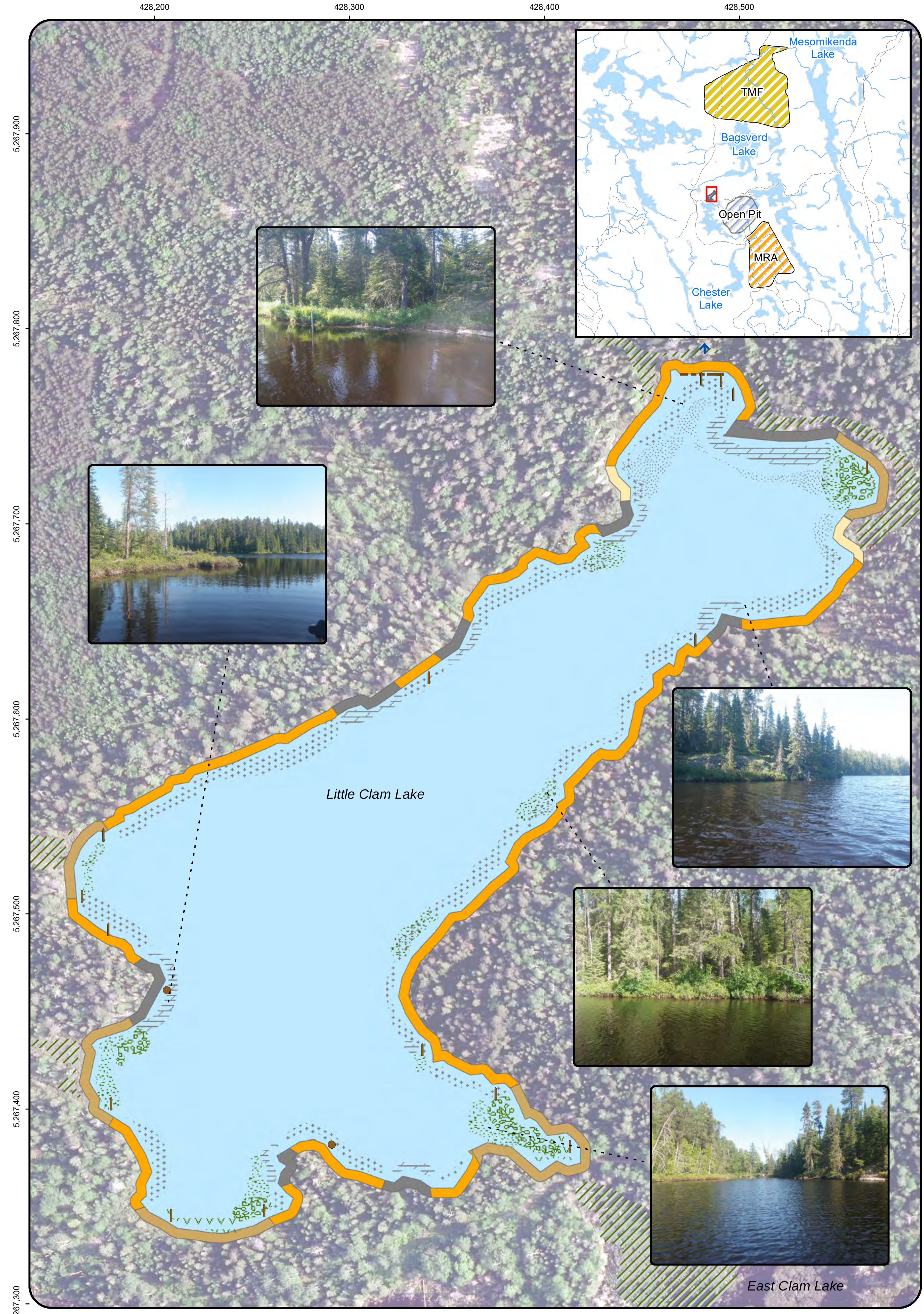
Little Clam Lake is located within the Neville Lake watershed just west of the proposed Côté Gold open pit and immediately north of Clam Lake (Figures A.11.1 and A.1). Little Clam Lake is a headwater lake with an approximate volume of 134,000 m^3 and a surface area of 6.6 ha. No perennial streams flow into Little Clam Lake, with the most significant inputs to the lake likely received via a small wetland located at the northeast border of the lake (Figure A.11.1). A beaver dam is located at the northern-most point of Little Clam Lake, with intermittent discharge from this location entering a wetland depression that has no defined channel. This wetland depression trends north-west, leading to an unnamed inlet that subsequently drains into the South Arm of Bagsverd Lake (Figure A.11.1).

The assessment of habitat and fish community for Little Clam Lake is based on a field survey conducted in July 2012. Little Clam Lake will be influenced by the watercourse realignment for the Mollie River. Instead of being a headwater lake within the Neville Lake watershed, Little Clam Lake will receive water from Clam Lake and flow north through a constructed realignment channel to West Beaver Pond (Figure A.1). Water will then flow east to the South Arm of Bagsverd Lake, south to Bagsverd Pond, east to Weeduck Lake and south into Three Ducks Lakes within the Mollie River watershed (Figure A.1). Following closure and filling of the open pit, Little Clam Lake will be disconnected from Clam Lake and return to a headwater lake within the Neville Lake watershed.

A.11.1 Habitat Description

Little Clam Lake contains a simple, elongate basin that reaches a maximum depth of approximately 6.0 m in the south portion of the lake (Figure A.11.2). Thermal stratification was apparent in Little Clam Lake during the July 2012 field survey, with the hypolimnion and hypoxic waters (i.e., dissolved oxygen concentration ≤ 2 mg/L) occurring at depths > 4 m (Appendix Table C.11). The waters of Little Clam Lake appeared to be slightly acidic (5.8 at surface), and exhibited the lowest pH of all the lakes sampled (Appendix Table C.11). Notably, a water quality profile conducted during fall turnover in September 2010 (AMEC 2011) indicated near neutral pH in Little Clam Lake. Water clarity was relatively high with a Secchi depth of 3.5 m allowing light to penetration to the bottom of the lake (Appendix Table C.11).

Substrate in deeper areas of Little Clam Lake was mainly organic silt. In contrast, substrate in the littoral zone is mainly cobble but transitions to mostly silt containing abundant woody debris as distance from shore reaches approximately 1 to 2 m (Figure A.11.1). Woody organic matter becomes less apparent in littoral substrate as depth and distance from shore increase. Notable



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MAP INFORMATION
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Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Dam
- Beaver Lodge
- Logs and Fallen Trees
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.11.1: Little Clam Lake Habitat Features

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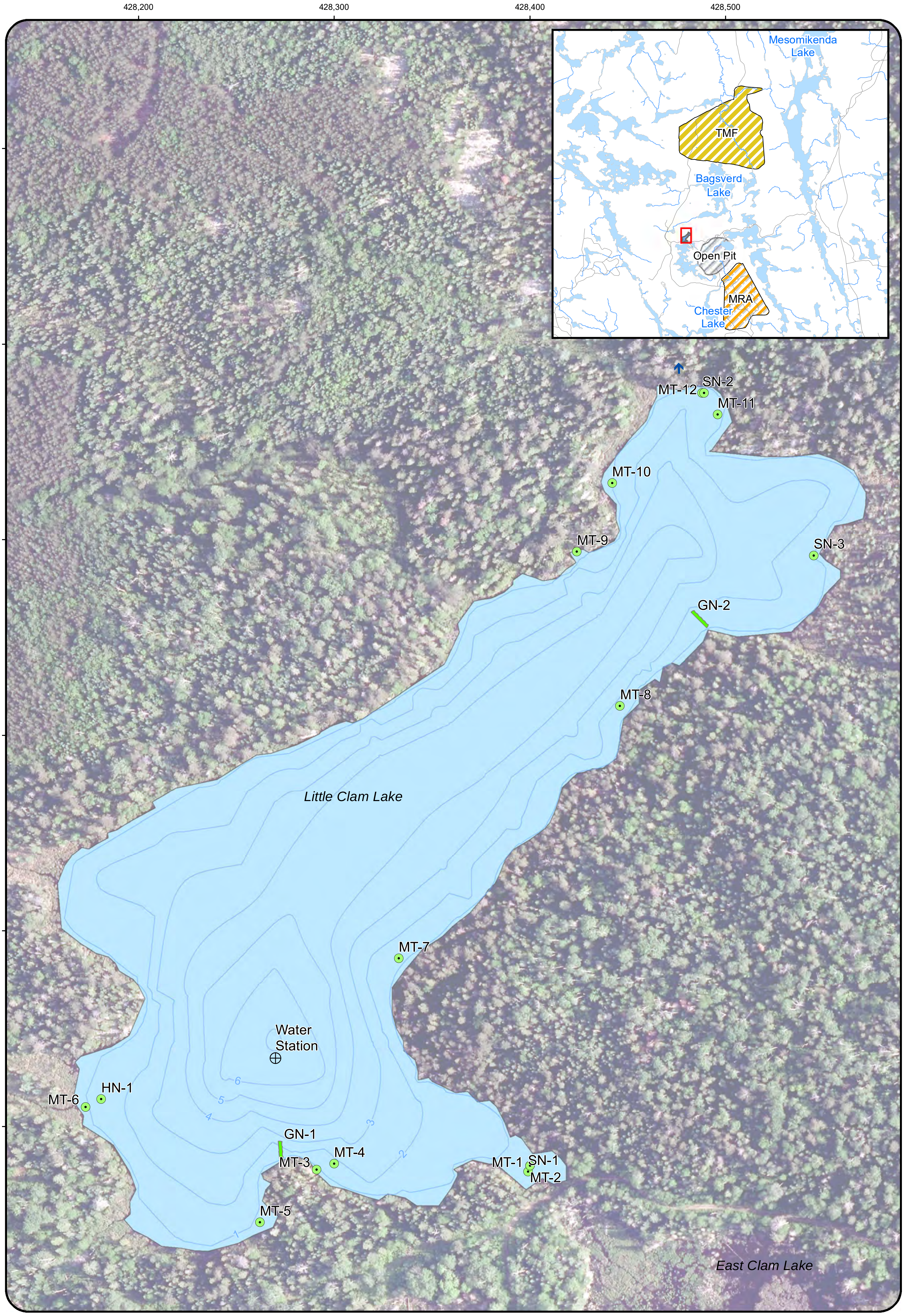

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MAP INFORMATION
Map Projection: NAD 1983
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Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Features:
- Bathymetry (1 m intervals)
- Water Flow Direction

Figure A.11.2: Little Clam Lake Bathymetry and Sampling Locations

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littoral substrate features in Little Clam Lake include the occurrence of a small cobble shoal off the east shoreline, sand-gravel areas that extend off the northern shoreline and near the beaver dam, and occasional sections of bedrock, particularly along the northern shore (Figure A.11.1). Aquatic vegetation growth in Little Clam Lake was sparse, consisting of scattered submergent burreed (*Sparganium* sp.), bladderwort (*Utricularia* sp.), fern pondweed (*Potamogeton robbinsii*), milfoil (*Myriophyllum* sp.) and stonewort (*Chara* sp.), as well as some floating yellow pond lily (*Nuphar variegatum*; Figure 3.7). Freshwater sponge (*Spongilla* sp.) was also abundant along the southern portion of the western shore.

The shoreline of Little Clam Lake consists predominantly of cobble with occasional bedrock outcrops, with areas of organic silt and/or sand-gravel associated with wetlands adjacent to the shoreline and the southeast outlet (Figure A.11.1). Little Clam Lake is generally treed to the shoreline, with black spruce (*Picea mariana*) and jack pine (*Pinus banksiana*) the dominant species, eastern white cedar (*Thuja occidentalis*) and white birch (*Betula papyrifera*) sub-dominant, and a low abundance of trembling aspen (*Populus tremuloides*) and/or white pine (*Pinus strobus*). Deadfall is common along the southern edge of the lake, and together with leatherleaf (*Chamaedaphne calyculata*), provides some cover for the fish community. Small areas of sedge (*Carex* sp.) and leatherleaf wetland can be found along the north-eastern, west-central and south-western shorelines of Little Clam Lake, with sparse cattail (*Typha* sp.) and larch (*Larix laricina*) also found growing in these areas.

A.11.2 Fish Community Composition

The fish community in Little Clam Lake included a total of five species (Table A.11.1 and Appendix Table F.10). Northern pike (*Esox lucius*) and yellow perch (Perca flavescens) were the only large-bodied fish observed in Little Clam Lake during the July 2012 field survey (Table A.11.1). The small-bodied fish community in Little Clam Lake consisted mainly of golden shiner (*Notemigonus crysoleucas*), with moderate abundance of blacknose shiner (*Notropis heterolepis*) and low numbers of Iowa darter (*Etheostoma exile;* Table A.11.1). No endangered, threatened or special concern fish species (COSEWIC 2013) were observed at Little Clam Lake during the July 2012 survey or during the previous survey conducted by AMEC (2011).

A.11.3 Fish Habitat Evaluation

Moderate spawning, rearing and foraging habitat for northern pike and yellow perch was found in Little Clam Lake as a result of sparse aquatic vegetation growth (Table A.1 and Figure A.11.1).

Table A.11.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Little Clam Lake, 2012.

a) Gill Netting

Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
northern pike	20	0.91
yellow perch	16	0.73
Total	**36**	**1.63**

b) Minnow Trapping

Species	Total Caught	CPUE (# of fish/trap*d)
golden shiner	2	0.12
yellow perch	6	0.35
Total	**8**	**0.47**

c) Seining

Species	Total Caught	CPUE (# of fish/m^2)
blacknose shiner	1	0.003
golden shiner	92	0.299
Iowa darter	10	0.032
northern pike	1	0.003
yellow perch	170	0.552
Total	**274**	**0.890**

d) Mini Hoop Netting

Species	Total Caught	CPUE (# of fish/trap*d)
blacknose shiner	33	32.00
golden shiner	4	3.88
Iowa darter	1	0.97
northern pike	2	1.94
yellow perch	2	1.94
Total	**42**	**40.73**

In general, Little Clam Lake provided a limited amount of spawning, rearing and foraging habitat for golden shiner due to the relatively low abundance of weedy areas (Table 3.4). Sandy-rocky areas likely provide some good spawning substrate for blacknose shiner, with good (albeit limited) rearing/foraging habitat provided by weedy areas (Table A.1 and Figure A.11.1). Despite few areas providing ideal Iowa darter spawning habitat, fallen trees and wetland areas with overhanging vegetation and rooted material may provide marginal spawning habitat, with the shallow littoral area containing organic substrate and vegetation that is likely good habitat for rearing/foraging (Table A.1).

A.11.4 References

AMEC (AMEC Americas Limited. Earth & Environmental Division). 2011. Phase II Baseline Aquatics Report Chester Project. Chester Township, District of Sudbury, Ontario. Prepared for Trelawney Mining and Exploration Inc., July 2011.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

A.12 LOWER THREE DUCK LAKE

Lower Three Duck Lake is part of the Three Duck Lakes chain within the Mollie River watershed (Figures A.12.1 and A.1). The lake is located approximately 2 km southeast of the proposed Côté Gold open pit and less than one kilometre from the Mine Rock Area (MRA; Figure A.12.1). The lake has a surface area of approximately 118.4 ha with the total estimated volume of 1.13×10^6 m^3, with a maximum depth of approximately 5.6 m and mean depth of 2.6 m based on the annual average water level (Figure A.12.2). The primary inflow to Lower Three Duck Lake is from Middle Three Duck Lake located immediately north and discharge is to the south into an unnamed lake in the Mollie River watershed (Figure A.12.1).

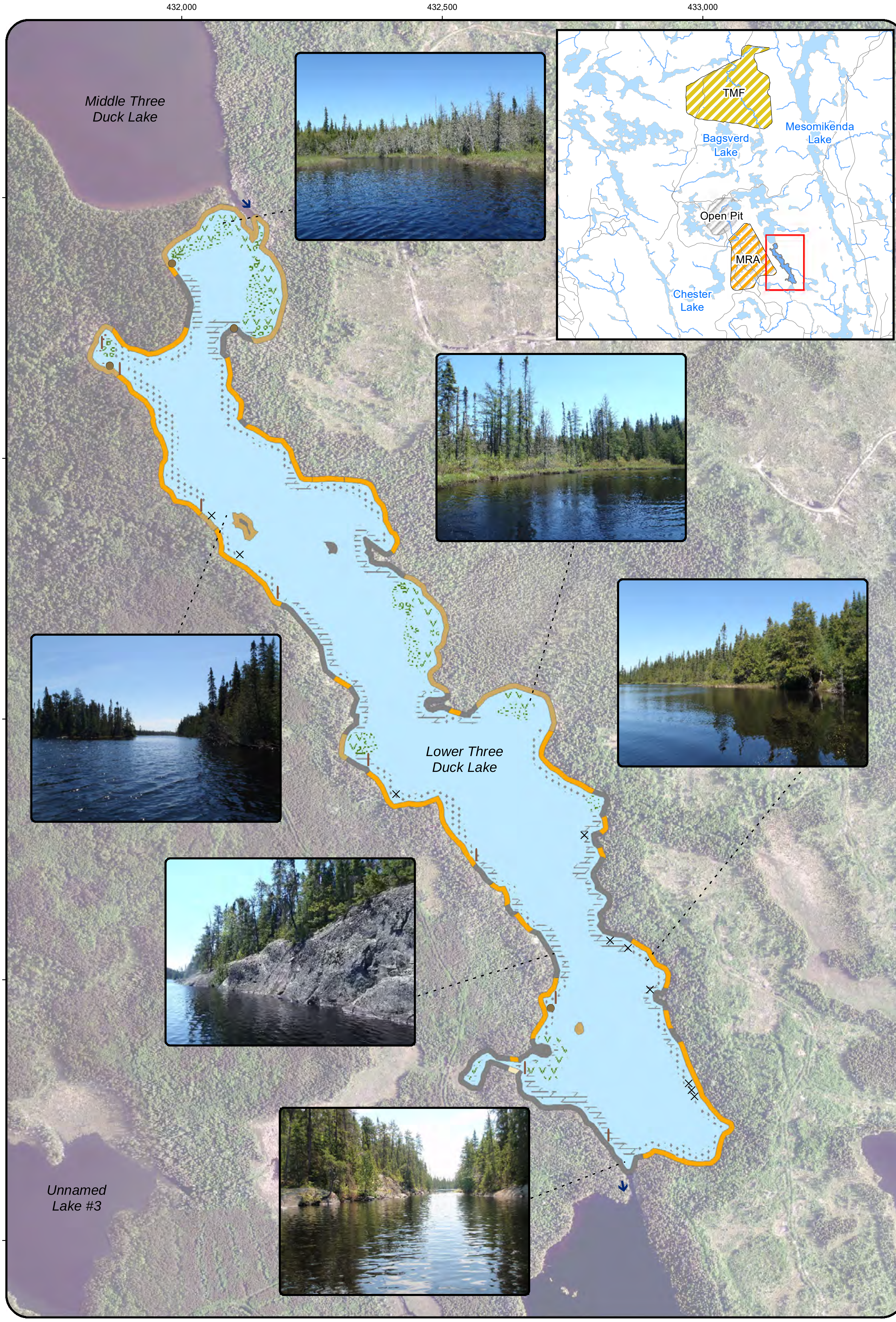
All surveys conducted on Lower Three Duck Lake occurred in 2013. Lower Three Duck Lake may be influenced by drainage from the MRA during mine operations and closure, but no physical change in habitat is anticipated with the development of the Côté Gold project (Figure A.1).

A.12.1 Habitat Description

Lower Three Duck Lake is a relatively narrow lake with simple basin morphology (Figure A.12.2). Thermal stratification was apparent during the June 2013 field survey; however it was not thermally stratified in the fall (Appendix Table C.12). In June, the hypolimnion was present at 3 m (Appendix Table C.12). The water was generally well oxygenated throughout the water column (Appendix Table C.12). Surface water pH was slightly acidic (6.61 and 6.91, spring and fall, respectively; Appendix Table C.12). Water clarity was moderate with a mean Secchi depth of 1.85 m (Appendix Table C.12).

Substrate in deeper areas of Lower Three Duck Lake was mainly organic silt. The substrate in the littoral zone generally transitions from mainly cobble or bedrock to mostly sandy-silt containing abundant woody debris, especially along the western shore (Figure A.12.1). Limited macrophytes were observed in Lower Three Duck Lake and were generally found surrounding the inlet from Middle Three Duck Lake and along the eastern shore in shallow bays (Figure A.12.1). Aquatic vegetation consisted of yellow pond lily (*Nuphar variegatum*) and/or eel grass (Vallisneria americana) at the time of the survey (spring 2013; Figure A.12.1).

The shoreline of Lower Three Duck Lake is dominated by cobble and/or boulder embedded in silty-sand (Figure A.12.1). Granitic bedrock is commonly found along the lake perimeter, with organic shoreline only found surrounding the inlet from Middle Three Duck and in two small bays along the eastern shoreline (Figure A.12.1). Lower Three Duck Lake is generally treed to the shoreline, with black spruce (*Picea mariana*) and eastern white cedar (*Thuja occidentalis*)



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Rock
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.12.1: Lower Three Duck Lake Habitat Features

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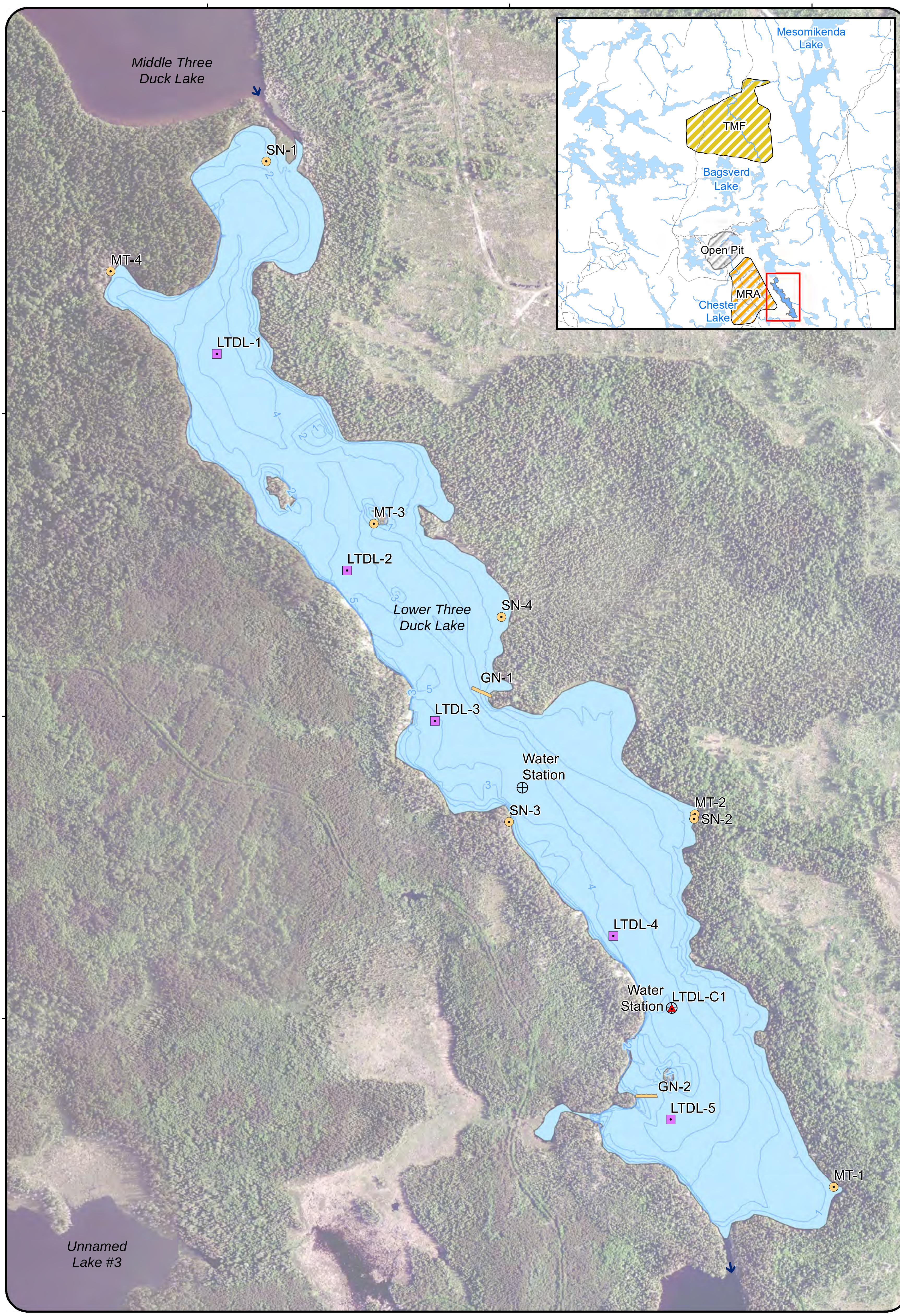
minnow environmental inc.



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:

- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Features:

- Bathymetry (1 m intervals)
- Water Flow Direction

Figure A.12.2: Lower Three Duck Lake Bathymetry and Sampling Locations

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minnow environmental inc.

being the dominant species with a few white birch (*Betula papyrifera*). No wetlands were found adjacent to Lower Three Duck Lake (Figure A.12.1). Leatherleaf (*Chamaedaphne calyulata*) commonly overhangs the shoreline with the cedar trees (*Cedrus* sp.) with a few sedges (*Carex* sp.).

A.12.2 Fish Community Composition

Eight species were captured in Lower Three Duck Lake during the June 2013 field survey (Table A.12.1, Figure A.12.2 and Appendix Table F.11). The large-bodied fish community included northern pike (*Esox lucius*), white sucker (*Catostomus commersonii*), walleye (*Sander vitreus*), lake whitefish (*Coregonus clupeaformis*) and yellow perch (*Perca flavescens*; Table A.12.1). The small-bodied fish community was dominated by blacknose shiner (*Notropis heterolepis*) with few Iowa darter (*Etheostoma exile*) and slimy sculpin (*Cottus cognatus*; Table A.12.1). It is likely that spottail shiner (*Notropis hudsonius*)) is also present within Lower Three Duck Lake as this species was present in both Upper and Middle Three Duck lakes (Tables A.14.1 and A.23.1). No endangered, threatened or special concern fish species (COSEWIC 2013) were observed in Lower Three Duck Lake during the June 2013 field survey.

A.12.3 Fish Habitat Evaluation

Moderate spawning and rearing habitat for northern pike was found in Lower Three Duck Lake associated with overhanging shoreline vegetation and a few macrophyte beds located near the inlet from Middle Three Duck Lake and along the eastern shore (Table A.1 and Figure A.12.1). The overhanging vegetation along the shoreline combined with the open areas provide good spawning, rearing and foraging habitat for yellow perch (Table A.1 and Figure A.12.1). Walleye and white sucker spawning within Upper Three Duck is limited to the rocky points around the lake (Table A.1 and Figure A.12.1). Good rearing and foraging/cover for these species in found through the combination of rocky habitat, submergent vegetation in small bays and open-water areas with silt substrate. Moderate to good spawning and rearing habitat for lake whitefish is available in association with rocky shoals and shoreline substrate. Deeper, cooler areas within Lower Three Duck Lake may be limited during the summer months for adult whitefish (Table A.1 and Figure A.12.2).

The presence of very large numbers of blacknose shiner suggests excellent spawning habitat is provided for blacknose shiner in the areas with sandy to rocky substrate and good to excellent rearing and foraging habitat is offered by the weedy areas (Table A.1 and Figure A.12.1). Good spawning habitat is provided for Iowa darter by overhanging vegetation, woody debris or floating vegetation (Table A.1 and Figure A.12.1). Rearing and foraging habitat is found in the shallow bay areas with mud to sand bottom, organic debris and rooted vegetation (Table A.1 and Figure

Table A.12.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Lower Three Duck Lake, 2013.

a) Gill Netting

Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
lake whitefish	1	0.06
northern pike	9	0.57
walleye	4	0.25
white sucker	5	0.32
Total	**19**	**1.20**

b) Minnow Trapping

Species	Total Caught	CPUE (# of fish/trap*d)
yellow perch	2	0.14

c) Seining

Species	Total Caught	CPUE (# of fish/m^2)
blacknose shiner (adult)[a]	147	0.295
blacknose shiner (juvenile)[a]	250	0.501
Iowa darter[b]	4	0.008
northern pike (YOY)[a]	2	0.004
slimy sculpin	1	0.002
yellow perch	49	0.098
Total	**453**	**0.908**

[a] Fish were classified as adults unless otherwise specified in the field to be juveniles or young-of-the-year (YOY)

[b] The Iowa darter counted may have been a johnny darter.

A.12.2). Excellent slimy sculpin spawning habitat is provided by the rocky shoreline (Table A.1). Moderate rearing and foraging habitat is provided for this species through the cobble sand-silt substrate observed around the lake (Table A.1 and Figure A.12.1). Although no spottail shiner were observed in Lower Three Duck Lake, excellent spawning , rearing and foraging habitat was found through the sandy to rocky substrate and open-water areas (Table A.1 and Figure A.12.1).

A.12.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

A.13 MESOMIKENDA LAKE

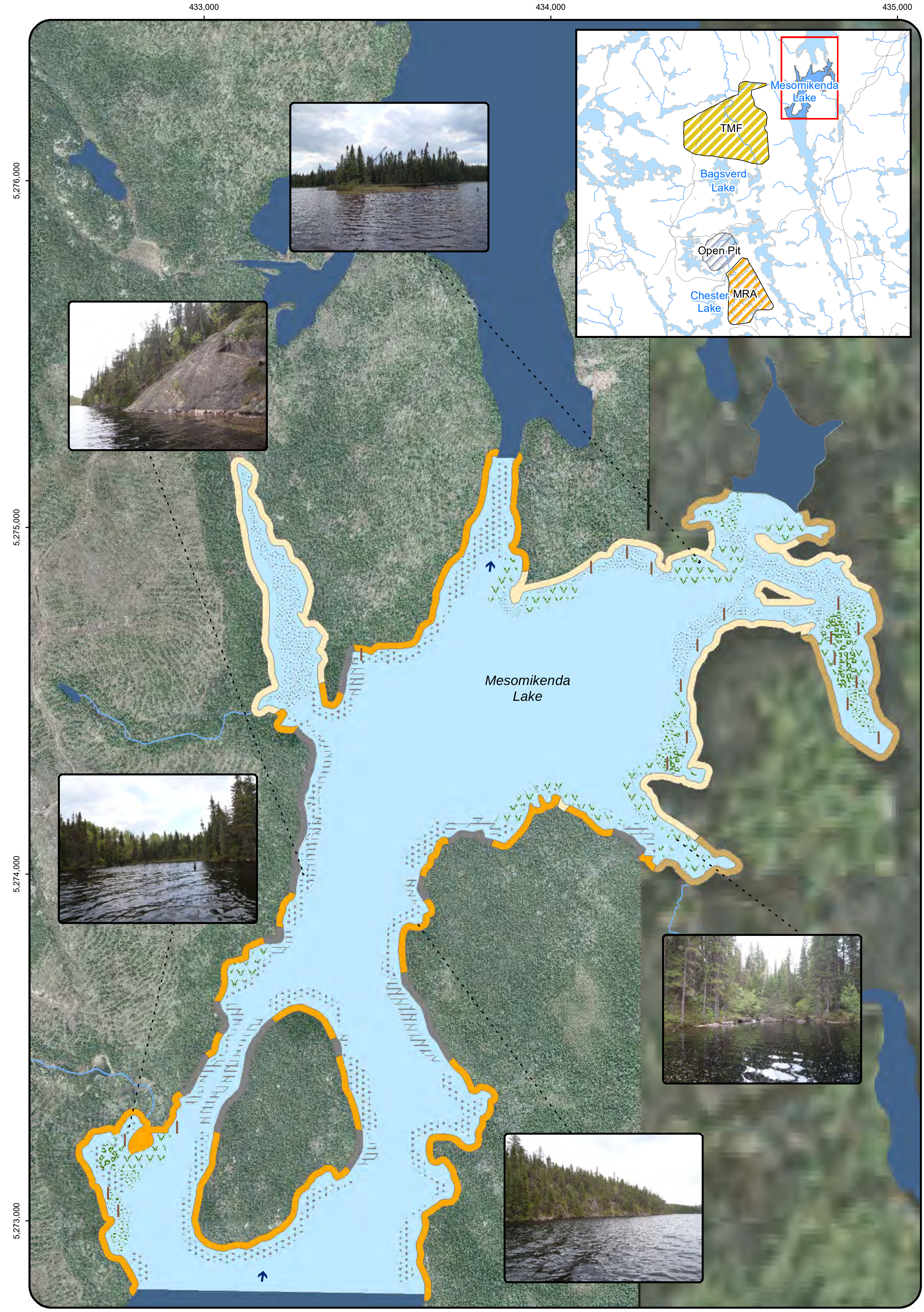
Mesomikenda Lake is part of the Mattagami River watershed (Figures A.13.1 and A.1) and receives drainage from Neville Lake which is downstream of the Côté Gold Tailings Mining Facility (TMF). It is located approximately 7 km to the east of the proposed Côté Gold site (Figure A.1). This narrow lake spans in a north south direction for approximately 27 km, varying in width from as little as 50 m to up to just over a kilometer. The lake has a surface area of approximately 1,705 ha with a maximum depth of approximately 60 m. Mesomikenda Lake flows north and discharge is regulated at the outlet of Mesomikenda Lake by an Ontario Power Generation dam. The dam is about 122 m long and 3 m high with three sluices.

During mine operations effluent from the TMF will discharge to either Bagsverd Creek or Mesomikenda Lake (Figure A.1). The preferred option for discharge is being evaluated as part of the environmental assessment for the Côté Gold project. In addition, during closure the TMF will drain to Mesomikenda Lake. The section of Mesomikenda Lake that could be potentially affected by the TMF was assessed (Figures A.13.1 and A.13.2). The physical habitat and fish community characterization of this section of Mesomikenda Lake was undertaken during the spring 2013, whereas the sediment quality was characterized during the June and September surveys in 2013.

A.13.1 Habitat Description

Mesomikenda is a narrow lake with a multi-basin morphology, where basins can reach depths of up to 60 m, with numerous islands and shallow bays (Figures A.1, A.13.1 and A.13.2). Thermal stratification was apparent in the spring at two to three metres for all water quality profile locations and at 12 m during the fall of 2013 (Figure A.13.2 and Appendix Table C.13). The water was well oxygenated throughout the measured water column at all locations except one where dissolved oxygen was low (< 3 mg/L) at bottom (MesL-C2; Figure A.13.2 and Appendix Table C.13). Surface water pH was neutral (7.1 to 7.47) which decreased slightly with depth (Appendix Table C.13). Water clarity was moderate with a mean Secchi depth of 2.7 m (Appendix Table C.13).

Physical habitat was only documented surrounding the area of potential influence (Figure A.13.1). Substrate in deeper areas of Mesomikenda Lake was mainly organic silt. The substrate in the littoral zone generally transitioned from mainly cobble, bedrock or sand to mostly sandy-silt containing abundant woody debris (Figure A.13.1). It is evident from the abundant stumps and dead trees within the water along the shoreline that there is a dam present on the lake regulating water levels. Macrophytes were limited, and generally found in



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.13.1: Mesomikenda Lake Habitat Features

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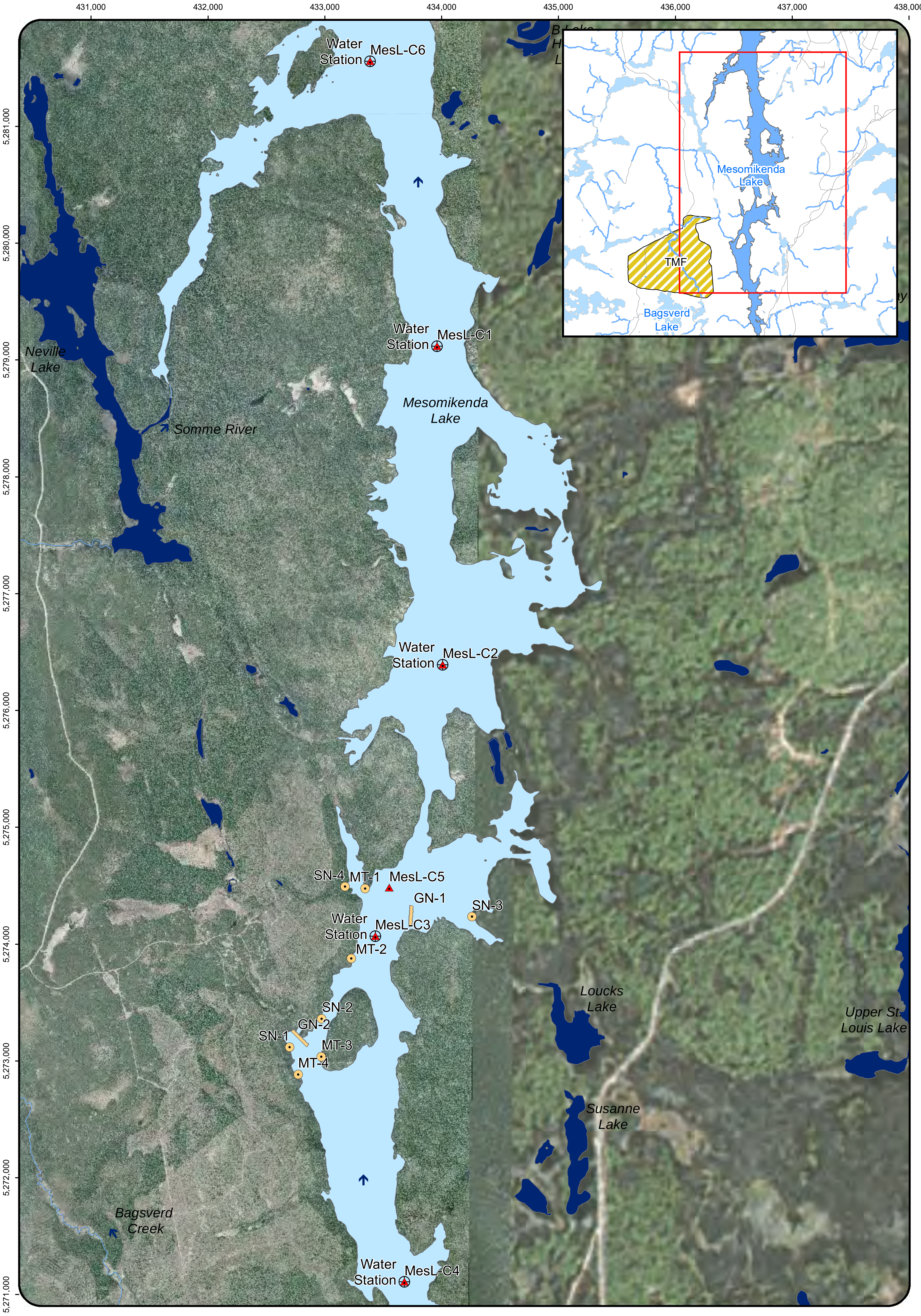

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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Feature:
- Water Flow Direction

Figure A.13.2: Mesomikenda Lake Sampling Locations

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the northeastern bay and a small bay on the southwestern shore (Figure A.13.1). Aquatic vegetation generally consisted of burreed (*Sparganium* sp.) or sedges (*Carex* sp.). Few small patches of eel grass (*Vallisneria americana*) were observed at the time of the survey (spring 2013; Figure A.13.1).

The shoreline of Mesomikenda within the area surveyed is dominated by bedrock outcrops, cobble/boulder embedded in silty-sand or sand (Figure A.13.1). Granitic bedrock is commonly found along the lake perimeter (Figure A.13.1). Mesomikenda Lake is generally treed to the shoreline, with black spruce (*Picea mariana*), eastern white cedar (*Thuja occidentalis*) and few jack pine (*Pinus banksiana*) being the dominant species with scattered white birch (*Betula papyrifera*) and trembling aspen (*Populus tremuloides*). No wetlands were found adjacent to the area surveyed on Mesomikenda Lake (Figure A.13.1). Cedar trees commonly overhand the shoreline within the areas of bedrock and cobble whereas sedges (*Carex* sp.) with scattered leatherleaf (*Chamaedaphne calyulata*) and alder (*Alnus* sp.) commonly line the shoreline within areas of sand (Figure A.13.1).

A.13.2 Fish Community Composition

Eleven species were captured in Mesomikenda Lake during the June 2013 field survey (Table A.13.1, Figure A.13.2 and Appendix Table F.12). The large-bodied fish community included lake whitefish (*Coregonus clupeaformis*), walleye (*Sander vitreus*), northern pike (*Esox lucius*), white sucker (*Catostomus commersonii*) and yellow perch (*Perca flavescens*; Table A.13.1). Although no lake trout (*Salvelinus namaycush*) were captured during the spring survey, they do inhabit the lake. The small-bodied fish community included blacknose shiner (*Notropis heterolepis*), spottail shiner (*Notropis hudsonius*), brook stickleback (*Culaea inconstans*), golden shiner (*Notemigonus crysoleucas*), trout-perch (*Percopsis omiscomaycus*) and Iowa darter (*Etheostoma exile*; Table A.13.1). No endangered, threatened or special concern fish species (COSEWIC 2013) were observed in Mesomikenda Lake during the June 2013 field survey.

A.13.3 Fish Habitat Evaluation

The section of Mesomikenda Lake assessed contains excellent habitat for all life stages of lake trout and lake whitefish (Table A.1). Specifically, an abundance of cobble and rocky substrate throughout the littoral areas provides excellent spawning habitat, whereas the complex morphology of the lake, including rocky shoreline and shoal areas, and combination of shallow bays and deep water that provides refuge from warm summer water temperatures, provide excellent juvenile rearing and adult foraging habitat for these species (Figure A.13.1). Good spawning habitat for northern pike is present through the sedge and burreed vegetation along the shoreline and the abundance of woody debris (Figure A.13.1 and Table A.1). Marginal

Table A.13.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Mesomikenda Lake, 2013.

a) Gill Netting

Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
lake whitefish	5	0.24
northern pike	4	0.19
spottail shiner	1	0.05
trout-perch	1	0.05
walleye	5	0.24
white sucker	2	0.10
Total	**18**	**0.87**

b) Minnow Trapping

Species	Total Caught	CPUE (# of fish/trap*d)
golden shiner	1	0.05

c) Seining

Species	Total Caught	CPUE (# of fish/m^2)
blacknose shiner	1	0.002
brook stickleback	3	0.006
golden shiner	1	0.002
Iowa darter	2	0.004
spottail shiner	31	0.067
yellow perch	1	0.002
Total	**39**	**0.084**

juvenile rearing and adult foraging was observed within the area surveyed of Mesomikenda Lake through the limited vegetation in the north eastern bay and by the abundance of cover provided by dead stumps and large woody debris (Table A.1 and Figure A.13.1). Near-shore aquatic vegetation in the northeastern section surveyed would provide good yellow perch spawning and rearing habitat, with good adult yellow perch foraging habitat available in the vegetated, woody areas and the open water (Table A.1 and Figure A.13.1). Inlet streams to Mesomikenda Lake were not evaluated, and therefore it is unclear the extent to which inlet stream may provide spawning habitat for white sucker and walleye. Within the area of the lake surveyed only marginal spawning habitat was found for these species and was restricted to the cobble and gravel shorelines (Table A.1 and Figure A.13.1). The occurrence of sand-silt in shallow littoral areas and softer substrates in deeper areas would suggest good rearing habitat and good foraging habitat for juvenile and adult white sucker as well as for walleye (Table A.1.and Figure A.13.1).

Mesomikenda Lake appeared to have moderate spawning and rearing/foraging habitat for golden shiner and brook stickleback, limited to the northeastern bays where some weedy habitat was present (Table A.1 and Figure A.13.1). Sandy-rocky areas provide good spawning substrate for both blacknose and spottail shiners, whereas good rearing/foraging habitat is provided by weedy, woody areas and cooler water habitat (Table A.1). Good spawning habitat is provided for Iowa darter by overhanging vegetation and woody debris (Table A.1). The sandy organic substrate coupled with the rooted aquatic vegetation in the shallow littoral areas of the northeastern bay surveyed provides good rearing/foraging habitat for Iowa darter. Excellent trout-perch spawning habitat is provided by the rocky shoreline (Table A.1). Good rearing and foraging habitat is provided for this species through the cobble sand-silt substrate observed around the lake (Table A.1 and Figure A.13.1).

A.13.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

A.14 MIDDLE THREE DUCK LAKE

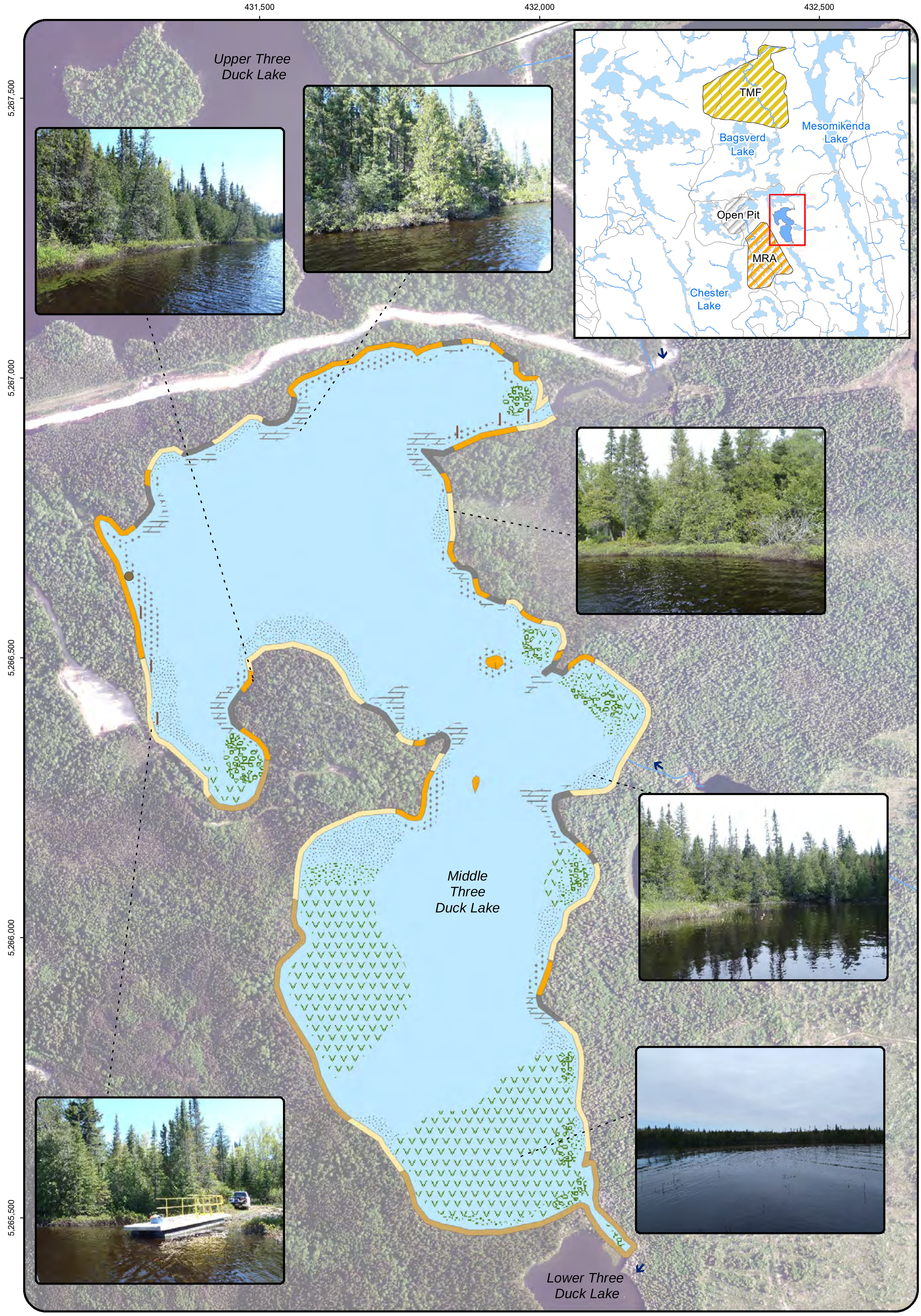
Middle Three Duck Lake is part of the Three Duck lakes chain within the Mollie River watershed (Figures A.14.1 and A.1). The lake is located approximately 1 km east of the proposed Côté Gold open pit and less than one kilometer from the Mike Rock Area (MRA; Figure A.14.1). The lake has a surface area of approximately 118.4 ha with the total estimated volume of 2.09 x 10^6 m^3, a maximum depth of approximately 8 m and mean depth of 2.7 m based on the annual average water level (Figure A.14.2). The lake has two main basins, one that reaches a maximum depth of 8 m to the south and the other which is slightly shallower (4 m) in the north basin. The primary inflow to Middle Three Duck Lake is from Upper Three Duck Lake which enters into the north east end of the lake. The lake also receives water from an unnamed inlet that drains a small lake located immediately to the east (Figure A.14.2). Middle Three Duck discharges at its south end to Lower Three Duck Lake (Figure A.14.1).

The assessment of habitat and fish community for Middle Three Duck Lake is based on the field surveys conducted in June and September 2013. Water quality within Middle Three Duck Lake may be influenced by drainage from the MRA during mine operations and closure, but no physical change in habitat is anticipated with the development of the Côté Gold project (Figure A.1).

A.14.1 Habitat Description

Middle Three Duck Lake has relatively simple basin morphology with a few small islands (Figures A.14.1 and A.14.2). Thermal stratification was apparent during the June 2013 field survey; however the lake was not thermally stratified in the fall (Appendix Table C.14). In June, the hypolimnion was present between 4 and 5 m (Appendix Table C.14). Dissolved oxygen was less than 3 mg/L at water depths greater than 7 m during the spring survey, whereas the water was well oxygenated throughout the water column in the fall (Appendix Table C.14). Likewise, water pH was relatively neutral at surface (6.96), however became acidic with depth (5.88 at bottom) in the spring and remained relatively neutral in the fall (Appendix Table C.14). Water clarity was moderate with a mean Secchi depth of 1.75 m (Appendix Table C.14).

Substrate in deeper areas of Middle Three Duck Lake was mainly sandy organic silt. The substrate in the littoral zone generally transitions from mainly sand, sandy-silt or cobble to mostly sandy-silt by 2 m depth containing moderate amounts of woody debris from overhanging and fallen trees. Large beds of emergent spikerushes (*Eleocharis* sp.) are present in the south basin of Middle Three Duck Lake (Figure A.14.1). Smaller macrophytes beds were observed in the small bays around Middle Three Duck Lake and surrounding the inlet from Upper Three



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.14.1: Middle Three Duck Lake Habitat Features

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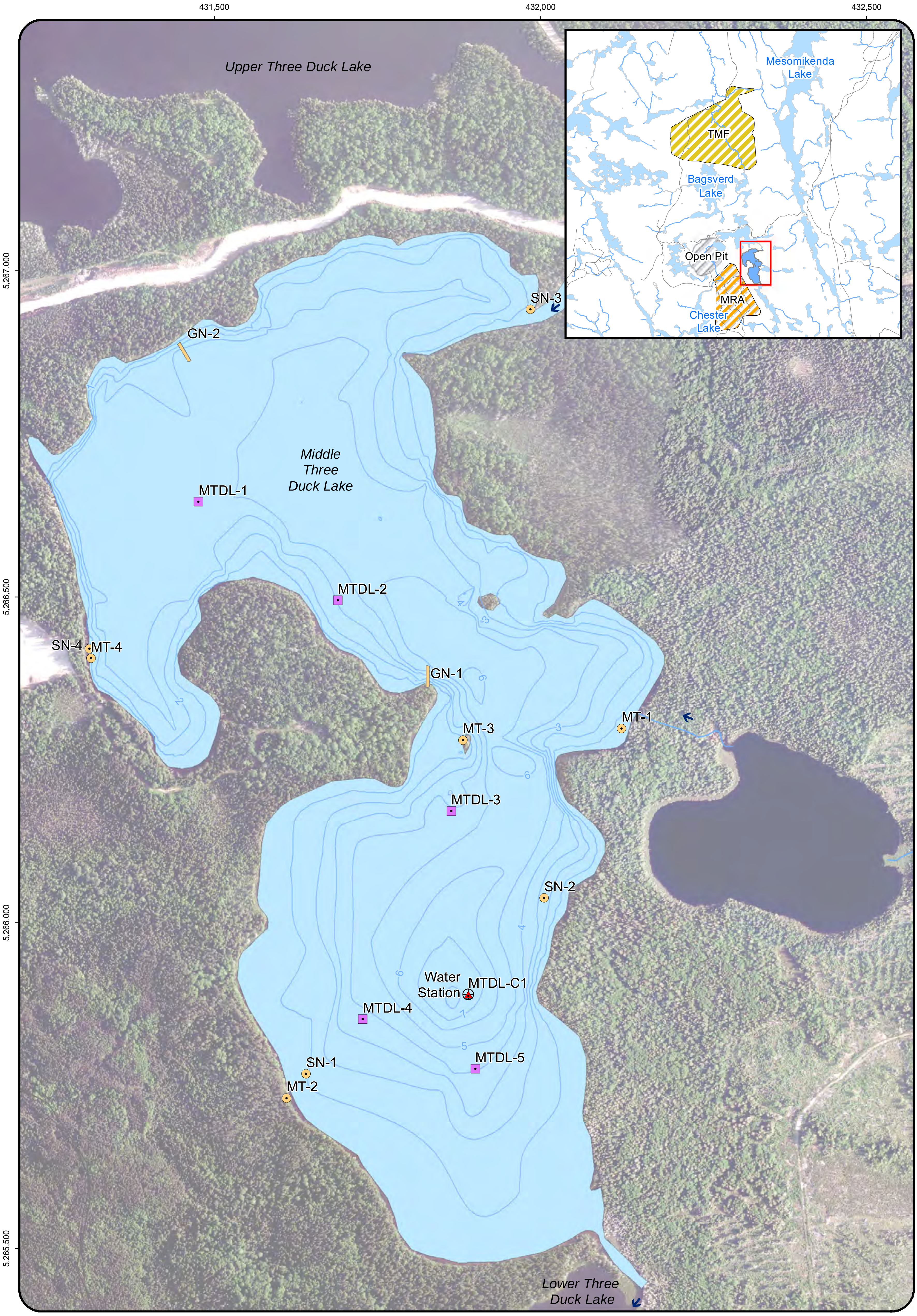

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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Features:
- Bathymetry (1 m intervals)
- Water Flow Direction

Figure A.14.2: Middle Three Duck Lake Bathymetry and Sampling Locations

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Duck Lake (Figure A.14.1). Aquatic vegetation consisted of spikerush, yellow pond lily (*Nuphar variegatum*), sedges (*Carex* sp.) along the shoreline at the time of the survey (early spring 2013; Figure A.14.1).

The shoreline of Middle Three Duck Lake is dominated by sand, sandy-silt and cobble embedded in silty-sand (Figure A.14.1). A few bedrock outcrops are present around the shoreline (Figure A.14.1). Middle Three Duck Lake is generally treed to the shoreline, with black spruce (*Picea mariana*) and eastern white cedar (*Thuja occidentalis*) being the dominant species with a few white birch (*Betula papyrifera*). No wetlands were found adjacent to Middle Three Duck Lake (Figure A.12.1). Leatherleaf (*Chamaedaphne calyulata*) commonly overhangs the shoreline with the cedar trees and sedges.

A.14.2 Fish Community Composition

Nine species were captured in Middle Three Duck Lake during the June 2013 field survey (Table A.14.1, Figure A.14.2 and Appendix Table F.13). The large-bodied fish community included moderate numbers of walleye (*Sander vitreus*), northern pike (*Esox lucius*), white sucker (*Catostomus commersonii*), and yellow perch (*Perca flavescens*) with fewer lake whitefish (*Coregonus clupeaformis*; Table A.14.1). The small-bodied fish community was dominated by blacknose shiner (*Notropis heterolepis*) and Iowa darter (*Etheostoma exile*; Table A.14.1). Few spottail shiner (*Notropis hudsonius*) and common shiner (*Luxilus cornutus*) were also present (Tables A.14.1). No endangered, threatened or special concern fish species (COSEWIC 2013) were observed in Middle Three Duck Lake during the June 2013 field survey.

A.14.3 Fish Habitat Evaluation

Excellent spawning and rearing habitat for northern pike was found in Middle Three Duck Lake associated with overhanging shoreline vegetation, the large emergent vegetation beds found in the southern basin and the small macrophyte beds located in the small bays and the inlet from Upper Three Duck Lake (Table A.1 and Figure A.14.1). The overhanging vegetation along the shoreline combined with the open areas provide excellent spawning, rearing and foraging habitat for yellow perch (Table A.1 and Figure A.14.1). Walleye and white sucker spawning within Middle Three Duck is limited to the cobble points and the sandy shorelines around the lake (Table A.1 and Figure A.14.1). Good rearing and foraging/cover for these species in found through the combination of rocky habitat, submergent vegetation in small bays and open-water areas with sandy-silt substrate. Moderate to good spawning and rearing habitat for lake whitefish is available in association with rocky points and sandy shoreline substrate. Deeper, cooler areas within Middle Three Duck Lake may be limited during the summer months for adult whitefish (Table A.1 and Figure A.14.1).

Table A.14.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Middle Three Duck Lake, 2013.

a) Gill Netting

Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
lake whitefish	4	0.28
northern pike	9	0.63
walleye	11	0.77
white sucker	8	0.56
yellow perch	4	0.28
Total	**36**	**2.53**

b) Minnow Trapping

Species	Total Caught	CPUE (# of fish/trap*d)
yellow perch	2	0.11

c) Seining

Species	Total Caught	CPUE (# of fish/m^2)
blacknose shiner	345	0.750
common shiner	1	0.002
Iowa darter	106	0.230
northern pike	1	0.002
spottail shiner	30	0.065
yellow perch	482	1.048
Total	**965**	**2.098**

The presence of very large numbers of blacknose shiner suggests excellent habitat for all life stages (Table A.1 and Figure A.14.1). Excellent spawning habitat is also provided for Iowa darter by overhanging vegetation, woody debris or aquatic vegetation (Table A.1). Rearing and foraging habitat is found in the shallow bay areas with mud to sand bottom, organic debris and rooted vegetation (Table A.1 and Figure A.14.1). Excellent habitat for spawning spottail shiner is provided in areas with sandy substrate and excellent rearing and foraging habitat is offered by weedy and open-water areas (Table A.1 and Figure A.14.1). Moderate spawning, rearing and foraging habitat are provided for golden shiner through the macrophyte beds and open water (Table A.1).

A.14.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

A.15 MOLLIE RIVER AND CLAM CREEK

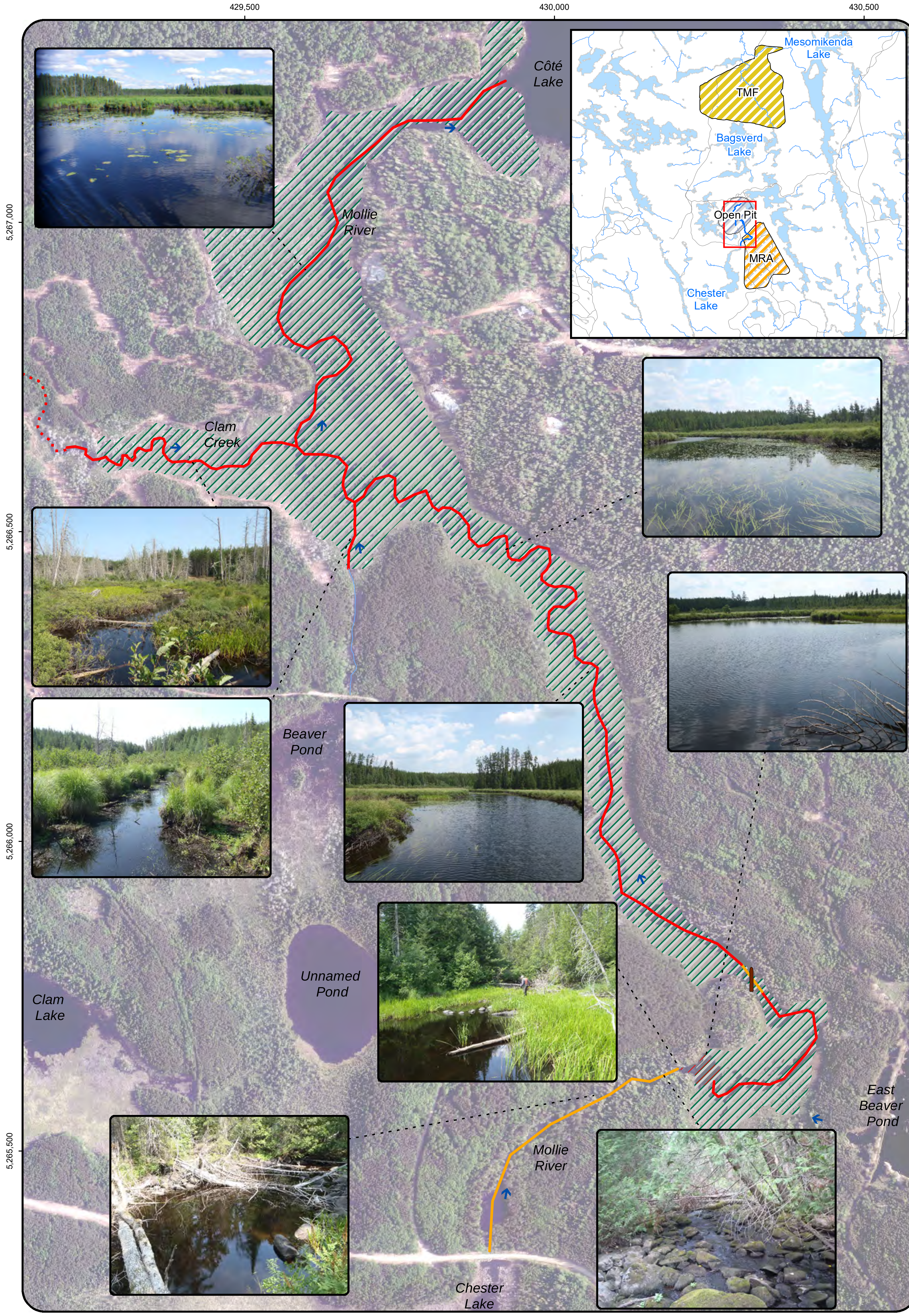
Within the local study area, the Mollie River connects Chester Lake to Côté Lake is (Figure A.15.1). Within this 3 km reach the Mollie River traverses the proposed Côté Gold open pit (Figure A.1). Three small, intermittent first-order streams feed into the Mollie River between Chester and Côté lakes which originate from East Beaver Pond, Unnamed Beaver/Pond Pond, and Clam Lake, the latter of which is referred to as Clam Creek (Figure A.15.1).

The assessment of habitat and fish community for this section of the Mollie River and Clam Creek is largely based on the field survey conducted in July 2012. Limited fishing was also conducted in Clam Creek in the fall of 2013. This section of the Mollie River and Clam Creek will be completely lost with the construction of the open pit. During operations the Mollie River will be rerouted around the open pit (Figure A.1) to Clam Lake. However, following operations and pit filling Clam Creek will be restored and will connect Clam Lake to the open pit lake.

A.15.1 Habitat Description

Mollie River

The Mollie River, within the 3 km reach, includes low- and high-gradient erosional habitats (Figure A.15.1). Mollie River low-gradient habitat is characterized by a meandering channel with stream morphology represented mainly by slow run and pools. The main channel of low-gradient habitat at the Mollie River averages approximately 10.6 m wide upstream of the confluence with Clam Creek, and approximately 14.2 m wide near the outlet to Côté Lake (Figure A.15.1). Water depth at in the low-gradient habitat of the Mollie River generally ranges from approximately 0.7 to 1.5 m in run habitat, with pool areas reaching maximum depths of approximately 2.5 to 3.0 m, during the July 2012 survey. Substrate of Mollie River in the low-gradient habitat generally includes a moderate to thick layer of organic muck over clay pan. Instream vegetation is very dense near the East Beaver Pond confluence, with 90 to 100 % areal coverage. With progression downstream, vegetation areal coverage generally decreases to between 50 and 80 %. Submergent vegetation was dominant by burreed (*Sparganium* sp.) and pondweed (*Potamogeton* sp.), with submergent bladderwort (*Utricularia* sp.) and mermaid's hair (*Scirpus subterminalis*), yellow pond lily (*Nuphar variegatum*) and emergent cattails (*Typha* sp.) also present at low-gradient areas. Low-gradient habitat of the Mollie River is generally bordered by wetland, with the average wetland width approximately 115 m wide (range from 55 to 310 m wide; Figure A.15.1). The wetland plant community adjacent to this habitat of the Mollie River includes mainly sedge (*Carex* sp.) and speckled alder (*Alnus incana*), with shoreline areas often lined by sweet gale (*Myrica gale*) and/or leatherleaf (*Chamaedaphne*



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Meters

MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

River Habitat Topography:

- Deep Pool
- High-Gradient
- Moderate Gradient
- Low-Gradient
- Intermittent Low-Gradient Channel
- Habitat Not Completed
- Low-Gradient Ponded Area

Habitat Features:

- Beaver Lodge
- Logs and Fallen Trees
- Water Flow Direction
- Wetland

Figure A.15.1: Mollie River and Clam Creek Habitat Features

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calyculata). Forest next to the low-gradient area wetlands is generally dominated by coniferous species including black spruce (*Picea mariana*) and jack pine (*Pinus banksiana*).

High-gradient habitat occurs at two locations in the Mollie River between Chester and Côté lakes, including a relatively long 440 m reach beginning at the outlet of Chester Lake, and an approximately 10 m long reach located a short distance downstream of the East Beaver Pond confluence (Figure A.15.1). High-gradient habitat in these areas is represented by a combination of riffle, run and pool stream morphology. Below Chester Lake, the Mollie River had a channel width of approximately 2 m and a mean water depth of about 0.2 m during the July 2012 survey. Substrate at high-gradient habitat consists of large cobble and boulder that is often deeply embedded in sand. Aquatic vegetation included aquatic mosses and sparse periphytic algae, with few vascular plants. However, abundant large woody debris and overhanging vegetation provide considerable amounts of instream cover. High-gradient habitat in the Mollie River is generally treed to the shoreline, with eastern white cedar (*Thuja occidentalis*), jack pine and black spruce the most common species encountered along these reaches.

Clam Creek

The confluence of Clam Creek and the Mollie River is situated approximately 750 m upstream of Côté Lake (Figure A.15.1). Clam Creek had a readily identifiable channel through the wetland area at its confluence with the Mollie River, however about 350 m upstream of the confluence as the creek enters the forested area a distinct channel was no longer apparent during the July 2012 field survey. From this point Clam Creek is an intermittent stream (approximately 200 m), with minimal discharge observed at the outlet of Clam Lake at the time of the field survey (see Appendix A.7 for further details on Clam Lake). Lower Clam Creek is entirely represented by low-gradient habitat (Figure A.15.1). The lower Clam Creek channel increases in width from the forest line where it is about one metre to approximately 3.5 m near its confluence with the Mollie River. No flow (i.e., stagnant) was observed in lower Clam Creek, with water depth in this area mainly dictated by Mollie River flow levels. Water depths ranged from approximately 0.1 m near the forest to approximately 3.5 m near the Mollie River. Substrate consists entirely of soft organic silt at lower Clam Creek. Aquatic vegetation of lower Clam Creek includes dense growth of bladderwort and stonewort (*Chara* sp.), patchy burreed in submergent and emergent forms, and sparse occurrence of the emergent plant, water arum (*Calla palustris*). Large woody debris is also abundant in lower Clam Creek, with standing deadwood commonly observed further upstream where the defined channel is lost. Lower Clam Creek is bordered mainly by sedge wetland with varying amounts of speckled alder, leatherleaf, sweet gale and/or bog rosemary (*Andromeda glaucophylla*). Forest next to the low-gradient area wetlands is generally dominated by coniferous species including black spruce and jack pine. Waters of lower Clam Creek contained a visible surface sheen in July 2012, which may have been related to nearby drilling activity or the combination of high organic content sediment coupled with stagnant flow conditions.

A.15.2 Fish Community Composition

A total of six fish species were captured at Mollie River low-gradient habitat areas during the July 2012 field survey (Table A.15.1, Figure A.15.2 and Appendix Table F.14). The large-bodied fish community was dominated by yellow perch (*Perca flavescens*), with moderate numbers of northern pike (*Esox lucius*) and white sucker (*Catostomus commersonii*; Table A.15.1). The small-bodied fish community included moderate numbers of golden shiner (*Notemigonus crysoleucas*) as well as low numbers of blacknose shiner (*Notropis heterolepis*) and Iowa darter (*Etheostoma exile*). Limited fishing was conducted at Clam Creek in 2013. No fish were caught, however it is expected that fish community species composition would be similar between the lower reaches of Clam Creek and low-gradient habitat of the Mollie River. No fishing was conducted in the high-gradient areas of the Mollie River, although the fish community of these areas was likely to be similar to that of Bagsverd Creek (see Appendix A.1). No COSEWIC (2013) listed endangered, threatened or special concern fish species were observed in the Mollie River during the July 2012 survey.

A.15.3 Fish Habitat Evaluation

Wetlands located along the margins of the Mollie River provide excellent spawning habitat for northern pike, whereas dense macrophyte coverage and abundant overhanging vegetation along the main channel provides excellent rearing habitat (Table A.1). Although the main channel of the Mollie River also contains features suitable for foraging by small adults, the overall quality of this habitat is marginal to good for large adult northern pike as a result of water temperatures likely exceeding thermal preferences during the summer months. Abundant submerged aquatic vegetation and overhanging vegetation throughout this reach of the Mollie River likely provides excellent spawning, juvenile rearing and adult foraging habitat for yellow perch (Table A.1). High gradient areas near the Chester Lake outlet in the Mollie River likely provide marginal to good habitat for white sucker and walleye (*Sander vitreus*) spawning. Although low-gradient areas that predominate much of the Mollie River provide good rearing and foraging habitat for white sucker, the lack of rocky structure and the shallow nature of these areas results in marginal habitat for juvenile and adult walleye (Table A.1).

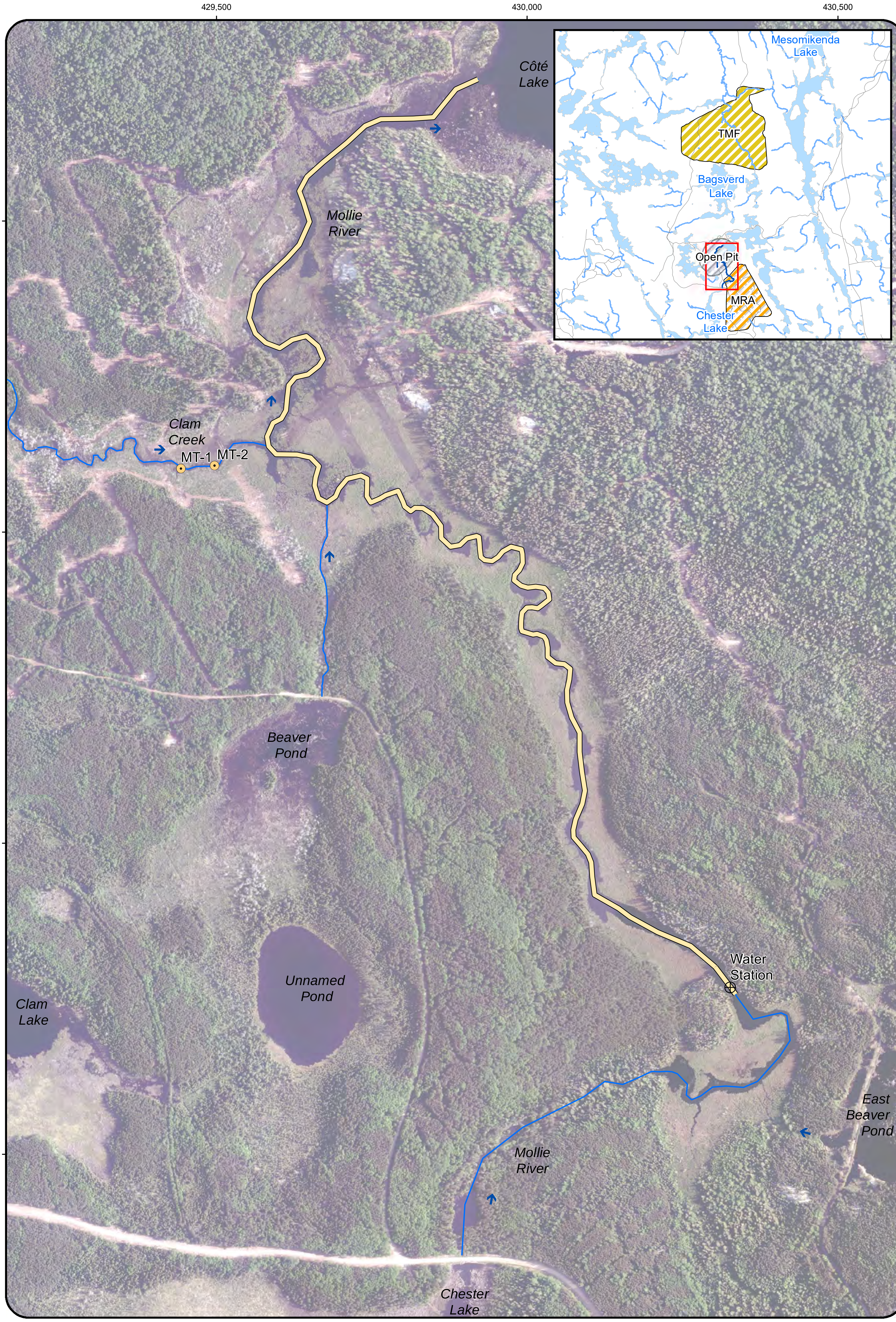
The Mollie River provides good spawning and rearing/foraging habitat for golden shiner (Table A.1) as a result of a diverse and abundant aquatic plant community. For blacknose shiner, sand

Table A.15.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Mollie River and Clam Creek, 2012 and 2013.

a) Boat Electrofishing

Area / Year	Species	Total Caught	CPUE (# of fish/hr)
Mollie River 2012	blacknose shiner	5	2.59
	golden shiner	22	11.38
	Iowa darter	1	0.52
	northern pike	38	19.65
	white sucker	20	10.34
	yellow perch	406	209.97
	Total	**492**	**254.45**

Note: Minnow trapping was conducted in Clam Creek in 2013, but no fish were caught after 40.03 trap hours.



MAP INFORMATION
Map Projection: NAD 1983
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Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station
- Boat Electrofishing Zone

Other Feature:
- Water Flow Direction

Figure A.15.2: Mollie River and Clam Creek Sampling Locations

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substrate suitable for spawning may be found near high gradient areas of the stream, with abundant aquatic vegetation within this reach also providing good rearing and foraging/cover habitat (Table A.1). Extensive wetland areas, overhanging vegetation and dense coverage of rooted macrophytes provide good spawning, rearing and foraging habitat for Iowa darter throughout the Mollie River (Table A.1).

Fish habitat quality in lower Clam Creek is generally similar to that in the Mollie River, but there is less available (Table A.1). A notable exception is the occurrence of excellent northern pike spawning habitat in lower Clam Creek which, similar to the Mollie River, reflects wetland areas located immediately adjacent to the main channel providing abundant vegetation. It is also noteworthy that, because no high gradient areas with gravel-cobble substrate occur in lower Clam Creek, no white sucker or walleye spawning habitat is available (Table A.1).

A.15.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

A.16 NEVILLE LAKE

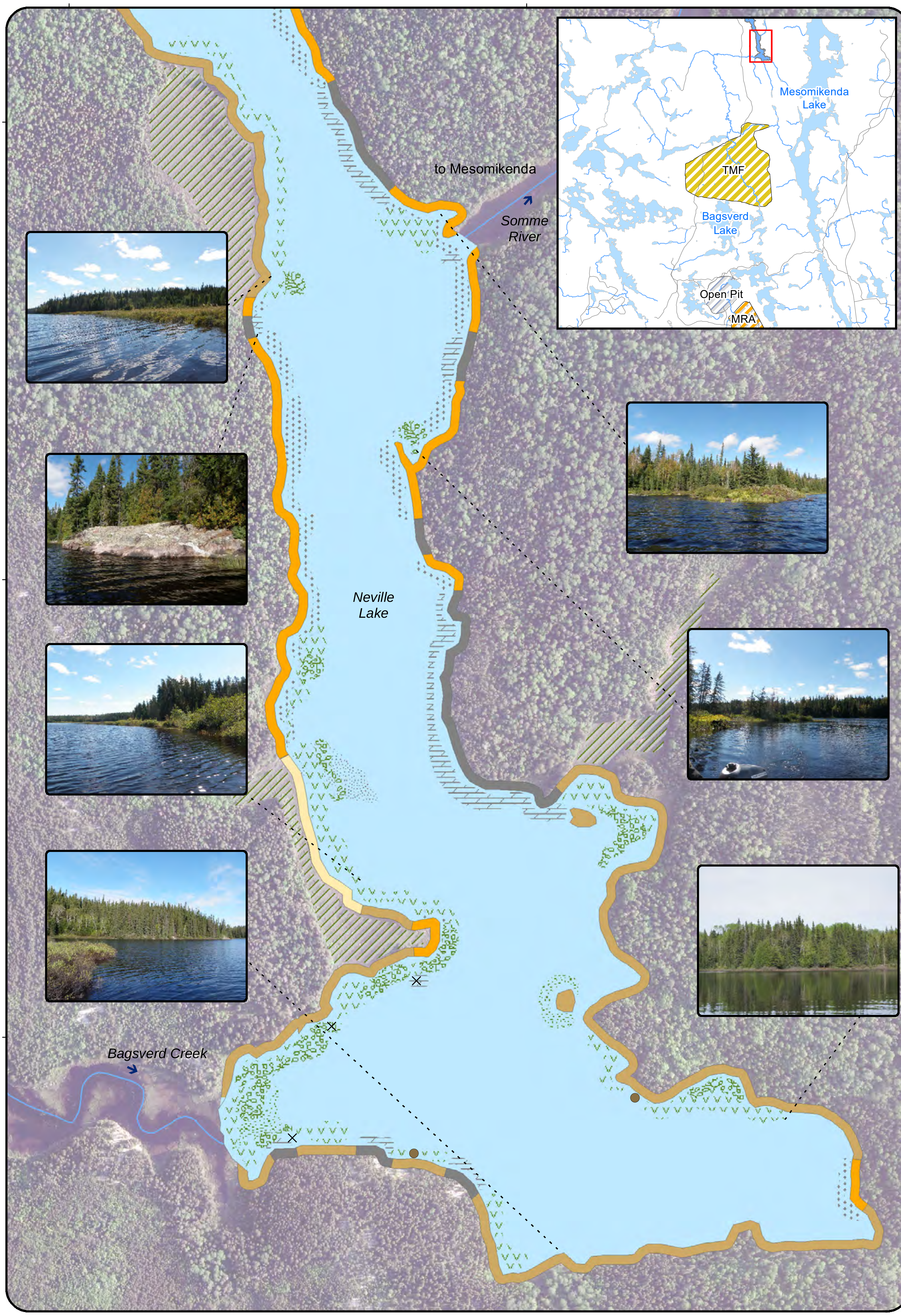
Neville Lake is located within the Mesomikenda Lake watershed approximately 10 km north of the Côté Gold site (Figures A.16.1 and A.1). The lake has a surface area of approximately 107.7 ha, a total estimated volume of 3.43 x 10^6 m^3, and a mean depth of approximately 2.8 m based on the annual average water level (Figure A.16.2). The lake has one deep basin at the south end that reaches a maximum depth of 11 m and is characterized by a relatively simple basin, several small islands and two main stream inlets. There are two primary inflows to the lake; the Somme River which enters at the north end of the lake and Bagsverd Creek which enters at the opposite end into the south basin. Neville Lake discharges on the eastern shore to the Somme River which flows northeast to Mesomikenda Lake (Figures A.1 and A.16.1).

Water quality within Bagsverd Creek and Neville Lake may be influenced by discharge from the Côté Gold tailing management facility. It is expected that if effluent is discharged to Bagsverd Creek, water quality within south basin of Neville Lake could be influenced from the inlet of Bagsverd Creek to the outlet of the lake. Therefore, the southern portion of Neville Lake was assessed. The assessment of habitat and fish community for southern end of Neville Lake is based on the field surveys conducted in June and September 2013.

A.16.1 Habitat Description

The southern section of Neville Lake contains the main basin with a few small islands (Figures A.16.1 and A.16.2). Thermal stratification was apparent during both the spring and fall 2013 field surveys (Appendix Table C.16). In June, the hypolimnion was present between 3 and 4 m, where in the fall it was deeper at 6 m (Appendix Table C.16). Hypoxia (i.e., dissolved oxygen concentrations < 1 mg/L) occurred at depths greater than 7 m in the fall (Appendix Table C.16). Water pH was slightly acidic (6.52 and 6.83 for spring and fall, respectively) that became more acidic with depth (5.81 and 6.46 for spring and fall, respectively; Appendix Table C.16). Changes in pH and specific conductance with depth in the fall water quality profile were likely associated with lower dissolved oxygen concentrations causing reducing conditions within the hypolimnion (Appendix Table C.16). Water clarity was relatively low with a mean Secchi depth of 1.2 m (Appendix Table C.16).

Substrate in deeper areas (>3.5 m) of Neville Lake was mainly silt. Shallow littoral substrate generally transitioned from mainly sandy-organics or cobble embedded in silty-sand to organic silt with depth (> 2 m). Macrophytes were observed bordering the shoreline and surrounding Bagsverd Creek inlet (Figure A.16.1). Aquatic vegetation bordering the shoreline consisted of emergent spikerushes (*Eleocharis* sp.) with scattered yellow pond lily (*Nuphar variegatum*) and



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Rock
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.16.1: Neville Lake Habitat Features

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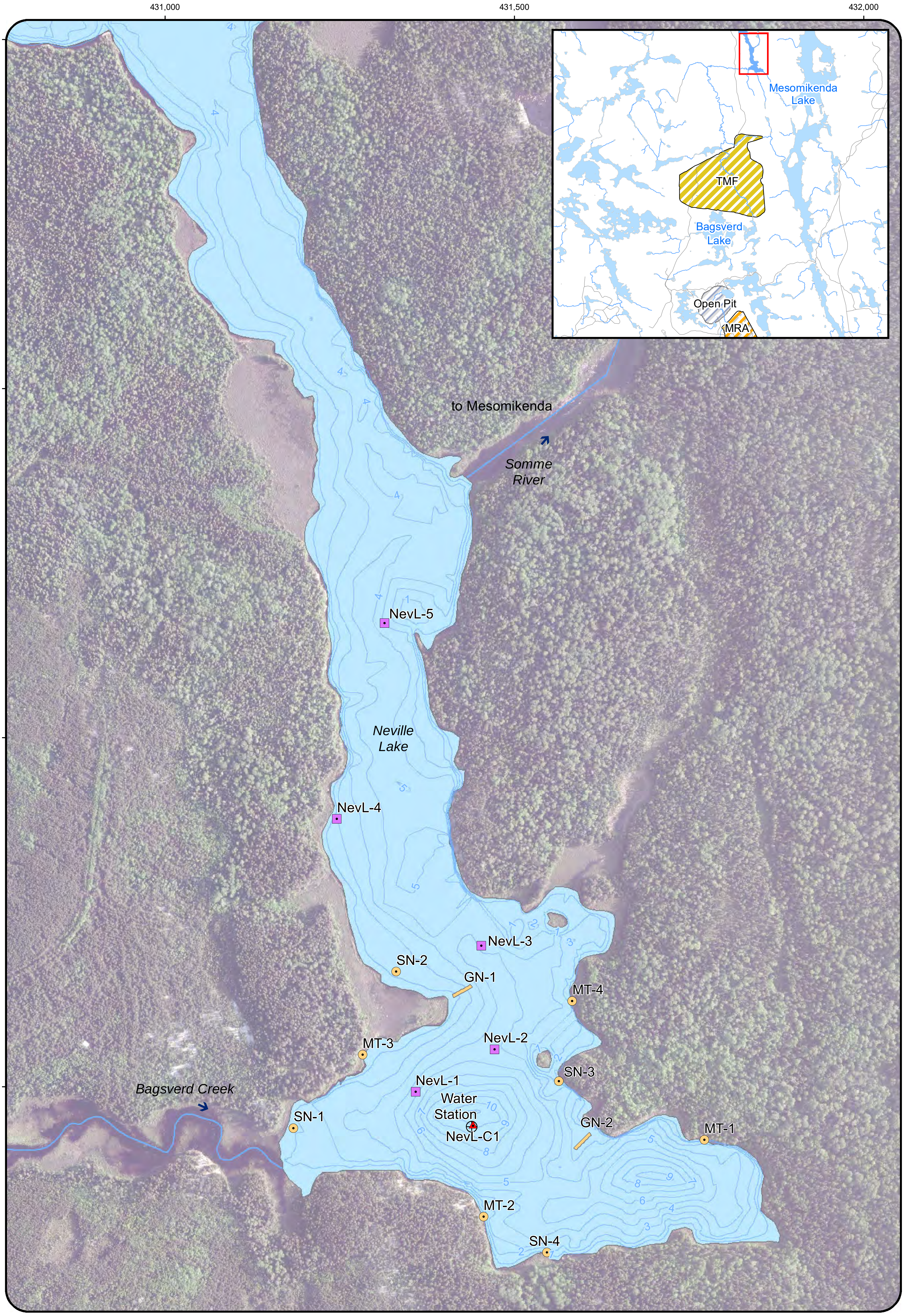
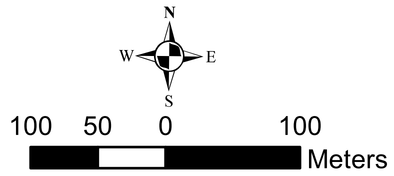
minnow environmental inc.





MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Features:
- Water Flow Direction
- Bathymetry (1 m intervals)

Figure A.16.2: Neville Lake Bathymetry and Sampling Locations

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minnow environmental inc.

white water lily (*Nymphaea odorata*). The macrophyte bed surrounding Bagsverd Creek inlet included dense growth yellow pond lily, pondweed (*Potamogeton* sp.) and mermaid's hair (*Scirpus subterminalis*) was present with proximity to the inlet (Figure A.16.1).

The shoreline consists primarily of cobble/boulder with some exposed bedrock and sandy organic areas (Figure A.16.1). Shoreline areas are generally forested, with jack pine (*Pinus banksiana*), black spruce (*Picea mariana*), and fewer eastern white cedar (*Thuja occidentalis*) scattered white birch (*Betula papyrifera*). Leatherleaf (*Chamaedaphne calyulata*) commonly overhangs the shoreline with sedges (*Carex* sp.) in addition to other common understory species such as sweet gale (*Myrica gale*), bog laurel (*Kalmia polifolia*) and speckled alder (*Alnus incana*). These species are the dominant species observed in the wetland areas that border the western shore of Neville Lake (Figure A.16.1).

A.16.2 Fish Community Composition

Nine species were captured in Neville Lake during the June 2013 field survey (Table A.16.1, Figure A.16.2 and Appendix Table F.14). The large-bodied fish community included moderate numbers of northern pike (*Esox lucius*), white sucker (*Catostomus commersonii*), and lake whitefish (*Coregonus clupeaformis*), with fewer walleye (*Sander vitreus*), yellow perch (*Perca flavescens*) and smallmouth bass (*Micropterus dolomieu*; Table A.16.1). The small-bodied fish community was dominated by spottail shiner (*Notropis hudsonius*) with fewer blacknose shiner (*Notropis heterolepis*) and golden shiner (*Notemigonus crysoleucas*; Table A.14.1). No endangered, threatened or special concern fish species (COSEWIC 2013) were observed in Neville Lake during the June 2013 field survey.

A.16.3 Fish Habitat Evaluation

Excellent spawning, rearing and foraging habitat for northern pike was found in Neville Lake associated with overhanging shoreline vegetation, the large macrophyte bed surrounding Bagsverd Creek inlet and the vegetation located along the shoreline (Table A.1 and Figure A.16.1). The overhanging and submergent vegetation along the shoreline combined with the open areas provide excellent spawning, rearing and foraging habitat for yellow perch (Table A.1 and Figure A.16.1). Walleye and white sucker spawning within Neville Lake is limited to the shoreline; however riffle habitat was observed at the outlet to the Somme River that would provide spawning habitat for these species (Table A.1 and Figure A.16.1). Good rearing and foraging/cover for these species is found through the combination of rocky habitat, submergent vegetation in small bays and open water areas with sandy-silt substrate. Moderate to good spawning and rearing habitat for lake whitefish is available in association with rocky points and sandy-organic shoreline substrate. Deeper, cooler areas within Neville Lake would only be

Table A.16.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Neville Lake, 2013.

a) Gill Netting

Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
lake whitefish	8	0.44
northern pike	7	0.39
smallmouth bass	1	0.06
walleye	3	0.17
white sucker	8	0.44
yellow perch	2	0.11
Total	**29**	**1.60**

b) Minnow Trapping

Species	Total Caught	CPUE (# of fish/trap*d)
spottail shiner	1	0.06
yellow perch	2	0.13
Total	**3**	**0.19**

c) Seining

Species	Total Caught	CPUE (# of fish/m^2)
blacknose shiner	250	0.625
golden shiner	45	0.113
spottail shiner	1,200	3.000
white sucker	1	0.003
yellow perch	125	0.313
Total	**1,621**	**4.053**

found in the deeper basin during the summer months for adult whitefish (Table A.1 and Figure A.16.1). Good spawning, juvenile rearing and adult foraging habitat for smallmouth bass is provided through the rocky substrate, shallow small bays and deeper water that provides refuge from warm summer water temperatures (Table A.1 and Figure A.16.1).

The presence of very large numbers of spottail shiner suggests excellent habitat for all life stages (Table A.1 and Figure A.16.1). Good habitat for spawning blacknose shiner is provided in areas with sandy substrate and excellent rearing and foraging habitat is offered by weedy and open-water areas (Table A.1 and Figure A.14.1). Moderate spawning, rearing and foraging habitat are provided for golden shiner through the macrophyte beds and open water (Table A.1).

A.16.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

A.17 NORTH BEAVER POND

The North Beaver Pond is an approximately 0.68 ha pond located within the Mollie River watershed about 260 m north of the proposed Côté Gold open pit, and about 30 m north of the Upper Three Duck Lake Inlet Arm (Figures A.17.1 and A.1). The pond, which was formed as a result of the combination of beaver activity and road construction, lies within an approximately 135 m long by 70 m wide (3.4 ha) depression that has no defined inlet source. Flow from North Beaver Pond occurs intermittently, discharging from the south end of the pond across the access road and entering a small, 0.3 m wide channel that drains into the Inlet Arm of Upper Three Duck Lake (Figure A.17.1).

The North Beaver Pond will be lost with the construction of the low grade ore stockpile (Figure A.1). The physical habitat and fish community characterization in North Beaver Pond was collected during a field survey conducted in July 2012.

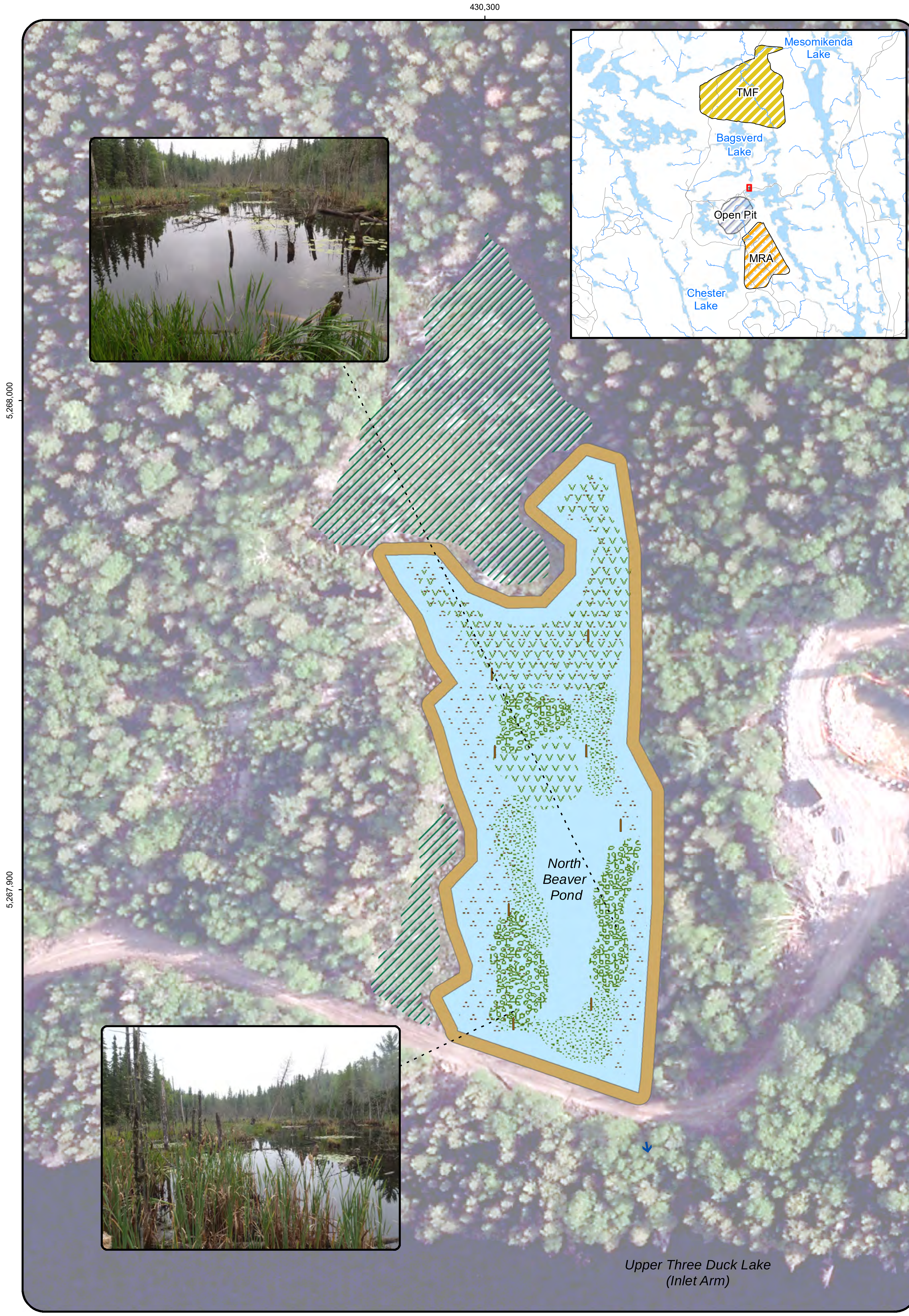
A.17.1 Habitat Description

Water depth of the North Beaver Pond generally ranged between 0.2 and 0.5 m, and appeared markedly lower than historical levels at the time of the survey, with large areas of exposed substrate surrounding the water line. In July 2012, water temperature was warm (23.4°C), pH was near neutral (6.51) and dissolved oxygen was low (3.59 mg/L; Appendix Table C.17).

The littoral substrate and shoreline of North Beaver Pond consists mostly of soft organic muck with abundant coarse particulate matter and large woody debris (Figure A.17.1). Dense aquatic vegetation, including submergent burreed (*Sparganium* sp.), stonewort (*Chara* sp.) and fern pondweed (*Potamogeton robbinsii*) together with yellow pond lily (*Nuphar variegatum*), provides nearly 100% coverage of the pond bed (Figure A.17.1). In addition, standing deadwood, logs and fallen trees provide additional cover for fish. Riparian areas adjacent to the water contain cattail (*Typha* sp.), burreed and sedges (*Carex* sp.), with the pond set in mixed forest dominated by black spruce (*Picea mariana*) and white birch (*Betula papyrifera*), with some eastern white cedar (*Thuja occidentalis*).

A.17.2 Fish Community Composition

The fish community of North Beaver Pond consisted solely of two small-bodied species; finescale dace and northern redbelly dace (*Chrosomus neogaeus* and C. *eos*, respectively), which were both captured in relatively high abundance (Table A.17.1, Figure A.17.2 and Appendix Table F.16). Consistent with other pond fish communities, the fish species observed at North Beaver Pond are considered characteristic of headwater environments in Northern



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features
- Beaver Lodge
- Logs and Fallen Trees
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.17.1: North Beaver Pond Habitat Features

Created by:

Table A.17.1: Summary of fish catches and catch-per-unit-effort (CPUE) in North Beaver Pond, 2012.

a) Minnow Trapping

Species	Total Caught	CPUE (# of fish/trap*d)
finescale dace	112	30.93
northern redbelly dace	205	56.61
Total	**317**	**87.53**

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Meters

MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Feature:
- Water Flow Direction

Figure A.17.2: North Beaver Pond Sampling Locations

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Ontario. No COSEWIC (2013) listed endangered, threatened or special concern fish species were observed at North Beaver Pond during the July 2012 survey.

A.17.3 Fish Habitat Evaluation

Moderate to good habitat for spawning, rearing and foraging for finescale and northern redbelly dace is provided by the dense macrophytes present in the pond.

A.17.2 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

A.18 SCHIST LAKE

Schist Lake is located within the Neville Lake watershed approximately 2.5 km northwest of the Côté Gold open pit (Figures A.18.1 and A.1). The lake has a surface area of approximately 403 ha and can be broken into two arms, one to the west and the other to the east joined by a narrower channel (Figure A.1). The lake is upstream of all proposed mining influences and was assessed for use as a reference area. Specifically, the eastern arm was characterized as a suitable reference area for lakes potentially affected within the Mollie River and Neville Lake watersheds. The eastern arm of the lake is characterized by a complex basin morphology that includes numerous islands and rocky shoals and a maximum depth of approximately 7 m (Figure A.18.1). Schist Lake has a number of inlets and discharges to Bagsverd Creek at the furthest southeastern point (Figure A.18.1). Water flows east from this location to Bagsverd Lake (Figure A.1).

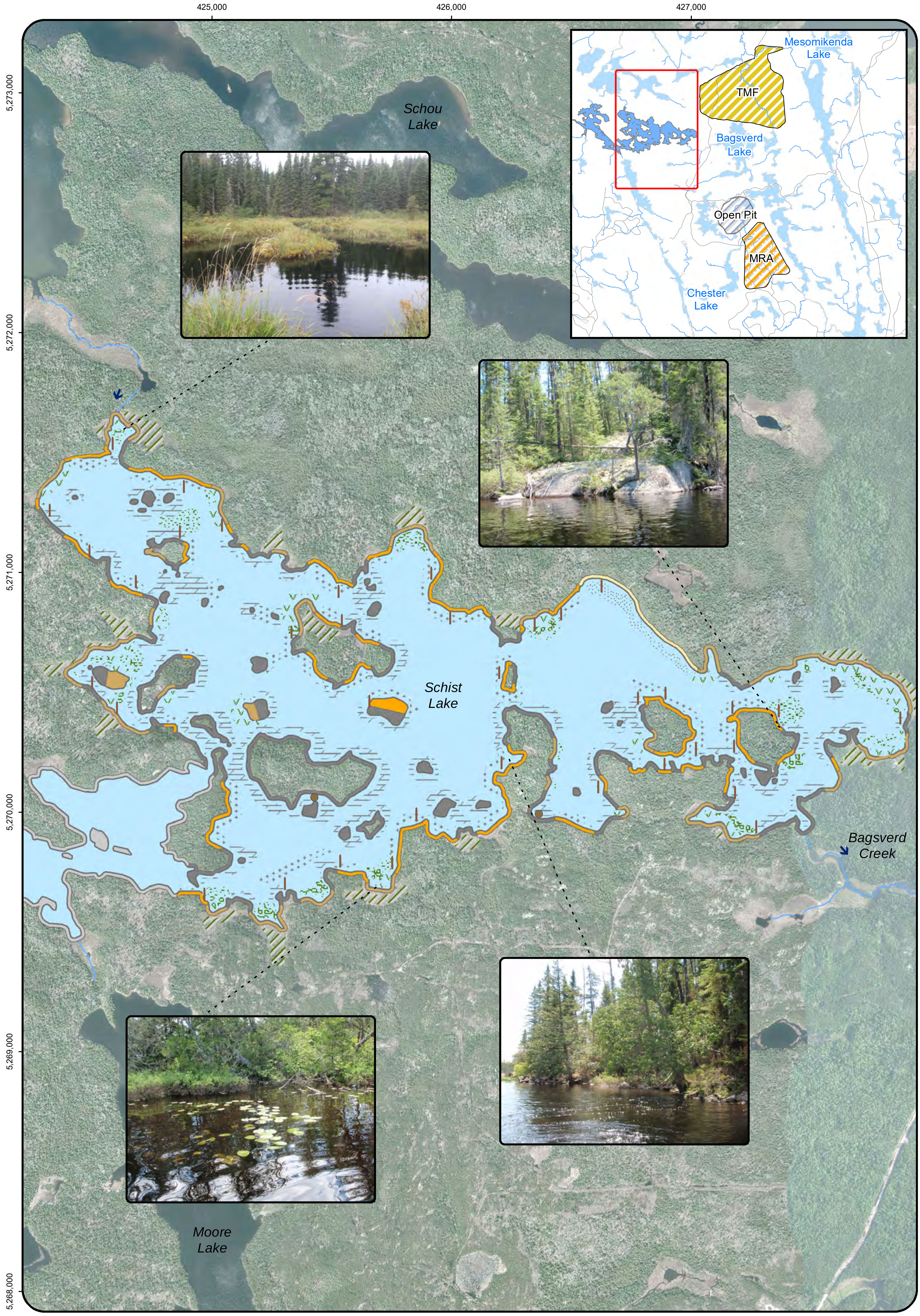
The assessment of fish habitat and fish community within the eastern arm of Schist Lake is based on the field surveys conducted in June and September 2013.

A.18.1 Habitat Description

The eastern arm of Schist Lake was generally less than 3 m with one deeper basin located at the east end of the lake (water profile location; Figures A.18.1 and A.18.2). Thermal stratification was only apparent during the spring 2013 survey, where the hypolimnion was present near bottom (5 m; Appendix Table C.18). The water column was well oxygenated, with the exception of near bottom concentrations, where dissolved oxygen was less than 3 mg/L (at 6 m depth; Appendix Table C.18). Surface water pH was neutral (7.53) in the spring and slightly basic in the fall (8.26) with relatively little change with depth (Appendix Table C.18). Water clarity was good with a mean Secchi depth of 3.25 m (Appendix Table C.18).

Shallow littoral substrate generally transitioned from mainly cobble, bedrock or sandy-silt quickly to organic silt. Sparse macrophytes were observed in and around the east arm of Schist Lake, largely found in the small shallower bays (Figure A.18.1). Aquatic vegetation generally consisted of yellow pond lily (*Nuphar variegatum*), water shield (*Brasenia schreberi*) and various types of pond weed (*Potamogeton* sp.).

The shoreline consists primarily of cobble/boulder with exposed bedrock and a few sandy beach areas (Figure A.18.1). Shoreline areas are generally forested, with jack pine (*Pinus banksiana*), black spruce (*Picea mariana*), and fewer eastern white cedar (*Thuja occidentalis*), scattered white birch (*Betula papyrifera*) and trembling aspen (*Populus tremuloides*). Leatherleaf (*Chamaedaphne calyulata*) commonly overhangs the shoreline with sedges (*Carex* sp.) in



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock
- Habitat Not Completed

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.18.1: Schist Lake Habitat Features

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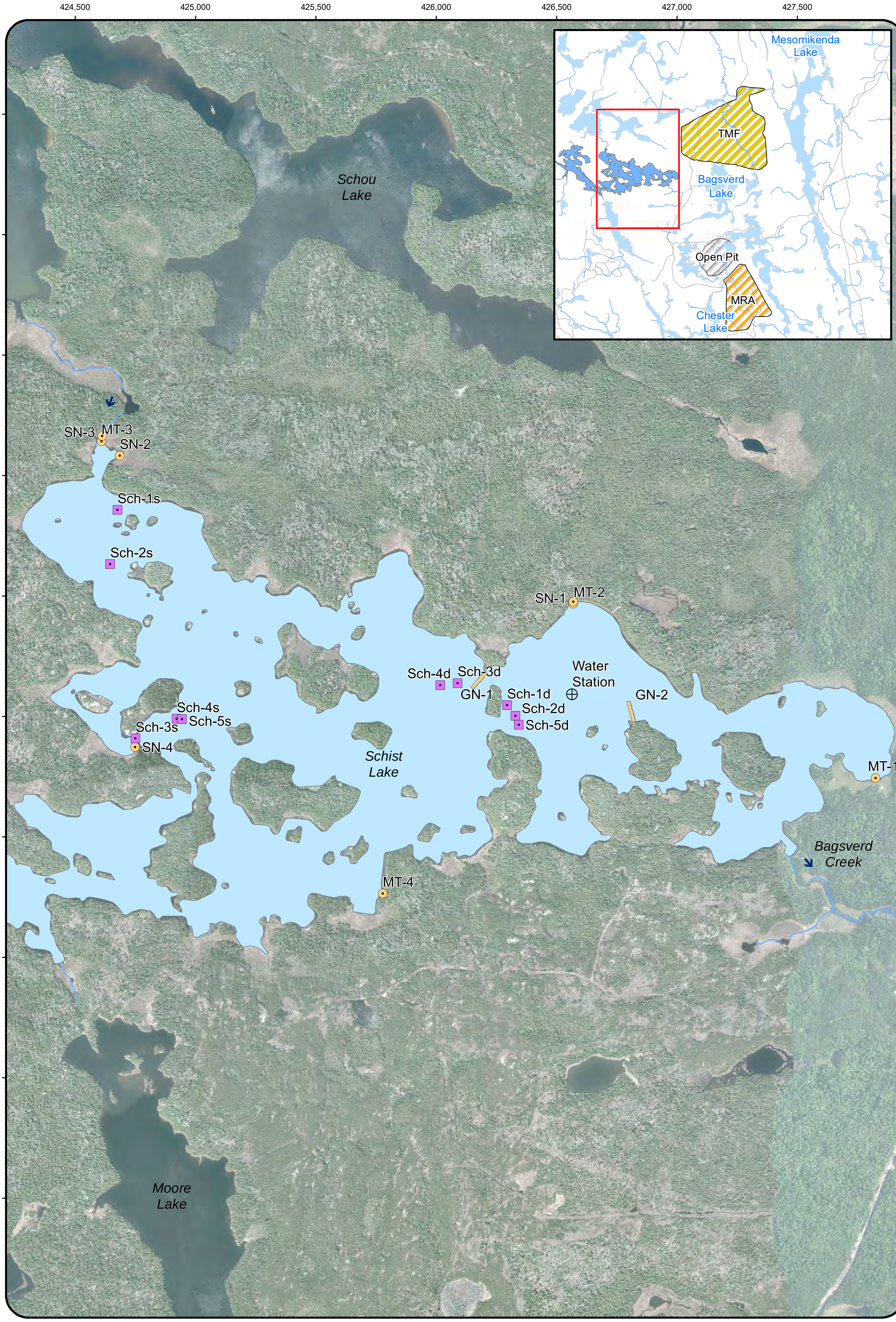

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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Feature:
- Water Flow Direction

Figure A.18.2: Schist Lake Sampling Locations

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addition to other common understory species such as sweet gale (*Myrica gale*), bog laurel (*Kalmia polifolia*) and speckled alder (*Alnus incana*). These species are the dominant species observed in the wetland areas that border the eastern arm of Schist Lake (Figure A.18.1).

A.18.2 Fish Community Composition

Ten species were captured in the eastern arm of Schist Lake during the June 2013 field survey (Table A.18.1, Figure A.18.2 and Appendix Table F.17). The large-bodied fish community included moderate numbers of northern pike (*Esox lucius*), walleye (*Sander vitreus*), white sucker (*Catostomus commersonii*), and yellow perch (*Perca flavescens*), with fewer lake whitefish (*Coregonus clupeaformis*; Table A.18.1). The small-bodied fish community was dominated by blacknose shiner (*Notropis heterolepis*), spottail shiner (*Notropis hudsonius*) and golden shiner (*Notemigonus crysoleucas*; Table A.18.1). Few finescale dace (*Chrosomus neogaeus*) and Iowa darter (*Etheostoma exile*) were also caught (Table A.18.1). No endangered, threatened or special concern fish species (COSEWIC 2013) were observed in Schist Lake during the June 2013 field survey.

A.18.3 Fish Habitat Evaluation

Good to excellent spawning, rearing and foraging habitat for northern pike was found in Schist Lake associated with overhanging shoreline vegetation and the macrophyte beds found in the small bays (Table A.1 and Figure A.18.1). The overhanging and submergent vegetation in the bay combined with the open areas provide excellent spawning, rearing and foraging habitat for yellow perch (Table A.1 and Figure A.18.1). Inlet streams to Schist Lake were not evaluated, and therefore it is unclear the extent to which inlet streams may provide spawning habitat for white sucker and walleye. Within the area of the lake surveyed, only marginal spawning habitat was found for these species and was restricted to the cobble and gravel shorelines (Table A.1 and Figure A.18.1). The occurrence of softer substrates in the littoral area would suggest good rearing habitat and good foraging habitat for juvenile and adult white sucker as well as for walleye (Table A.1). Moderate to good spawning and rearing habitat for lake whitefish is available in association with rocky shoals and sandy-organic shoreline substrate. Deeper, cooler areas of refuge during the summer months for adult whitefish within Schist are limited in the eastern arm (Table A.1 and Figure A.18.1).

The presence of very large numbers of blacknose shiner suggests excellent habitat for all life stages (Table A.1 and Figure A.18.1). Good habitat for spawning spottail shiner is provided in areas with sandy substrate and excellent rearing and foraging habitat is offered by weedy and open-water areas (Table A.1 and Figure A.14.1). Good to moderate spawning, rearing and foraging habitat for golden shiner is present where weedy habitat is located (Table A.1 and

Table A.18.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Schist Lake, 2013.

a) Gill Netting

Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
lake whitefish	3	0.18
northern pike	16	0.98
spottail shiner	6	0.37
walleye	17	1.05
white sucker	16	0.98
yellow perch	10	0.62
Total	**68**	**4.19**

b) Minnow Trapping

Species	Total Caught	CPUE (# of fish/trap*d)
blacknose shiner	1	0.06
Iowa darter	7	0.43
yellow perch	19	1.17
Total	**27**	**1.66**

c) Seining

Species	Total Caught	CPUE (# of fish/m^2)
blacknose shiner (adult)[a]	346	0.227
blacknose shiner (juvenile)[a]	301	0.197
finescale dace	2	0.001
golden shiner	120	0.079
Iowa darter	5	0.003
spottail shiner	189	0.124
white sucker	8	0.005
yellow perch	101	0.066
Total	**1,072**	**0.703**

[a] Fish were classified as adults unless otherwise specified in the field to be juveniles

Figure A.18.1). Moderate spawning, rearing and foraging habitat are provided for golden shiner through the macrophyte beds and open water (Table A.1). Good spawning habitat is available for Iowa darter through aquatic vegetation (Table A.1). The loose organic substrate coupled with presence of rooted aquatic vegetation in the shallow littoral areas of the eastern arm of Schist Lake provide good rearing/foraging habitat for Iowa darter. Few finescale dace were observed and moderate to good habitat is provided in areas of where vegetation is present (Table A.1 and Figure A.18.1).

A.18.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

A.19 UNNAMED LAKE #1

Unnamed Lake #1 is located within the Neville Lake watershed, approximately 6 km north of the Côté Gold open pit (Figures A.19.1 and A.1). This small lake has a surface area of approximately 18.8 ha, with a total estimated volume of 141,000 m^3 and a maximum depth of 1.5 m based on the annual average water level (Figure A.19.2). Unnamed Lake #1 has a simple, shallow basin with no notable features (Figure A.19.1). The lake is primarily fed from the west from an unnamed inlet from Unnamed Lake #2 (Figures A.19.1 and A.19.3). In addition, Bagsverd Creek is attached to the furthest east end of the lake.

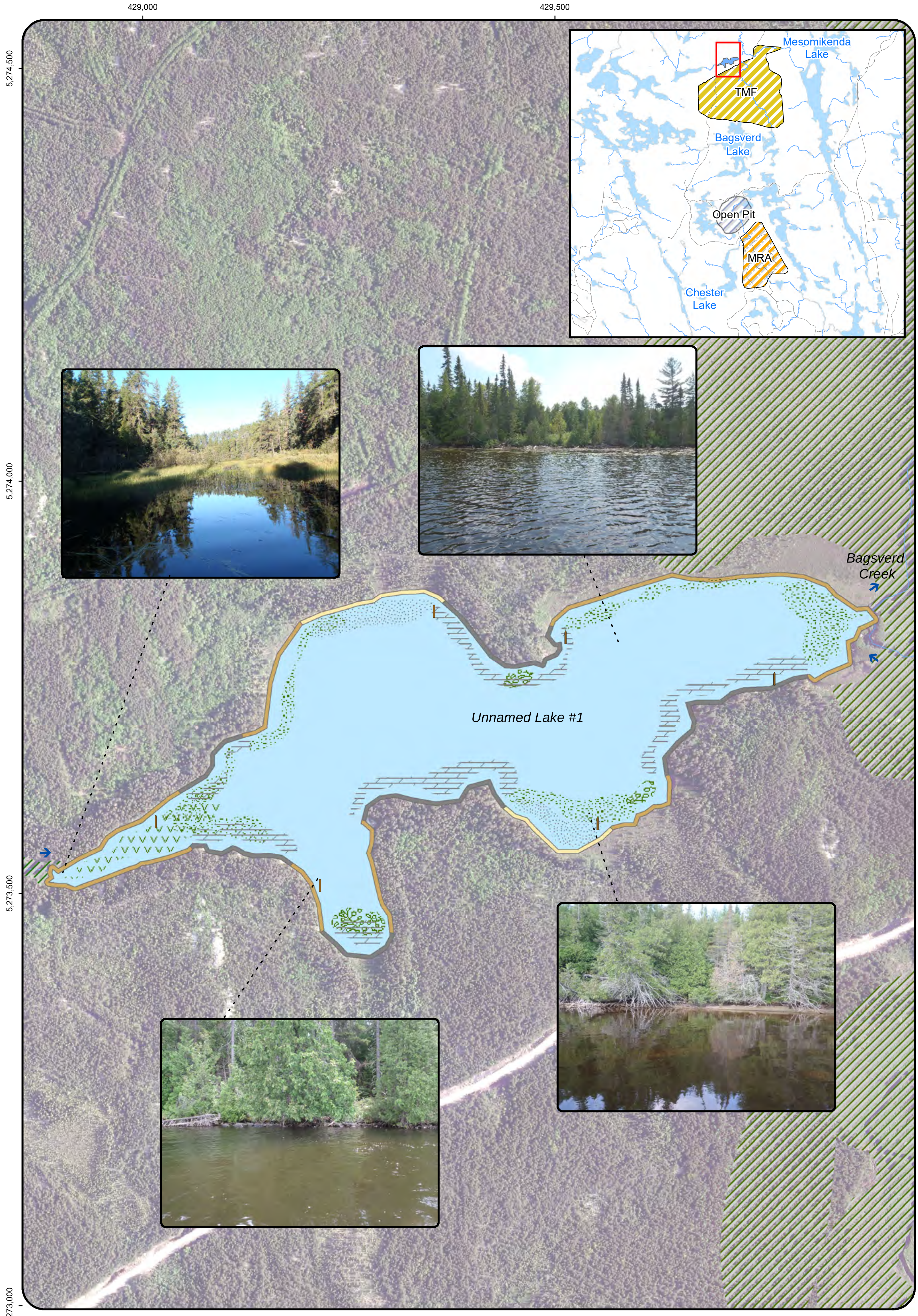
This section describes the physical habitat and fish communities of Unnamed Lake #1 and the unnamed inlet from Unnamed Lake #2 based on field surveys undertaken in July 2012, June 2013 and September 2013. In addition to documenting fish habitat in the July 2012 survey, a population study for northern pike (*Esox lucius*), walleye (*Sander vitreus*) and white sucker (*Catostomus commersonii*) was conducted within Unnamed Lake #1. Unnamed Lake #1 will be influenced by the construction of the Tailings Mining Facility (TMF) just upstream of the lake and the watercourse realignment for Bagsverd Creek (Figure A.1). The outflow from Bagsverd Lake will be relocated to flow north from the Main Basin of Bagsverd Lake to Unnamed Lake #2 (Figure A.1). Therefore, all the water from Bagsverd Creek will flow through Unnamed Lake #2 and the unnamed inlet from Unnamed Lake #2 prior to reaching Unnamed Lake #1, ultimately changing the flow regime within Unnamed Lake #1. Water levels within Unnamed Lake #1 are not expected to change.

A.19.1 Unnamed Lake #1

A.19.1.1 Habitat Description

Unnamed Lake #1 is a shallow lake with thermal stratification only observed during the June 2013 sampling (Appendix Table C.19). Dissolved oxygen concentrations were below 2 mg/L (i.e., hypoxic) near the lake bottom in July 2012, but were well oxygenated during the other sampling periods (Appendix Table C.19). Surface water pH varied from slightly basic (7.94) in July 2013 to acidic (6.20) in June 2013 (Appendix Table C.19). Water was yellow-brown in colour and has moderate clarity allowing light to penetrate to the bottom of the lake (mean Secchi depth = 1.35 m; Appendix Table C.19).

The substrate of Unnamed Lake #1 consists almost entirely of silt and clay-sized fines containing high organic content, with two relatively sandy areas in the lake that extend approximately 15 m from shore (Figure A.19.1). Littoral areas ≤ 1 m deep throughout the lake generally contain very soft organic substrate or soft sand-silt that supports dense submergent



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.19.1: Unnamed Lake #1 Habitat Features

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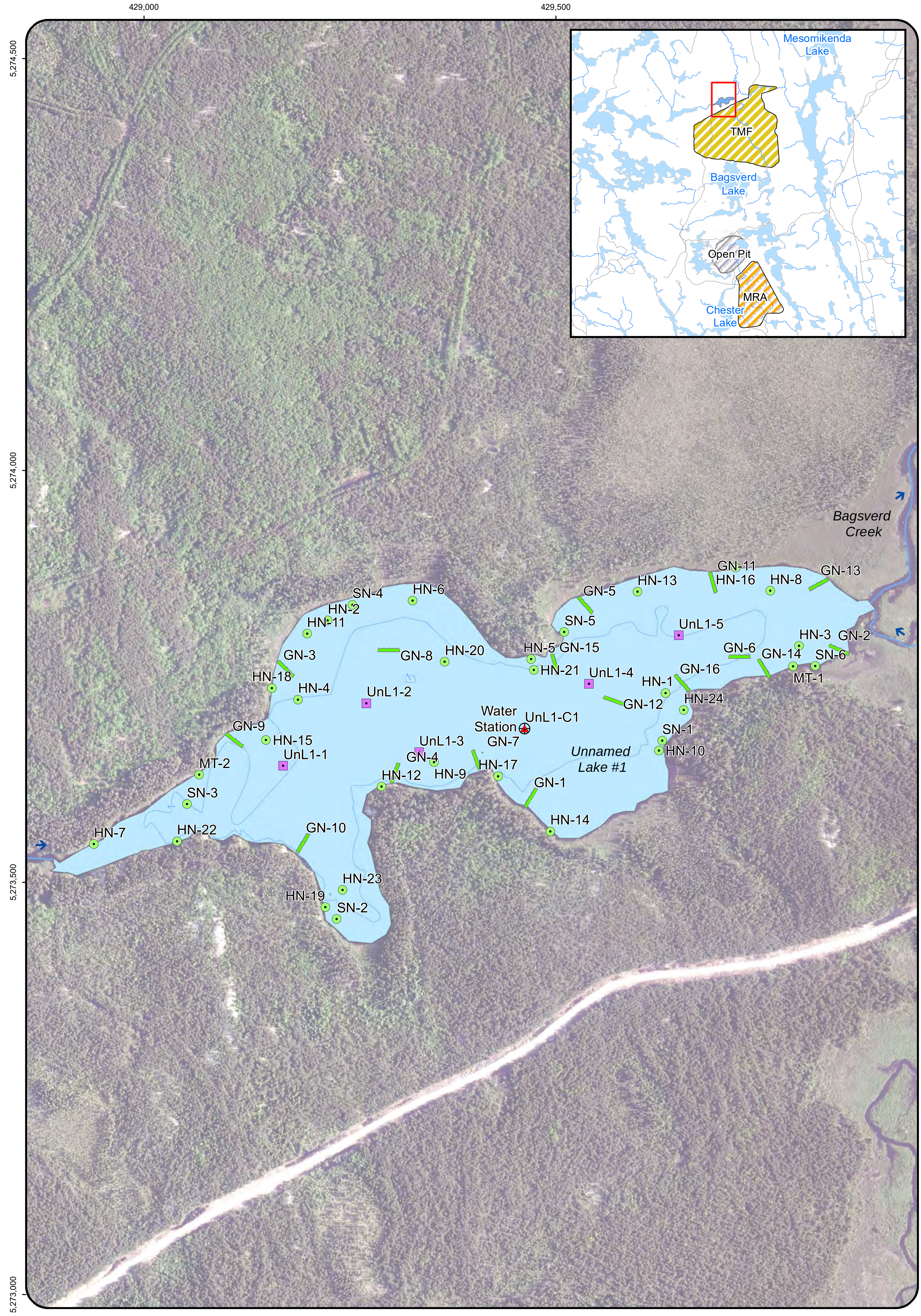

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MAP INFORMATION
Map Projection: NAD 1983
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Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:

- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Features:

- Bathymetry (1 m intervals)
- Water Flow Direction

Figure A.19.2: Unnamed Lake #1 Bathymetry and Sampling Locations

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macrophyte growth of mermaid's hair (*Scirpus subterminalis*) and burreed (*Sparganium* sp.) which can be interspersed with emergent aquatic plants such as cattails (*Typha* sp.) and sedges (*Carex* sp.) closer to the shoreline (Figure A.19.1). Floating macrophyte growth is sparse in Unnamed Lake, with small patches of yellow pond lilies (*Nuphar variegatum*) observed along the margins, particularly along the south shore (Figure A.19.1).

The shoreline of Unnamed Lake #1 primarily consists of organic materials, bedrock and sand (Figure A.19.1). Organic and sandy areas along the shoreline generally contain dense sweet gale (*Myrica gale*) and bog laurel (*Kalmia polifolia*) that overhangs the water's edge, whereas rocky areas are usually treed to the shoreline by upland mixed forest including primarily black spruce (*Picea mariana*) and trembling aspen (*Populus tremuloides*). The eastern end of the lake contains an extensive wetland area through which Bagsverd Creek flows.

A.19.1.2 Fish Community and Population

Community Composition

A total of nine species comprised the Unnamed Lake #1 fish community (Table A.19.1, Figure A.19.2 and Appendix Table F.18). The large-bodied fish community was dominated by yellow perch (*Perca flavescens*) with a moderate number of northern pike and white sucker as well as a few walleye (Table A.19.1 and Appendix Table F.18). The small-bodied fish community included a moderate number of blacknose (*Notropis heterolepis*) and golden shiner (*Notemigonus crysoleucas*) and a small number of central mudminnow (*Umbra limi*), slimy sculpin (*Cottus cognatus*) and Iowa darter (*Etheostoma exile*; Table A.19.1). No endangered, threatened or special concern fish species (COSEWIC 2013) were observed at Unnamed Lake #1 during the 2012 or 2013 surveys.

Species Population Characteristics

The northern pike population in Unnamed Lake #1 was estimated to be approximately 387 individuals (Table A.19.2) with an average density of 20.5 northern pike/ha. The northern pike density in Unnamed Lake was very similar to that of Côté Lake as well as to other Ontario and Minnesota lakes of comparable size and latitude (Table A.19.2), suggesting that the northern pike population of Unnamed Lake #1 fell within the regional norm.

The white sucker population in Unnamed Lake #1 was estimated to be approximately 54 individuals (Table A.19.2) with a corresponding population density of 2.9/ha. This population density was low compared to published values, which ranged from 11 to 82 white sucker/ha (Table A.19.2). While these published values were applicable to white sucker populations in lakes that are much larger and deeper than Unnamed Lake #1 (Table A.19.2), the density

Table A.19.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Unnamed Lake #1, 2012 and 2013.

a) Gill Netting

Year	Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
2012	northern pike	16	0.72
	walleye	2	0.09
	white sucker	3	0.13
	yellow perch	43	1.93
	Total	**64**	**2.87**

b) Minnow Trapping

Year	Species	Total Caught	CPUE (# of fish/trap*d)
2012	slimy sculpin	1	0.03
	yellow perch	7	0.20
	Total	**8**	**0.23**

c) Seining

Year	Species	Total Caught	CPUE (# of fish/m^2)
2012	blacknose shiner	44	0.147
	central mudminnow	1	0.003
	golden shiner	12	0.040
	Iowa darter	3	0.010
	northern pike	5	0.017
	yellow perch	286	0.957
	Total	**351**	**1.174**
2013[a]	yellow perch	6	0.020

[a] Seining was conducted in 2013 in order to collect perch for tissue samples. Total catches including all other species were not recorded.

d) Hoop Netting

Net Size / Year	Species	Total Caught	CPUE (# of fish/trap*d)
small hoop net 2012	blacknose shiner	3	0.51
	northern pike	4	0.68
	white sucker	1	0.17
	yellow perch	17	2.89
	Total	**25**	**4.25**
medium hoop net 2012	northern pike	25	2.71
	walleye	4	0.43
	white sucker	33	3.57
	yellow perch	67	7.26
	Total	**129**	**13.97**
large hoop net 2012	northern pike	11	1.44
	walleye	5	0.66
	white sucker	30	3.93
	yellow perch	17	2.23
	Total	**63**	**8.26**

Table A.19.2: Population estimates for northern pike, white sucker and walleye at Côté Lake and Unnamed Lake #1 compared to other North American lakes of similar surface area and/or latitude.

Species	Lake	Surface Area (ha)	Mean Depth (m)	Maximum Depth (m)	Population Size [a]	Fish Density (No. / ha)	Source
Northern Pike	Unnamed Lake #1	18.8	n/a	1.5	387 [143 - 1,418]	20.5	Minnow 2013 (2012 survey)
	Côté Lake	19.4	n/a	4.3	442 [294 - 689]	22.3	Minnow 2013 (2012 survey)
	Forest Lake	15.3	n/a	9.0	151	9.4	Pierce and Tomcko 2003
	Camerton Lake	28.3	n/a	3.0	1,672	59.0	
	Sand Lake	47.8	n/a	11.0	1,534	32.1	
	Snaptail Lake	59.1	n/a	21.0	1,148	19.9	
	Cargill Lake	20.8	3.0	12.0	575 [b]	27.5	Connors et al. 2011
White Sucker	Unnamed Lake #1	18.8	n/a	1.5	54 [35 - 95]	2.9	Minnow 2013 (2012 survey)
	Côté Lake	19.4	n/a	4.3	906 [271 - 5,101]	46.7	Minnow 2013 (2012 survey)
	Red Chalk	38.0	14.2	56.9	4,206 [3,302 - 5,360]	73.9	Trippel and Harvey 1987
	Dickie Lake	12.0	5.0	92.3	7,670 [6,202 - 9,483]	82.3	
	Pocasset Lake (2002)	244.8	4.8	6.0	4,310 [3,061 - 5,590]	18	Mower et al. 2011
	Pocasset Lake (2003)				17,140 [6,561 - 27,718]	71	
	Pocasset Lake (2004)				2,838 [2,396 - 3,281]	11	
	Cargill Lake	20.8	3.0	12.0	132 [b]	6.3	Connors et al. 2011
Walleye	Unnamed Lake #1	18.8	n/a	1.5	27 [8 - 152]	1.4	Minnow 2013 (2012 survey)
	Savanne Lake	364	2.6	n/a	n/a	11.5	Colby and Baccante 1996
	North American lakes of various sizes	n/a	n/a	n/a	n/a	14.8	Baccante and Colby 1996
	Northern Wisconsin lakes of various sizes	n/a	n/a	n/a	n/a	6.6	Sass et al. 2004

[a] - Population estimate [lower 95% confidence limit, upper 95% confidence limit]

[b] - Actual population was determined as part of fish removal program

estimates for Unnamed Lake #1 were sufficiently lower to suggest that conditions in the lake are not optimal for white sucker.

The walleye population in Unnamed Lake #1 was estimated to be approximately 27 individuals (Table A.19.2), with a corresponding population density of 1.4 walleye/ha. The average density of walleye among North American lakes of various sizes and depths was estimated to be approximately 14.8/ha (Baccante and Colby 1996). In a relatively large, shallow, unproductive lake in Northern Ontario, mean walleye density was estimated at 11.5 walleye/ha (Colby and Baccante 1996). In Northern Wisconsin, walleye density ranged between 0.47 and 29.1 walleye/ha (average of 6.6 walleye/ha) among numerous lakes (i.e., > 40) and years (Sass et al. 2004). Therefore, the walleye population of Unnamed Lake #1 was small relative to most typical northern temperate lakes, suggesting conditions in the lake were not optimal for walleye production.

A.19.1.3 Fish Habitat Evaluation

Excellent spawning and rearing (juvenile) habitat for northern pike and excellent spawning, rearing and foraging habitat for yellow perch (Table A.1) were found in Unnamed Lake #1, as a result of abundant shallow wetland areas adjacent to the shoreline and/or shallow vegetated areas within the lake (Figure A.19.1). Good northern pike foraging habitat is also available in Unnamed Lake #1 (Table A.1), although warm summer water temperatures may seasonally reduce the quality of habitat for adult northern pike. A general lack of cobble, gravel and/or sand substrate results in marginal quality habitat available for spawning white sucker and walleye (Table A.1). Nevertheless, the combination of submergent vegetation and open-water areas provides good habitat for juvenile/adult white sucker and juvenile walleye (Table A.1 and Figure A.19.1). These same features provide adult walleye with marginal habitat, limited perhaps by summer water temperatures above those preferred by these species and the shallow nature of the lake, which allows light penetration to the lake bottom.

Excellent spawning and rearing/foraging habitat for golden shiner (Table A.1) is afforded by a good variety and dense occurrence of aquatic vegetation (Figure A.19.1). Sand substrate suitable for blacknose shiner spawning occurs in Unnamed Lake #1, with aquatic vegetation found throughout the lake providing good rearing and foraging/cover habitat (Table A.1). Mats of wetland vegetation associated with wetlands on the east and west shorelines provide good spawning habitat for Iowa darter and central mudminnow, while the loose organic substrate coupled with abundant rooted aquatic vegetation in the shallow littoral area likely provide good rearing, foraging and cover habitat for these species (Table A.1 and Figure A.19.1). Limited slimy sculpin spawning habitat is provided due to the lack of rocky shoreline (Table A.1).

Moderate rearing and foraging habitat is provided for this species through the sand-silt substrate observed around the lake (Table A.1 and Figure A.19.1).

A.19.2 Unnamed Inlet from Unnamed Lake #2

A.19.2.1 Habitat Description

The unnamed inlet from Unnamed Lake #2 discharges from the east end of the lake and travels approximately 700 m before reaching the far western portion of Unnamed Lake #1 (Figure A.19.2). This reach is characterized by meandering low-gradient, flowing glide habitat with varying water depths (Figure A.19.2). The stream flows through a forested area for approximately 150 m before entering an open wetland area (Figure A.19.3). Wetted channel widths within this section of the stream vary between 1.5 and 3 m and depths of 25 to 50 cm. Substrate within this area is gravel with sand and scattered cobble and the occasional boulder. Instream aquatic vegetation includes white water lily (*Nymphaea odorata*), sedges and burreed. Sedges with sweet gale, bog laurel and speckled alder (*Alnus incana*) line the borders of the channel with scattered black spruce and eastern white cedar (*Thuja occidentalis*). The meandering u-shaped channel within the wetland area varies from 1.5 to 10 m in width (Figure A.19.3). Depth can be as shallow as 30 cm and deeper than 1 m in places with an average of approximately 50 cm. Substrate is predominantly sand with fines mixed with cobble and few boulders. In deeper areas substrates are softer with more organics. Sedges and grasses (*Poaceae* sp.), overhang each bank with sweet gale and bog laurel. Forest adjacent to the wetland area included black spruce, eastern white cedar and a few scattered white birch (*Betula papyrifera*; Figure A.19.3).

A.19.2.2 Fish Habitat Evaluation

Although no fishing was conducted within the inlet from Unnamed Lake #2, it was assumed that similar species would inhabit the channel as were found within Unnamed Lake #1 and #2 (Tables A.19.1 and A.20.1).

Excellent spawning and rearing habitat for northern pike and yellow perch were observed in the stream based on the presence of shallow wetland areas adjacent to the stream and instream vegetation (Table A.1 and Figure A.19.3). Adult northern pike and yellow foraging habitat may be limited within the stream because of the small channel and potentially high summer water temperatures (Table A.1 and Figure A.19.3). Limited to moderate walleye and white sucker spawning habitat was observed in the furthest upstream section of the inlet stream. Small sections of gravel and sand present could potentially be used for spawning (Table A.1 and Figure A.19.3). Good sucker rearing is provided by instream vegetation and sandy to soft

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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
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Creation Date: December 2013
Project No.: 2496

River Habitat Topography:
- Deep Pool
- High-Gradient
- Moderate Gradient
- Low-Gradient

Habitat Features:
- Beaver Lodge
- Water Flow Direction
- Culvert
- Wetland

Figure A.19.3: Unnamed Inlet from Unnamed Lake #2 Habitat Features

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substrates (Table A.1). Limited adult white sucker foraging and walleye habitat is provided due of the small nature of the stream.

Moderate to good habitat is provided for all the small-bodied species present in either Unnamed Lake #1 or #2 through the variety of habitat within the reach from sandy, gravel substrates to softer organic substrates and the abundant of cover offered by instream and overhanging vegetation (Table A.1 and Figure A.19.3). Only open water is limited through the absence of large pools within the stream.

A.19.3 References

Baccante, D.A., and Colby, P.J. 1996. Harvest, density and reproductive characteristics of North American walleye populations. Ann. Zool. Fennici. 33:601-615.

Carlander, K.D. 1969. Handbook of Freshwater Fishery Biology Volume One. The Iowa State University Press, Ames, Iowa.

Colby, P.J., and Baccante, D.A. 1996. Dynamics of en experimentally exploited walleye population: sustainable yield estimate. Ann. Zool. Fennici. 33:589-599.

Connors, K., Russel, C., and Munnoch, K. 2011. Moving a small boreal lake – what is involved? Application of a whole lake compensation plan under the Federal *Fisheries Act*. Poster at 2011 Canadian Conference for Fisheries Research.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

Mower, B.F., Munkittrick, K.R., McMaster, M.E., and Ven Beneden, R.J. 2011. Response of white sucker (*Catostomus commersoni*) to pulp and paper mill effluent in the Androscoggin River, Maine, USA. Environ. Tox. Chem. 30(1):142-153.

Pierce, R.B. and Tomcko, C.M. 2003. Interrelationships among production, density, growth and mortality of northern pike in seven north-central Minnesota lakes. Trans. Amer. Fish. Soc. 132:143–153.

Sass, G.G., Hewett, S.W.Q., Beard, D., Fayrman, A.H., and Kitchell, J.F. 2004. The role of density dependence in growth patterns of ceded territory walleye populations of northern Wisconsin: effects of changing management regimes. N. Amer.J. of Fish. Manag. 24:1262-1278.

Scott, W.B. and Crossman, E.J. 1998. Freshwater Fishes of Canada. Galt House Publications, Oakville, Ontario.

Trippel, E.A. and Harvey, H.W. 1986. Abundance, growth, and food supply of white suckers (*Catostomus commersoni*) in relation to lake morphmetry and pH. Can. J. Zool. 65:558-564.

A.20 UNNAMED LAKE #2

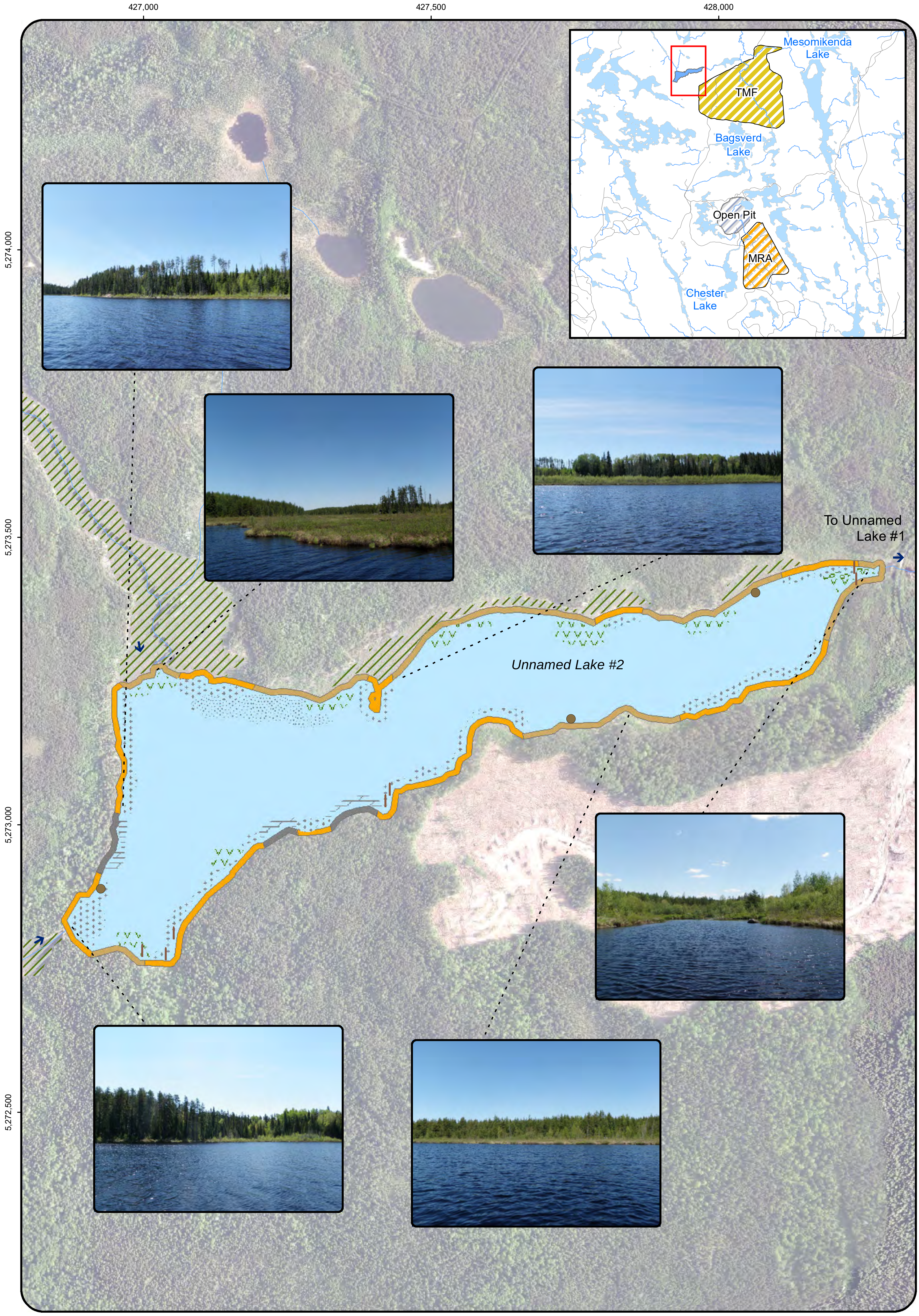
Unnamed Lake #2 is located within the Neville Lake watershed, approximately 6 km north of the Côté Gold open pit (Figures A.20.1 and A.1). This small lake has a surface area of approximately 30 ha, a total estimated volume of 898,832 m^3 and a mean depth of approximately 2.85 m based on the annual average water level (Figure A.20.2). Unnamed Lake #2 has simple basin morphology with a maximum depth of 14 m with no notable features (Figure A.20.1). The lake is has two inlet streams located to the far west and northwest of the lake and discharges to the east via an unnamed stream to Unnamed Lake #1 (Figure A.19.1; see Appendix A.19 for description on the unnamed stream).

The description of physical habitat and fish community structure within Unnamed Lake #2 is based on field surveys completed during the spring and fall of 2012. Unnamed Lake #2 will be influenced by the watercourse realignment for Bagsverd Creek (Figure A.1). The outflow from Bagsverd Lake will be relocated to flow north from the Main Basin of Bagsverd Lake to Unnamed Lake #2 (Figure A.1). Therefore, all the water from Bagsverd Lake will flow through Unnamed Lake #2 altering the size of the watershed although; water levels within Unnamed Lake #2 are not expected to change.

A.20.1 Habitat Description

Unnamed Lake #2 has a single basin on the western end of the lake with the eastern section generally less than two metres (Figure A.20.2). Thermal stratification, observed during both sampling periods, reached a depth of 4 and 5 m in spring and fall, respectively (Appendix Table C.20). Dissolved oxygen concentrations at 5 to 6 m water depth were consistently below Provincial Water Quality Guidelines (< 6 mg/L) and hypoxic during the fall sampling period at depths greater than 5 m (i.e., <1 mg/L; Appendix Table C.20). Surface water pH was acidic in the spring (6.07) and relatively neutral in the fall (7.61; Appendix Table C.19). Changes in pH and specific conductance with depth in Unnamed Lake #2 were likely associated with lower dissolved oxygen concentrations causing reducing conditions at greater depth. Water was yellow-brown in colour with moderate clarity (mean Secchi depth = 1.3 m; Appendix Table C.20).

The shallow littoral substrate of Unnamed Lake #2 consists almost entirely of silt with high organic content and woody debris. Near shoreline cobble, boulder substrate may extend 1 to 2 m before transitioning to silt and fine substrate. The only submergent or floating macrophytes observed on Unnamed Lake #2 surround the outlet and consisted of white water lily (*Nymphaea*



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.20.1: Unnamed Lake #2 Habitat Features

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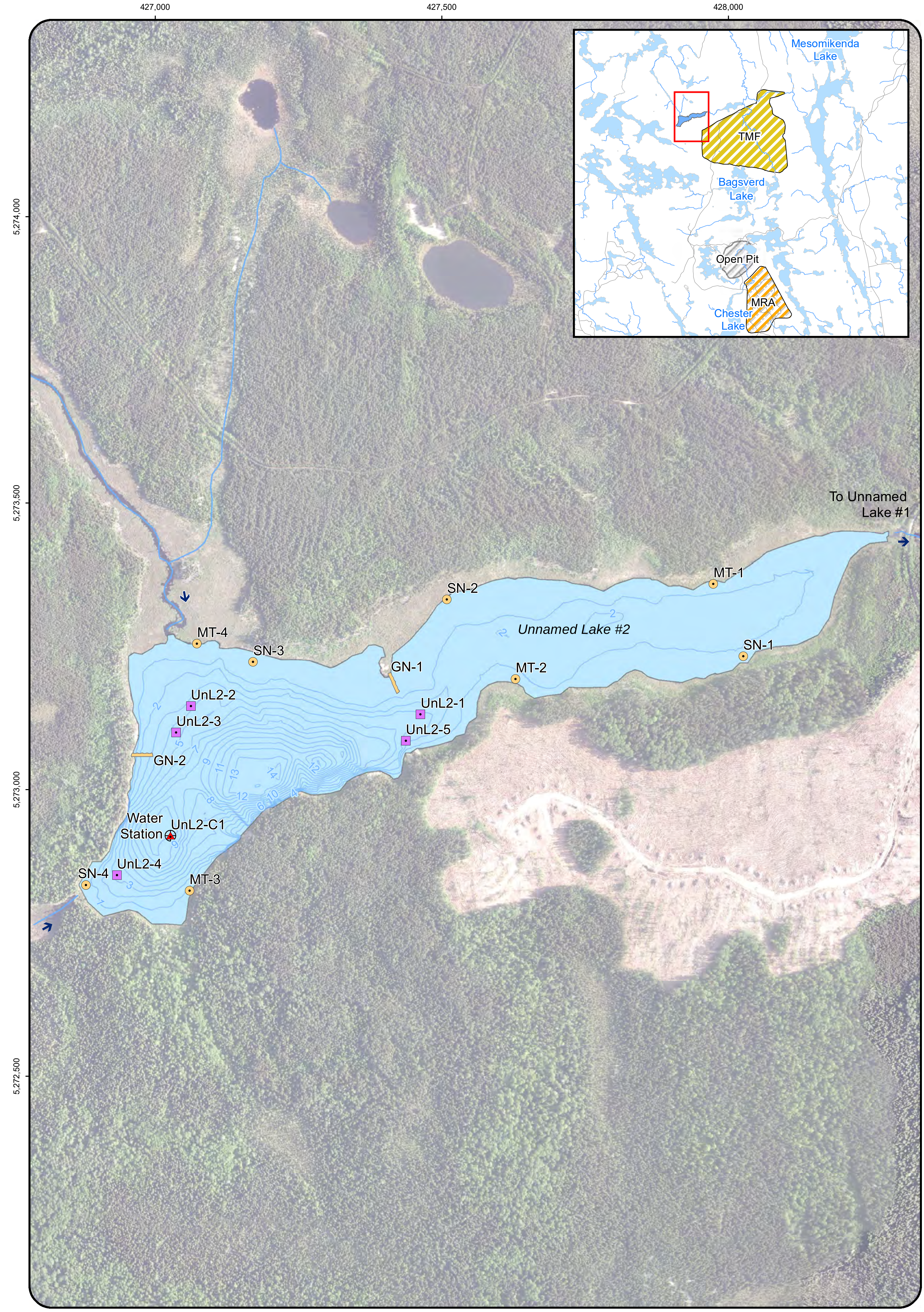

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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:

- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Features:

- Bathymetry (1 m intervals)
- Water Flow Direction

Figure A.20.2: Unnamed Lake #2 Bathymetry and Sampling Locations

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odorata). Emergent sedges (*Carex* sp.) and burreed (*Sparganium* sp.) are also found in this area. Sparse small patches of burreed were observed along a few sections of the shoreline.

The shoreline of Unnamed Lake #2 primarily consists of cobble/boulder and fine/organic substrate (Figure A.20.1). A few bedrock outcrops are found along the western and southern shorelines (Figure A.20.1). Leatherleaf (*Chamaedaphne calyulata*) with sweet gale (*Myrica gale*) and bog laurel (*Kalmia polifolia*) commonly overhang the water's edge up to 1 m in the spring time with sedges (*Carex* sp.) and grasses (*Poaceae* sp.), mixed in. In wetland areas speckled alder (*Alnus incana*) are also present. In areas where trees are found along the shoreline, the forest is predominantly black spruce (*Picea mariana*) with trembling aspen (*Populus tremuloides*).

A.20.2 Fish Community and Population

Unnamed Lake #2 fish community consisted of four large-bodied fish species and five small-bodied fish species in the spring survey of 2013 (Table A.20.1, Figure A.20.2 and Appendix Table F.19). Moderate numbers of northern pike (*Esox lucius*) and walleye (*Sander vitreus*) were caught with fewer white sucker (*Catostomus commersonii*) and yellow perch (*Perca flavescens*; Table A.20.1 and Appendix Table F.19). The small-bodied fish community was dominated by blacknose shiner (*Notropis heterolepis*) with spottail shiners (*Notropis hudsonius*) with Iowa darter (*Etheostoma exile*) also found (Table A.20.1). No endangered, threatened or special concern fish species (COSEWIC 2013) were observed at Unnamed Lake #2 during the 2012 or 2013 surveys.

A.20.3 Fish Habitat Evaluation

Good spawning and rearing (juvenile) habitat for northern pike and good spawning, rearing and foraging habitat for yellow perch (Table A.1) were found in Unnamed Lake #2, as a result of the shallow wetland areas adjacent to the north shoreline (Figure A.20.1). Good northern pike foraging habitat is also available in Unnamed Lake #2 (Table A.1). It is likely that both white sucker and walleye from Unnamed Lake #2 spawn somewhere upstream on one of the inlets or downstream in the unnamed stream (inlet to Unnamed Lake #1; see Appendix A.19). However, within the lake itself, marginal spawning habitat for these species is represented by rocky shoals and steep rocky shorelines (Table A.1 and Figure A.20.1). The combination of soft sediment and open-water areas provides good habitat for juvenile/adult white sucker and juvenile/adult walleye (Table A.1 and Figure A.20.1). Overwintering within Unnamed Lake #2 may not be optimal due to the hypoxia (dissolved oxygen concentrations < 2 mg/L at 5 m depth in the fall) observed within the lake during the spring and fall sampling periods.

Table A.20.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Unnamed Lake #2, 2013.

a) Gill Netting

Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
northern pike	11	0.75
walleye	14	0.96
white sucker	9	0.62
yellow perch	6	0.41
Total	**40**	**2.74**

b) Seining

Species	Total Caught	CPUE (# of fish/m^2)
blacknose shiner (adult)[a]	56	0.067
blacknose shiner (juvenile)[a]	2	0.002
Iowa darter	2	0.002
northern pike	2	0.002
spottail shiner	2	0.002
Total	**64**	**0.077**

[a] Fish were classified as adults unless otherwise specified in the field to be juveniles

Note: Minnow trapping was conducted in Unnamed Lake #2 in 2013, but no fish were caught after 93.67 trap hours.

Sand substrate suitable for blacknose and spottail shiner spawning is limited to the north shoreline of Unnamed Lake #2, with limited aquatic vegetation found throughout the lake providing moderate rearing and foraging/cover habitat (Table A.1 and Figure A.20.1). Moderate spawning habitat is provided for Iowa darter by overhanging vegetation or woody debris (Table A.1 and Figure A.20.1). Moderate rearing and foraging habitat is found along the shoreline with mud bottom and organic debris (Table A.1 and Figure A.20.1).

A.20.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

A.21 UNNAMED LAKE #3

Unnamed Lake #3 is located within the Mollie River watershed, approximately 2.5 km south of the Côté Gold open pit and less than a kilometer south of the Mine Rock Area (MRA; Figures A.21.1 and A.1). This small lake has a surface area of approximately 9.5 ha, with a total estimated volume of 255,538 m^3 and a mean depth of 2.1 m based on the annual average water level (Figure A.21.2). Unnamed Lake #3 has a single deep basin (maximum depth of approximately 7 m) with no notable features (Figure A.21.2). A single first order stream (unnamed inlet) flows into Unnamed Lake #3 on the north west side of the lake and water from the lake discharges from the north eastern point into another unnamed stream that flows southeast towards the Mollie River (Figures A.21.1 and A.1).

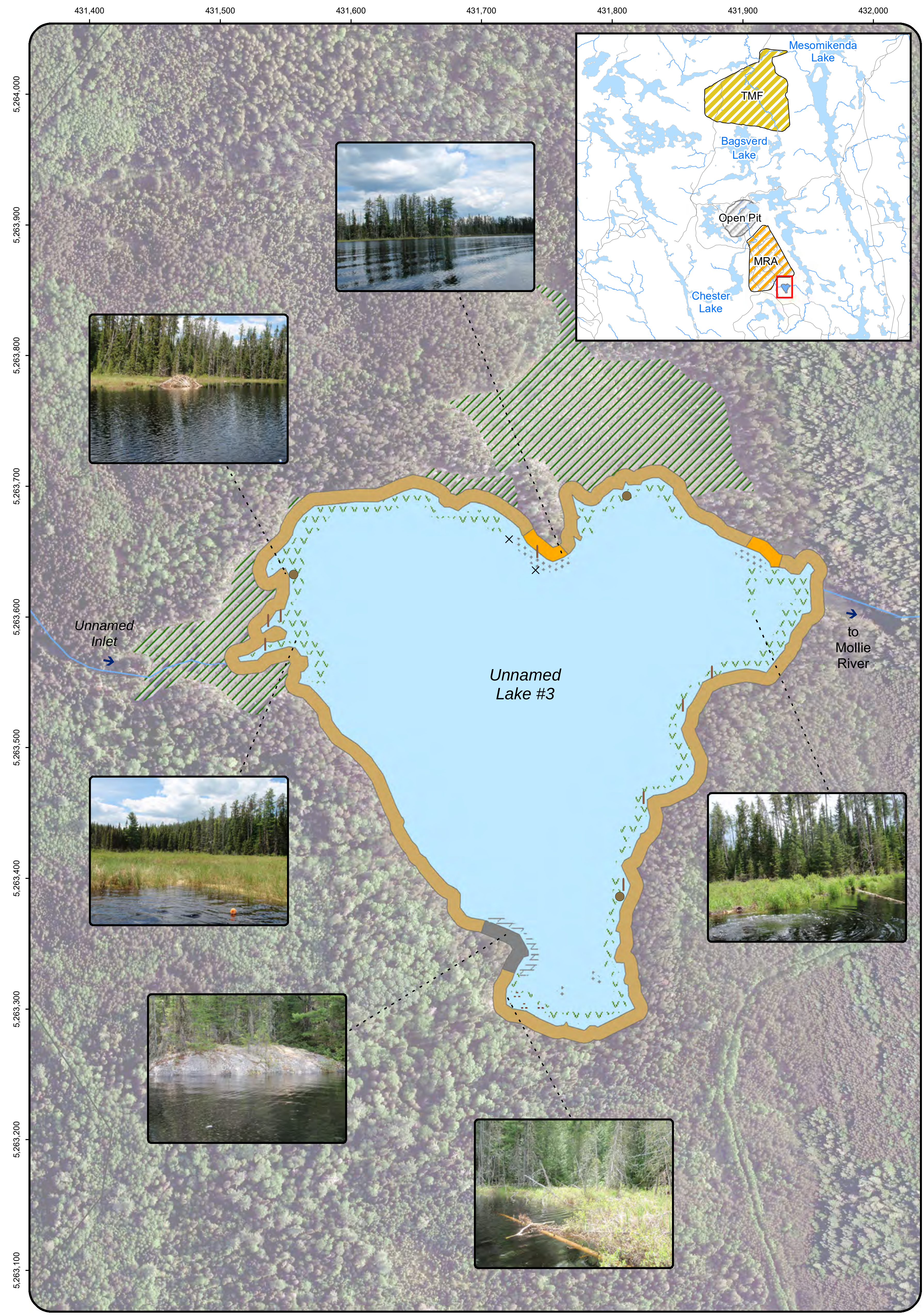
The description of physical habitat within Unnamed Lake #3 and the unnamed inlet to Unnamed Lake #3 is based on field surveys completed during the spring and fall of 2013. The fish community of Unnamed Lake #3 was evaluated in the spring of 2013. Unnamed Lake #3 may be influenced by drainage from the MRA during mine operations and closure. In addition, the upstream section of the unnamed inlet may be lost with the construction of the MRA (Figure A.1).

A.21.1 Unnamed Lake #3

A.21.1.1 Habitat Description

Thermal stratification was observed during both spring and fall sampling in Unnamed Lake #3 below 3 m depth (Appendix Table C.21). Dissolved oxygen concentrations below the thermocline were less than the Provincial Water Quality Guidelines (< 6 mg/L) during both sampling periods and approached hypoxic (< 2 mg/L) conditions near the bottom (Appendix Table C.21). Surface water pH was acidic in the spring (6.2) and relatively neutral in the fall (7.21; Appendix Table C.21). Changes in pH and specific conductance with depth in Unnamed Lake #3 were likely associated with lower dissolved oxygen concentrations causing reducing conditions at greater depth. Water was stained yellow-brown in colour with moderate clarity (mean Secchi depth = 0.9 m; Appendix Table C.21).

The littoral substrate of Unnamed Lake #3 consists almost entirely of silt and clay-sized fines containing high organic content (Figure A.21.1). Limited macrophytes observed during the spring survey were only noted near the outlet and consisted of yellow pond lily (*Nuphar variegatum*) and pond weed (*Potamogeton* sp.). The shoreline of Unnamed Lake #3 primarily consists of organic materials, with very little bedrock and cobble (Figure A.21.1). Shoreline vegetation generally comprised of dense leatherleaf (*Chamaedaphne calyulata*), sweet gale



MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

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Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Dam
- Beaver Lodge
- Logs and Fallen Trees
- Rock
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.21.1: Unnamed Lake #3 Habitat Features

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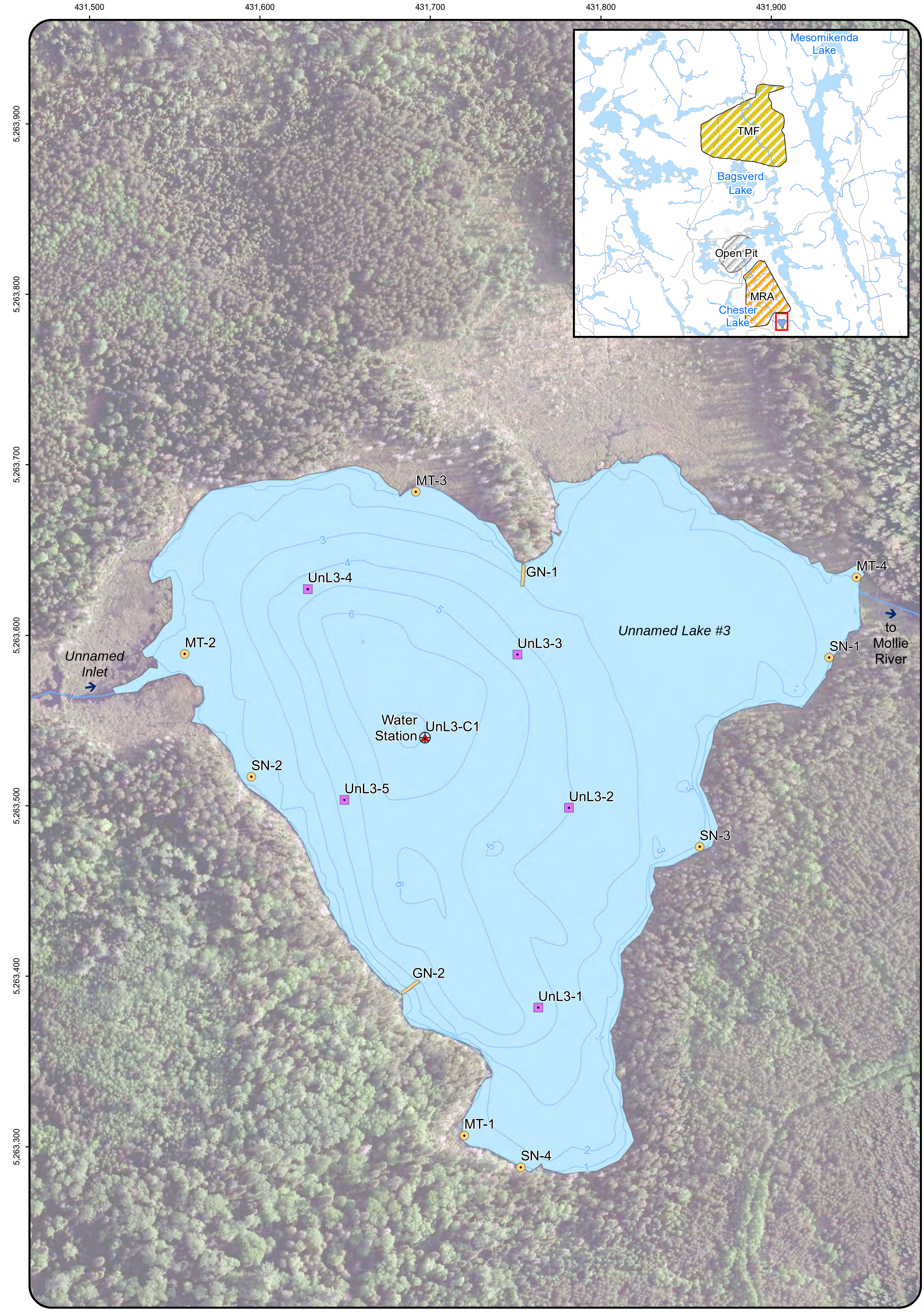

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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Features:
- Bathymetry (1 m intervals)
- Water Flow Direction

Figure A.21.2: Unnamed Lake #3 Bathymetry and Sampling Locations

Created by:
minnow environmental inc.

(*Myrica gale*) and bog laurel (*Kalmia polifolia*) that overhangs the water's edge, with sedges (*Carex* sp.) and burreed (*Sparganium* sp.). Unnamed Lake #3 was generally treed to the shoreline by upland mixed forest including primarily black spruce (*Picea mariana*), jack pine (*Pinus banksiana*) and scattered white pine (*Pinus strobes*) and trembling aspen (*Populus tremuloides*).

A.21.1.2 Fish Community Composition

A total of four species, northern pike (*Esox lucius*), yellow perch (*Perca flavescens*), golden shiner (*Notemigonus crysoleucas*) and Iowa darter (*Etheostoma exile*), were observed during the spring 2013 survey (Table A.21.1, Figure A.21.2 and Appendix Table F.20). No endangered, threatened or special concern fish species (COSEWIC 2013) were observed at Unnamed Lake #3.

A.21.1.3 Fish Habitat Evaluation

Good spawning and rearing (juvenile) habitat for northern pike and excellent spawning, rearing and foraging habitat for yellow perch (Table A.1) were found in Unnamed Lake #3, as a result of shallow wetland areas and overhanging vegetation observed in the spring survey (Figure A.21.1). Good adult northern pike foraging habitat is also available in Unnamed Lake #3 (Table A.1).

Moderate spawning and rearing/foraging habitat for golden shiner (Table A.1) is afforded by the overhanging vegetation along the shoreline (Figure A.20.1). Wetland vegetation associated with the inlet and outlet provide good spawning habitat for Iowa darter, while the loose organic substrate in the shallow littoral area likely provides good rearing, foraging and cover habitat for these species (Table A.1 and Figure A.21.1).

A.21.2 Unnamed Inlet to Unnamed Lake #3

A.21.2.1 Habitat Description

The habitat of this inlet stream was surveyed in its entirety (approximately 730 m) in the fall of 2013. The stream originates in a low lying depression of black spruce, larch (*Larix laricina*) with dense alder (*Alnus* sp.; Figure A.21.3). The wetted width of the channel within this section is varies from 30 cm to 75 cm, less than 30 cm in depth with a substrate composed of completely fines and organics. The banks are lined with sphagnum mosses and sedges. No fish were observed within this area. The stream continues to flow through the lowland forest for approximately 265 m before reaching an open wetland area (Figure A.21.3). The channel widens to approximately one metre and increases in depth (generally less than one metre),

Table A.21.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Unnamed Lake #3, 2013.

a) Gill Netting

Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
golden shiner	8	0.49
northern pike	7	0.43
yellow perch	2	0.12
Total	**17**	**1.05**

b) Minnow Trapping

Species	Total Caught	CPUE (# of fish/trap*d)
yellow perch	1	0.07

c) Seining

Species	Total Caught	CPUE (# of fish/m^2)
golden shiner	86	0.191
Iowa darter	1	0.002
northern pike	5	0.011
yellow perch	25	0.056
Total	**117**	**0.260**

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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
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Creation Date: December 2013
Project No.: 2496

River Habitat Topography:
- Deep Pool
- High-Gradient
- Moderate Gradient
- Low-Gradient
- Intermittent Low-Gradient Channel
- Low-Gradient Ponded Area

Habitat Features:
- Beaver Dam
- Beaver Lodge
- Water Flow Direction
- Wetland

Figure A.21.3: Inlet to Unnamed Lake #3 Habitat Features

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minnow environmental inc.

although substrates still consist of fines and organics. Both banks are lined with sedges and grasses (*Poaceae* sp.). At the furthest downstream end of the open area an old road crossing exists pooling water upstream of the crossing (Figure A.21.3). Water depth within this pool was greater than one metre. Culverts were not present and the water flowed subsurface to a beaver pond downstream of the road crossing. For the remaining 250 m, the water flows through a series of small beaver ponds varying in size and depth (the largest pond was approximately 15 x 20 m; Figure A.21.3). Water depth was typically less than 50 cm within the ponds with cobble and silt substrate. Channel widths and depths of the inlet at the confluence of Unnamed Lake #3 varied from one to 10 m wide and less than one metre deep with fines and organics substrate. Riparian vegetation was dominated by leatherleaf, sedges, grasses and alder with black spruce.

A.21.2.2 Fish Habitat Evaluation

Although no fishing was conducted within the inlet from Unnamed Lake #3, it was assumed that similar species would inhabit the channel as were found within Unnamed Lake #3 (Table A.21.1).

Good spawning and rearing habitat for northern pike and yellow perch were observed in the stream, especially within 250 m of the lake based on the presence of shallow wetland areas, and beaver ponds with an abundance of woody debris for cover (Table A.1 and Figure A.21.3). Adult northern pike and yellow perch foraging habitat may be limited within the stream because of the limited depth (generally <1 m; Table A.1 and Figure A.21.3). Habitat is limited for the remaining reach of the inlet due to the small nature of the stream. Moderate to good habitat is provided for both golden shiner and Iowa darter with the overhanging sedge vegetation and softer organic substrates and the abundant of cover offered by woody debris and overhanging vegetation (Table A.1 and Figure A.21.3). Limited overwintering habitat would be available for any species since water depths rarely exceed 1 m.

A.19.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

A.22 UNNAMED POND

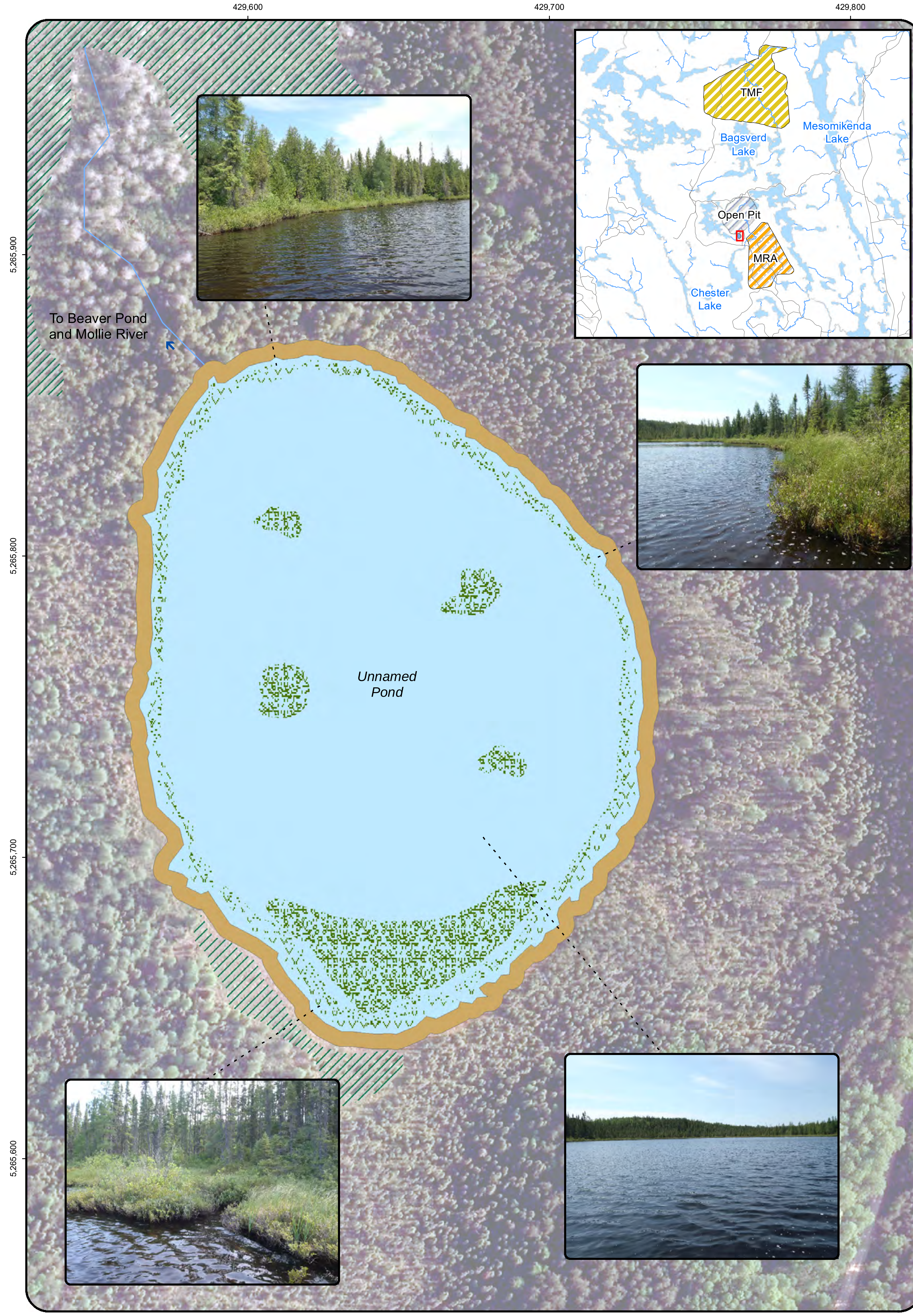
Unnamed Pond is a small, (3.0 ha) headwater bog-lake located on the southern border of the proposed Côté Gold open pit (Figures A.22.1 and A.1). No tributaries flow into Unnamed Pond. Flow from Unnamed Pond occurs intermittently, discharging north into a wetland that includes Beaver Pond, which subsequently drains to the Mollie River upstream of Clam Creek (Figure A.1). Unnamed Pond may also have a southwestern outlet (which is indicated on regional topographic maps) that drains to the southeast arm of Clam Lake via a small, 300 m long wetland, although discharge from this location would only occur during very high flow periods (e.g., spring freshet, large storm events; Figures A.22.1 and A.1).

The assessment of habitat and fish community for Unnamed Pond is based on a field survey conducted in July 2012. Unnamed Pond will be lost with the construction of the open pit (Figure A.1).

A.22.1 Habitat Description

Unnamed Pond contains a simple, oval-shaped basin approximately 185 m long and 220 m wide, with a mean and maximum depth of approximately 1.0 and 1.8 m, respectively. The water of Unnamed Pond was stained dark yellow-brown, which was consistent with wetland bog drainage sources. Surface water temperature during the July 2012 field survey was very warm (22.4°C), with dissolved oxygen (5.61 mg/L; Appendix Table C.22) only slightly above the Provincial Water Quality Objectives minimum of 5.0 mg/L for warm water habitats. Despite containing plant species that are normally associated with bog environments and suggestive of strongly acidic conditions, the pH of the water was near neutral (pH 6.88; Appendix Table C.22).

The littoral substrate of Unnamed Pond was entirely soft organic muck (i.e., silt with high organic content including coarse woody debris). Aquatic vegetation was generally limited to sparse, patchy growth of submergent stonewort (*Chara* sp.) throughout the pond, as well as very small patches of submergent bladderwort (*Utricularia* sp.) and emergent cattail (*Typha* sp.) found occasionally near shore. The entire shoreline of Unnamed Pond is bordered by a floating sphagnum mat that contains a high diversity of plants characteristic of bog environments including *Sphagnum* moss, sedges (*Carex* sp.), herbaceous plants such as pitcher plant (*Sarracenia* sp.), sun dew (*Drosera* sp.), northern blue flag (*Iris versicolor*), rose pogonia (*Pogonia ophioglossoides*), bog aster (*Aster nemoralis*), bell flower (*Campanula* sp.), marsh cinquefoil (*Potentilla palustris*), hooded ladies tress (*Spiranthes romanzoffiana*) and buck bean (*Menyanthes trifoliata*), and various shrubs such as bog laurel (*Kalmia polifolia*), sheep laurel (*Kalmia angustifolia*), Labrador tea (*Ledum groenlandicum*), bog rosemary (*Andromeda*



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.22.1: Unnamed Pond Habitat Features

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polifolia), leatherleaf (*Chamaedaphne calyculata*) and sweet gale (*Myrica gale*). With the exceptions of eastern white cedar (*Thuja occidentalis*) near the northern lake outlet and larch on the southwest shoreline, black spruce (*Picea mariana*) was the dominant tree species found adjacent to the sphagnum mat surrounding Unnamed Pond.

A.22.2 Fish Community Composition

The Unnamed Pond fish community included a total of four species (Table A.22.1, Figure A.22.2 and Appendix Table F.21). The large-bodied fish community was dominated by yellow perch (*Perca flavescens*) with moderate abundance of northern pike (*Esox lucius*) and low abundance of white sucker (*Catostomus commersonii*; Table A.22.1). The small-bodied fish community of Unnamed Pond only included Iowa darter (*Etheostoma exile*; Table A.22.1), which were captured in low numbers. No COSEWIC (2013) listed endangered, threatened or special concern fish species were observed at Unnamed Pond in 2012.

A.22.3 Fish Habitat Evaluation

Areas adjacent to Unnamed Pond, including the floating sphagnum mats, provide good spawning habitat for northern pike, with sparse submergent aquatic vegetation coupled with overhanging vegetation (Table A.1 and Figure A.22.1). The overhead protection offered by the floating *sphagnum* mats also provides good to marginal juvenile rearing and adult habitat for northern pike. These same features also provide good spawning, rearing and foraging habitat for yellow perch (Table A.1). No white sucker spawning habitat was observed in Unnamed Pond, and therefore white sucker likely migrate to outlet areas to spawn. Good rearing and foraging habitat exists for white sucker in Unnamed Pond (Table A.1). The occurrence of large-bodied fish in Unnamed Pond was somewhat surprising given the shallow lake depth, which would be expected to freeze to near-bottom for much of the winter. Nevertheless, the occurrence of all age classes of northern pike and yellow perch in the lake suggests that these populations are self sustaining. Good spawning habitat is available for Iowa darter through floating vegetation mats (Table A.1). The loose organic substrate coupled with rooted aquatic vegetation provides good rearing/foraging habitat for Iowa darter.

A.22.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

Table A.22.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Unnamed Pond, 2012.

a) Gill Netting

Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
northern pike	7	0.36
white sucker	4	0.21
yellow perch	13	0.68
Total	**24**	**1.25**

b) Minnow Trapping

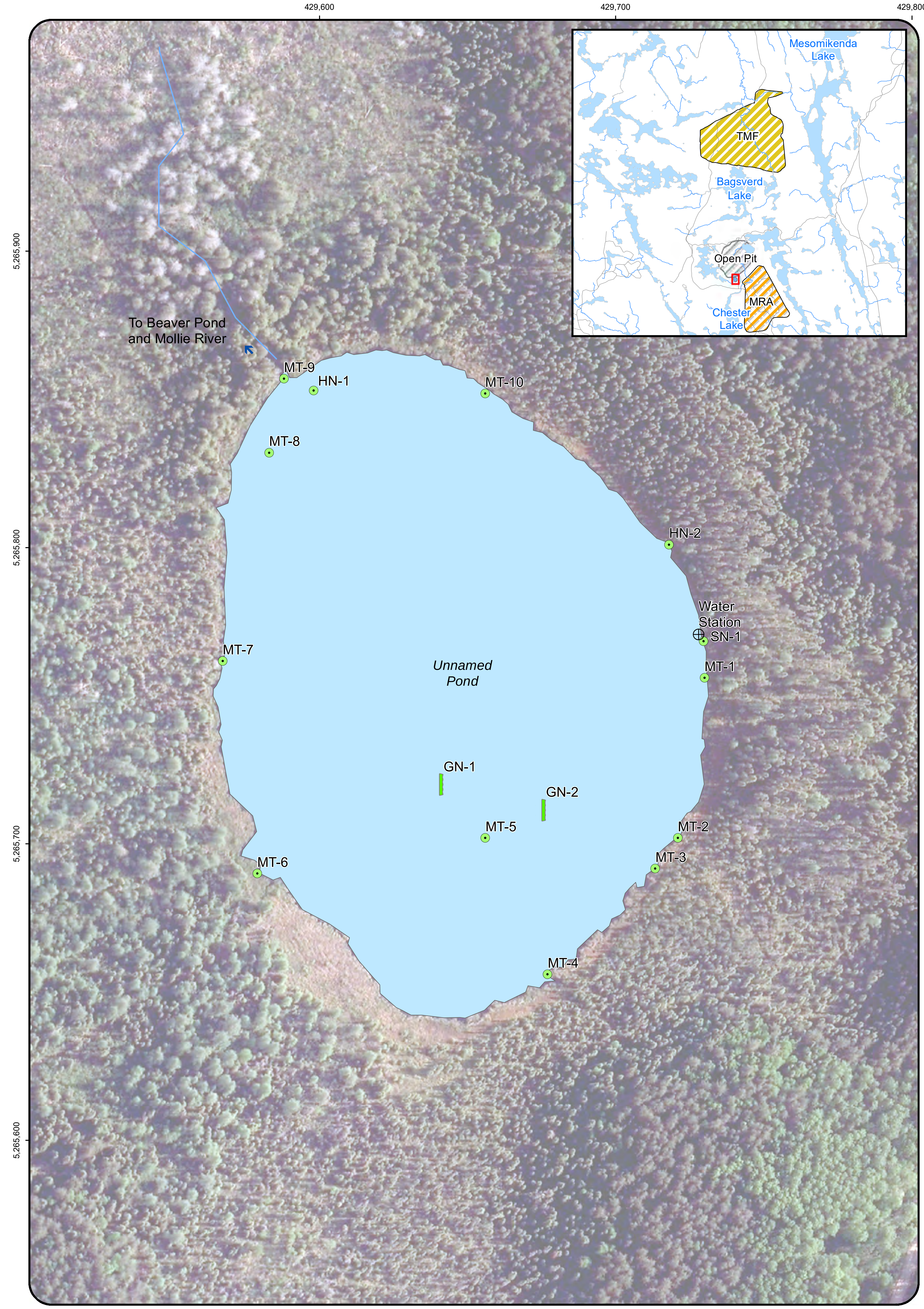
Species	Total Caught	CPUE (# of fish/trap*d)
yellow perch	3	0.34

c) Seining

Species	Total Caught	CPUE (# of fish/m^2)
Iowa darter	3	0.02
northern pike	1	0.01
yellow perch	136	1.06
Total	**140**	**1.09**

d) Mini Hoop Netting

Species	Total Caught	CPUE (# of fish/trap*d)
yellow perch	7	3.91



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:
- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Feature:
- Water Flow Direction

Figure A.22.2: Unnamed Pond Sampling Locations

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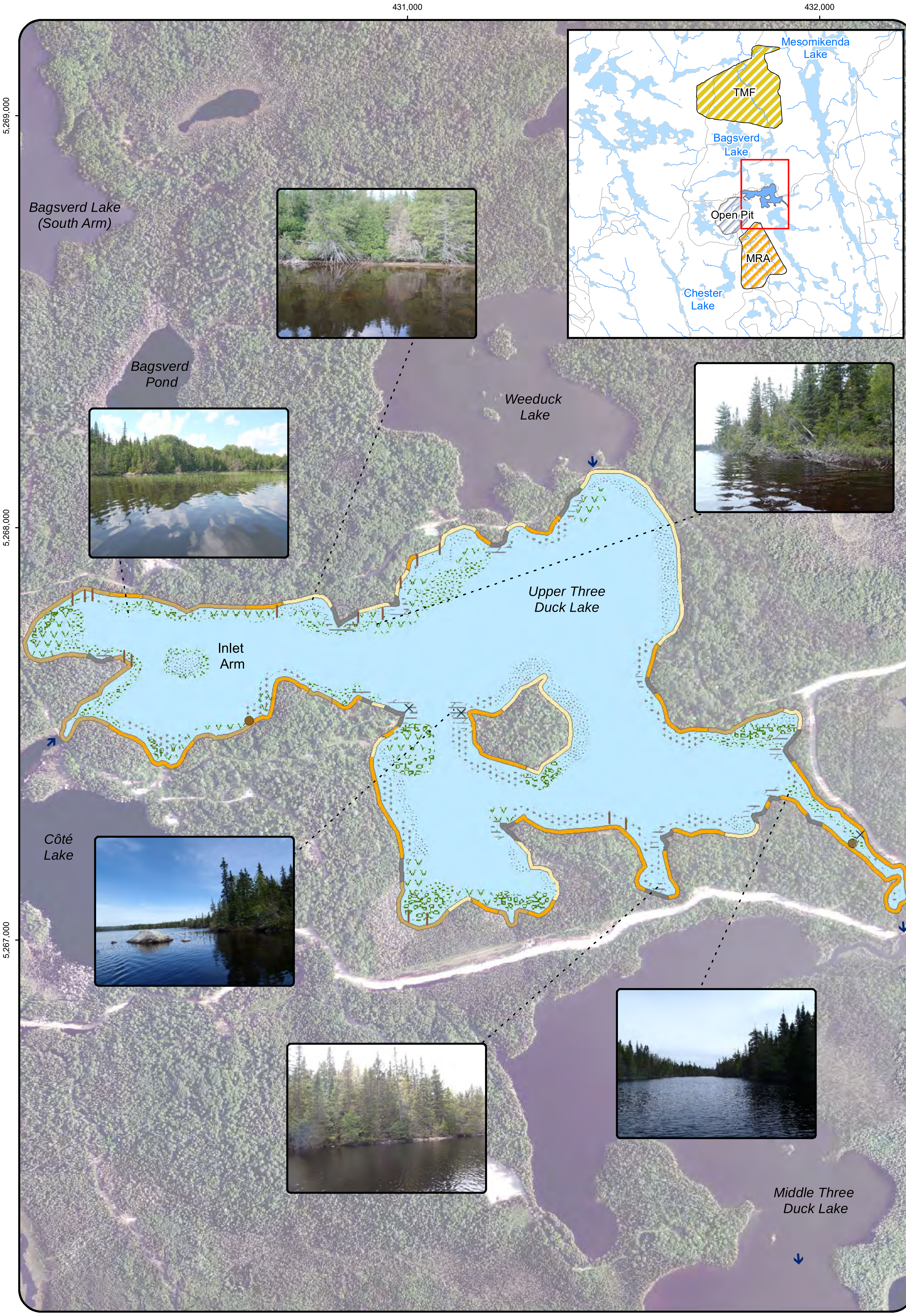
A.23 UPPER THREE DUCK LAKE

Upper Three Duck Lake is part of the Three Duck lakes chain within the Mollie River watershed (Figures A.23.1 and A.1). The lake is located less than one kilometre east of the proposed Côté Gold open pit (Figure A.23.1). The lake has a surface area of approximately 83.2 ha with the total estimated volume of 1.86 x 10^6 m^3, a maximum depth of approximately 6.2 m and mean depth of 2.6 m based on the annual average water level (Figure A.23.2). The lake has two main basins, one deeper at 6 m and the other slightly shallower at 4 m, with one central island and a western Inlet Arm (Figure A.23.1). The primary inflow to Upper Three Duck Lake is from the Mollie River as it discharges from Côté Lake into the Inlet Arm of Upper Three Duck Lake (Figure A.23.1). Water from the upgradient Weeduck Lake currently flows subsurface under the road between the two lakes (Figure A.23.1). Discharge from Upper Three Duck is south into Middle Three Duck Lake (Figure A.23.1).

This section describes the physical habitat and fish communities of Upper Three Duck Lake and the Inlet Arm of Upper Three Duck Lake based on field surveys undertaken in July 2012 in the Inlet Arm and in June and September of 2013 in the rest of the lake. It is anticipated that during mine development, the Inlet Arm of Upper Three Duck Lake will be separated from the main basin to enable mining of the open pit and to store low grade ore. Therefore, physical habitat characterization focused on the Inlet Arm of Upper Three Duck Lake during the July 2012 field survey. Fish community characterization of Upper Three Duck Lake was conducted in the spring of 2013 and previously by AMEC (2011). In addition, with the realignment of the Mollie River, a connection to Weeduck Lake will created as the Mollie River will flow around the open pit and through Weeduck Lake before returning to the Three Duck lakes chain (Figure A.1). Upon closure and filling of the open pit, the pit lake will be connected to Upper Three Duck Lake via a small channel/stream. The Mollie River will flow through the open pit and into Upper Three Duck Lake.

A.23.1 Habitat Description

The main section of Upper Three Duck Lake was surveyed in June and September of 2013. Thermal stratification was apparent during the spring survey; however the lake was not thermally stratified in the fall (Appendix Table C.23). In June, the hypolimnion was present at 5 m (Appendix Table C.23). Dissolved oxygen was less than 3 mg/L at water depths greater than 6 m during the spring survey, whereas the water was well oxygenated throughout the water column in the fall (Appendix Table C.23). Likewise, water pH was relatively neutral at surface (6.74 and 6.93, spring and fall, respectively), however became slightly acidic with depth (6.10 at



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Meters

MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

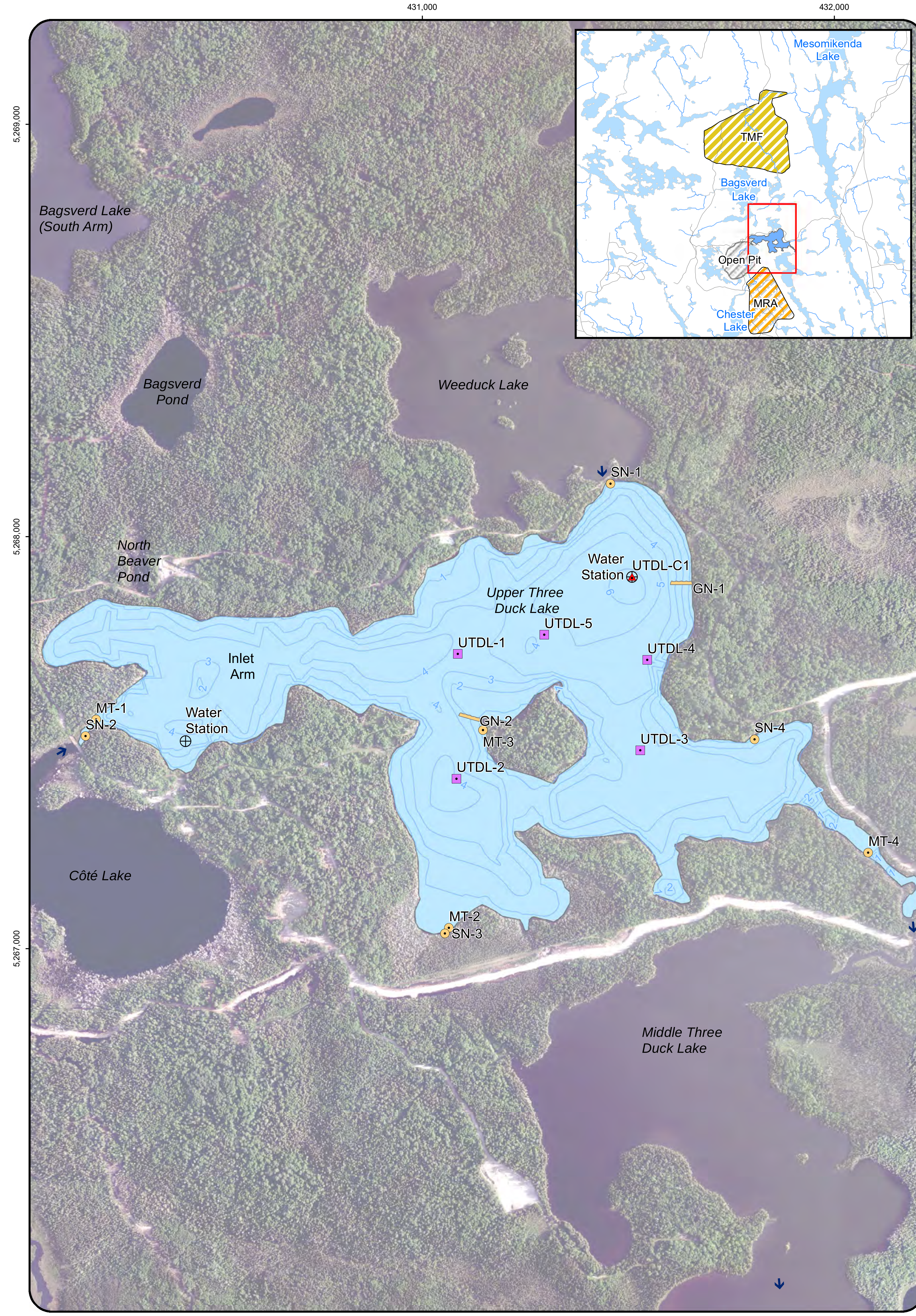
Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Rock
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.23.1: Upper Three Duck Lake Habitat Features

Created by:
minnow environmental inc.



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:

- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Features:

- Bathymetry (1 m intervals)
- Water Flow Direction

Figure A.23.2: Upper Three Duck Lake Bathymetry and Sampling Locations

Created by:
minnow environmental inc.

bottom) in the spring and remained unchanged in the fall (Appendix Table C.23). Water clarity was moderate with a mean Secchi depth of 2.2 m (Appendix Table C.23).

Substrate in the deeper areas of Upper Three Duck Lake was mainly sandy organic silt. The substrate in the littoral zone generally transitions from mainly sand, sandy silt or cobble to mostly sand-silt containing moderate amounts of woody debris. Macrophytes lined sections of the shoreline. Emergent sedges (*Carex* sp.), spikerushes (*Eleocharis* sp.), burreed (*Sparganium* sp.) and horsetails (*Equisetum* sp.) were noted along with scattered yellow pond lily (*Nuphar variegatum*). Submergent tape grass (*Vallisneria americana*) was also present (Figure A.23.1).

The shoreline of Upper Three Duck Lake is dominated by sand, cobble embedded with silty-sand and with few scattered patches of bedrock outcrops (Figure A.23.1). Leatherleaf (*Chamaedaphne calyculata*) commonly overhangs the shoreline with the cedar trees (*Thuja occidentalis*) in addition to other common understory species such as sedges (*Carex* sp.), sweet gale (*Myrica gale*), and meadow sweet (*Kalmia polifolia*). Middle Three Duck Lake is generally treed to the shoreline, with black spruce (*Picea mariana*) and eastern white cedar (*Thuja occidentalis*) being the dominant species and trembling aspen (*Populus tremuloides*). No wetlands were found adjacent to Middle Three Duck Lake (Figure A.23.1).

Inlet Arm

The Upper Three Duck Lake Inlet Arm extends east-west approximately 760 m as a 170 to 370 m wide channel and has an approximate surface area of 21.9 ha. The maximum depth was approximately 3 m, with much of the area approximately 2 m deep (Figure A.23.2). Thermal stratification was not observed during the July 2012 field survey, with dissolved oxygen concentrations remaining relatively high (6.88 mg/L at surface) and above the Provincial Water Quality Guidelines warm water habitat minimum of 5.0 mg/L (Appendix Table C.23). Water pH was near neutral (7.33 at surface), with no substantial change observed from surface to bottom (Appendix Table C.23).

Littoral substrate of the Inlet Arm generally consists of silt, although compact sand to silty-sand often forms the dominant substrate of shallow littoral areas on the north side and around a small 'sunken island' in the centre (Figure A.23.1). Very minor amounts of gravel and bedrock substrate were also found in shallow littoral areas on the south side (Figure A.23.1). A diverse assemblage of aquatic vegetation formed extensive beds, particularly within the littoral area of the northern portion of the inlet, around the central sunken island, and near the inlet. With progression from shallow to deep littoral habitat of the northern portion of the Inlet Arm, the aquatic plant community transitioned from emergent horsetails and/or hardstem bulrushes

(*Scirpus acutus*) to a combination of floating (fragrant white lilies [*Nymphaea odorata*], water shield [*Brasenia schreberi*]) and submergent (mermaid's hair [*Scirpus subterminalis*], burreed) plants, to a completely submergent plant community of large-leaved pondweed (*Potamogeton amplifolius*) and bladderwort (*Utricularia* sp.). Aquatic vegetation around the sunken island generally included submergent mermaid's hair, burreed, large-leaved pondweed and bladderwort. Aquatic macrophytes along most of the southern portion of the Inlet Arm were less abundant and generally included patchy growth of the species indicated above at the same relative water depths, but also small patches of emergent cattail (*Typha* sp.) and broadleaf arrowhead (*Sagittaria latifolia*).

The shoreline predominantly consists of a combination of sand, cobble and organics, with minor amounts of bedrock (Figure A.23.1). Shoreline areas are generally forested to the waterline, with eastern white cedar and black spruce representing the dominant species. White birch often occurs as a sub-dominant species along the shoreline, with less common species including trembling aspen, jack pine (*Pinus banksiana*) and white pine (*Pinus strobus*). Riparian understory found immediately adjacent to the shoreline is sparse, but when present mainly includes shrubs such as leatherleaf and sweet gale. No substantial wetland areas border the Inlet Arm of Upper Three Duck Lake (Figure A.23.1).

A.23.2 Fish Community Composition

Eight species were captured in Upper Three Duck Lake during the June 2013 field survey (Table A.23.1, Figure A.23.2 and Appendix Table F.22). The large-bodied fish community included moderate numbers of northern pike (*Esox lucius*), walleye (*Sander vitreus*), white sucker (*Catostomus commersonii*), lake whitefish (*Coregonus clupeaformis*) and yellow perch (*Perca flavescens*). Smallmouth bass (*Micropterus dolomieu*) was also present during the Upper Three Duck Lake assessment in 2010 (AMEC 2011). The small-bodied fish community was dominated by blacknose shiner (*Notropis heterolepis*) with fewer spottail shiner (*Notropis hudsonius*) and Iowa darter (*Etheostoma exile*). No endangered, threatened or special concern fish species (COSEWIC 2013) were observed at Upper Three Duck Lake during the 2010 or the 2013 field surveys.

A.23.3 Fish Habitat Evaluation

Good to excellent spawning for northern pike is provided by the abundant overhanging vegetation and fallen trees along the shoreline of Upper Three Duck Lake, in addition to small beds of aquatic vegetation (Table A.1 and Figure A.23.1). One of these beds can be found along the eastern shore at SN-4 where a number of young-of-the-year northern pike were caught (Figure A.23.2 and Appendix Table F.22). Moderate to good foraging/cover is provided

Table A.23.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Upper Three Duck Lake, 2013.

a) Gill Netting

Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
lake whitefish	3	0.35
northern pike	17	2.00
walleye	5	0.59
white sucker	7	0.82
yellow perch	1	0.12
Total	**33**	**3.88**

b) Minnow Trapping

Species	Total Caught	CPUE (# of fish/trap*d)
yellow perch	1	0.07

c) Seining

Species	Total Caught	CPUE (# of fish/m^2)
blacknose shiner (adult)[a]	296	0.14
blacknose shiner (juvenile)[a]	550	0.26
Iowa darter	11	0.01
northern pike (YOY)[a]	24	0.01
spottail shiner	9	0.00
yellow perch (adult)[a]	713	0.34
yellow perch (juvenile)[a]	34	0.02
Total	**1,637**	**0.78**

[a] Fish were classified as adults unless otherwise specified in the field to be juveniles or young-of-the-year (YOY)

by the scattered macrophytes and fallen trees along the shoreline of the lake (Table A.1). The vegetation and woody debris found along the shoreline of Upper Three Duck Lake combined with the open areas of sand substrate provide excellent spawning, rearing and foraging habitat for yellow perch (Table A.1 and Figure A.23.1). Good foraging habitat for lake whitefish was found in Upper Three Duck Lake through the sandy-silt substrate (Table A.1). Good to excellent spawning and rearing habitat for lake whitefish is available in association with rocky to sandy shoal and shoreline substrate (Table A.1). The deeper basin in the north will also provide the cooler water temperatures necessary in the summer for adult whitefish (Table A.1 and Figure A.23.2). Within Upper Three Duck Lake, marginal spawning habitat for walleye and white sucker is represented by rocky shoals, hard sand-bottom areas and steep rocky shorelines (Table A.1). Good rearing and foraging/cover for these species in found through the combination of rocky habitat, submergent vegetation along the shoreline and open-water areas with sandy-silt substrate (Table A.1 and Figure A.23.1).

The mixture of habitat around Upper Three Duck Lake provides excellent spawning and rearing/foraging habitat for blacknose and spottail shiner (Table A.1). The overhanging vegetation, woody debris and scattered macrophytes would provide good habitat for spawning Iowa darter as well as excellent rearing and foraging habitat through the shallow littoral areas with sand-silt bottom (Table A.1 and Figure A.23.1).

Inlet Arm

The Inlet Arm of Upper Three Duck Lake had marginal spawning habitat for northern pike due to limited wetland areas immediately adjacent to the arm. However, dense aquatic beds containing a diversity of plant species would provide excellent rearing and foraging/cover habitat for northern pike, as well as excellent habitat for spawning and all life stages of yellow perch (Table A.1). Although a marginal amount and/or quality of suitable gravel to rocky spawning habitat exists for white sucker, walleye and lake whitefish, the combination of relatively dense mixed aquatic vegetation in shallow water to the north, and rocky areas with open, deeper water to the south, provides good to excellent rearing and/or foraging/cover habitat for these species. An abundance of sandy-silt, gravel or rocky substrate in the northern portion of the inlet arm provides excellent smallmouth bass spawning habitat, whereas the rocky shoreline and shoal areas found primarily along the southern portion of the inlet provide good juvenile rearing and adult foraging habitat for this species (Table A.1 and Figure A.23.1).

The Inlet Arm contained good spawning substrate and rearing/foraging opportunities for both blacknose and spottail shiner through the sandy areas with abundant vegetation along the north portion of the arm (Table A.1 and Figure A.23.1). A general absence of overhanging bank material and floating vegetation mats suggests only marginal spawning habitat for Iowa darter. However, shallow littoral areas containing organic substrate and vegetation likely provide good habitat for rearing/foraging for this species (Table A.1).

A.23.4 References

AMEC (AMEC Americas Limited. Earth & Environmental Division). 2011. Phase II Baseline Aquatics Report Chester Project. Chester Township, District of Sudbury, Ontario. Prepared for Trelawney Mining and Exploration Inc., July 2011.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

A.24 WEEDUCK LAKE

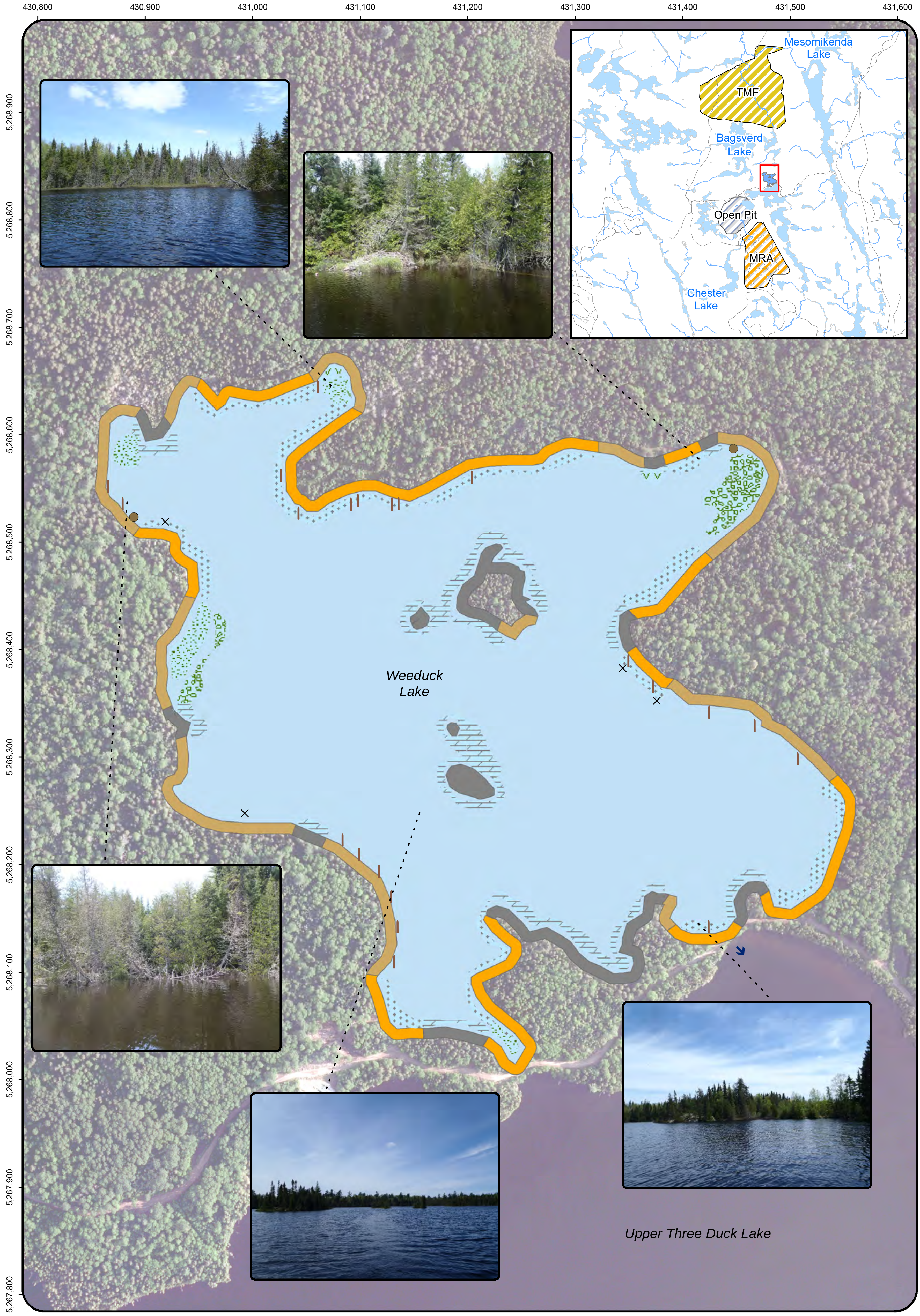
Weeduck Lake is a headwater lake within the Mollie River watershed (Figures A.24.1 and A.1). The lake is located approximately 1 km northeast of the proposed Côté Gold open pit (Figure A.1). The lake has a surface area of approximately 22 ha with the total estimated volume of 869,290 m^3, a maximum depth of approximately 9.8 m and mean depth of 4 m based on the annual average water level (Figure A.24.2). The lake has two main basins, one that reaches a maximum depth of 10 m to the south and the other which is slightly shallower at 9 m to the north. No perennial streams flow into Weeduck Lake (Figure A.24.1). The lake drains south to Upper Three Duck Lake via sub-surface flow (i.e., there is no surface connection through culverts or a channel between the two lakes; Figure A.24.1).

The assessment of habitat and fish community for Weeduck Lake is based on the field surveys conducted in June and September 2013. Weeduck Lake will be influenced by the Mollie River realignment (Figure A.1). As water will be rerouted around the pit, a realignment channel will be constructed from Bagsverd Pond to Weeduck Lake then into Upper Three Duck, ultimately changing the flow regime of the lake (Figure A.1). Water levels within Weeduck are not expected to change. Upon closure and filling of the open pit, Weeduck Lake will be disconnected from Bagsverd Pond and returned to a headwater lake.

A.24.1 Habitat Description

Weeduck Lake has relatively simple basin morphology with a few small islands (Figures A.24.1 and A.24.2). Thermal stratification was apparent during both June and September 2013 field surveys (Appendix Table C.24). In June, the hypolimnion was present at 3 m and in the fall it was located at 4 m (Appendix Table C.24). Dissolved oxygen fell below Provincial Water Quality Guidelines (6 mg/L) at depths greater than 6 m in the spring and 4 m in the fall (Appendix Table C.24). Likewise, water pH was near neutral at surface (7.36 and 6.63 in the spring and fall, respectively), however pH became acidic with depth (Appendix Table C.14). Water clarity was moderate with a mean Secchi depth of 2.7 m (Appendix Table C.14).

Substrate in deeper areas of Weeduck Lake was mainly sandy organic silt. The substrate in the littoral zone generally transitions from mainly cobble, bedrock with cobble or sandy-silt to mostly sandy-silt containing moderate amounts of woody debris. Aquatic vegetation in Weeduck was relatively sparse at the time of the survey (June 2013). Macrophytes that were observed were located within the shallow small bays and consisted of yellow pond lily (*Nuphar variegatum*) and white water lily (*Nymphaea odorata*).



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

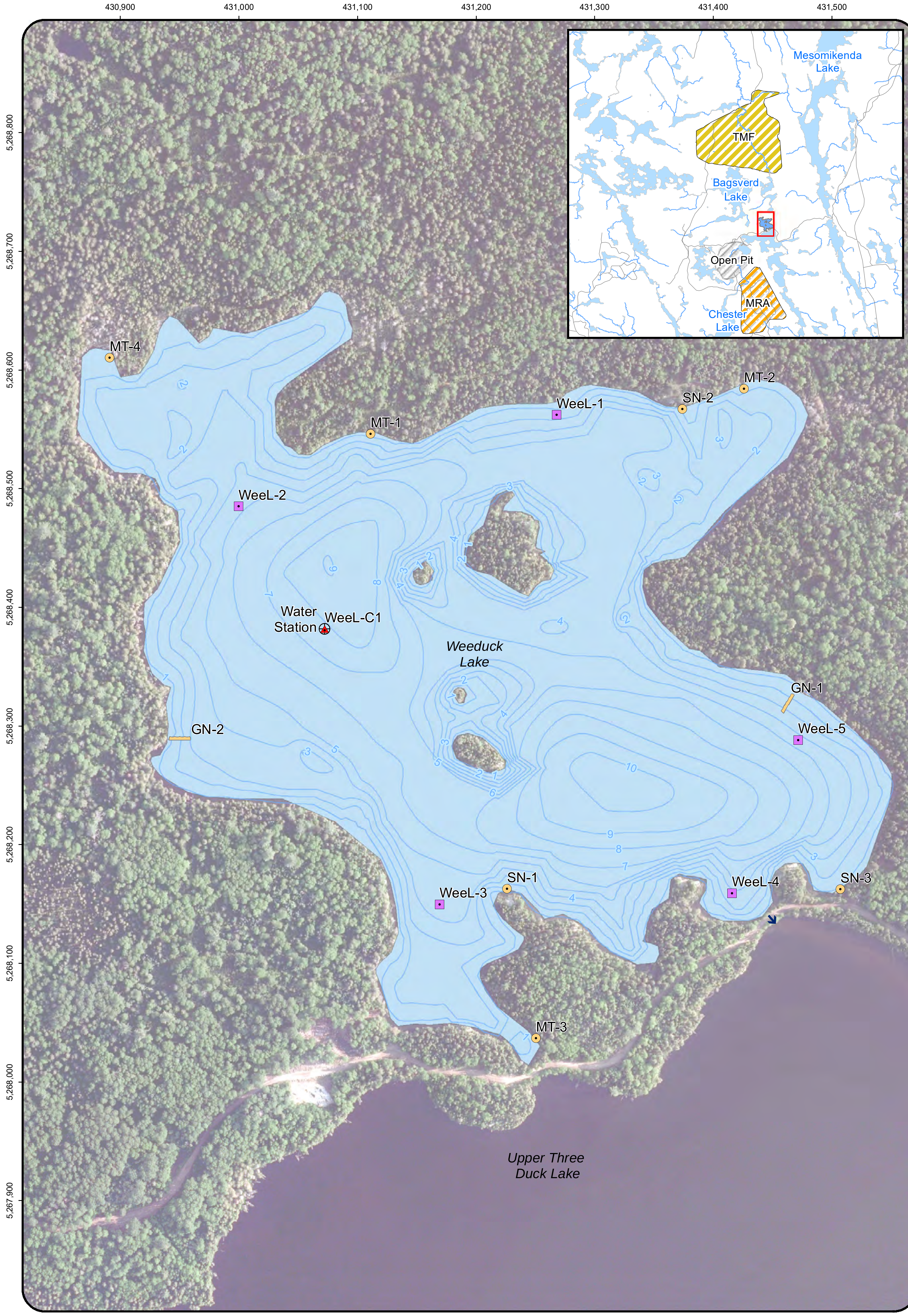
Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Rock
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.24.1: Weeduck Lake Habitat Features

Created by:
minnow environmental inc.



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MAP INFORMATION
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Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Sample Location:

- 2012 Seine, Hoop Net and Minnow Trap
- 2013 Seine, Hoop Net and Minnow Trap
- 2012 Gill Net
- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Features:

- Bathymetry (1 m intervals)
- Water Flow Direction

Figure A.24.2: Weeduck Lake Bathymetry and Sampling Locations

Created by:

The shoreline of Weeduck Lake is dominated by cobble embedded in silty-sand and silty-sand (Figure A.24.1). Bedrock outcrops are scattered around the shoreline (Figure A.24.1). Shoreline vegetation generally comprised of dense leatherleaf (*Chamaedaphne calyulata*), sweet gale (*Myrica gale*) and bog laurel (*Kalmia polifolia*) that overhangs the water's edge, with sedges (*Carex* sp.) and burreed (*Sparganium* sp.). Weeduck Lake is generally treed to the shoreline, with black spruce (*Picea mariana*) and eastern white cedar (*Thuja occidentalis*) being the dominant species with a few white birch (*Betula papyrifera*). No wetlands were found adjacent to Weeduck Lake (Figure A.24.1).

A.24.2 Fish Community Composition

Nine fish species were captured in Weeduck Lake during the June 2013 field survey (Table A.24.1, Figure A.24.2 and Appendix Table F.23). The large-bodied fish community included moderate numbers of lake whitefish (*Coregonus clupeaformis*) with fewer northern pike (*Esox lucius*), white sucker (*Catostomus commersonii*), and yellow perch (*Perca flavescens*; Table A.24.1). The small-bodied fish community was dominated by blacknose (*Notropis heterolepis*) and golden shiner (*Notemigonus crysoleucas*) with lower abundance of spottail shiner (*Notropis hudsonius*) and Iowa darter (*Etheostoma exile*; Table A.24.1). No endangered, threatened or special concern fish species (COSEWIC 2013) were observed in Weeduck Lake during the June 2013 field survey.

A.24.3 Fish Habitat Evaluation

Moderate spawning and rearing habitat for northern pike is provided in Weeduck Lake associated with overhanging shoreline vegetation, the scattered aquatic vegetation found in the shallow bays (Table A.1 and Figure A.24.1). The overhanging vegetation along the shoreline combined with the open areas provide excellent spawning, rearing and foraging habitat for yellow perch (Table A.1 and Figure A.14.1). White sucker spawning within Weeduck is limited to the cobble points and the sandy shorelines around the lake (Table A.1 and Figure A.24.1). Good rearing and foraging/cover for these species in found through the combination of rocky habitat, fallen trees and small patches of vegetation in small bays and open-water areas with sandy-silt substrate. Good spawning and excellent rearing habitat for lake whitefish is available in association with rocky points and sandy shoreline substrate (Table A.1 and Figure A.24.1).

The presence of large numbers of blacknose and golden shiner suggests good to excellent habitat for all life stages (Table A.1 and Figure A.14.1). Excellent habitat for spottail shiner is provided by the sandy-silt substrate and open areas. Good spawning habitat is also provided for Iowa darter by overhanging vegetation, woody debris or aquatic vegetation (Table A.1). Rearing and foraging habitat is found in the shallow bay areas with sandy-silt bottom, organic

Table A.24.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Weeduck Lake, 2013.

a) Gill Netting

Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
lake whitefish	28	1.90
northern pike	6	0.41
white sucker	4	0.27
yellow perch	2	0.14
Total	**40**	**2.71**

b) Minnow Trapping

Species	Total Caught	CPUE (# of fish/trap*d)
slimy sculpin	1	0.06
spottail shiner	2	0.12
yellow perch	8	0.49
Total	**11**	**0.67**

c) Seining

Species	Total Caught	CPUE (# of fish/m^2)
blacknose shiner (adult)[a]	25	0.08
blacknose shiner (juvenile)[a]	231	0.77
golden shiner	106	0.35
Iowa darter	13	0.04
yellow perch	6	0.02
Total	**381**	**1.27**

[a] Fish were classified as adults unless otherwise specified in the field to be juveniles

debris and rooted vegetation (Table A.1 and Figure A.14.1). Good slimy sculpin (*Cottus cognatus*) spawning habitat is provided by the rocky shoreline (Table A.1). Moderate rearing and foraging habitat is provided for this species through the cobble sand-silt substrate observed around the lake (Table A.1 and Figure A.24.1).

A.24.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

A.25 WEST BEAVER POND

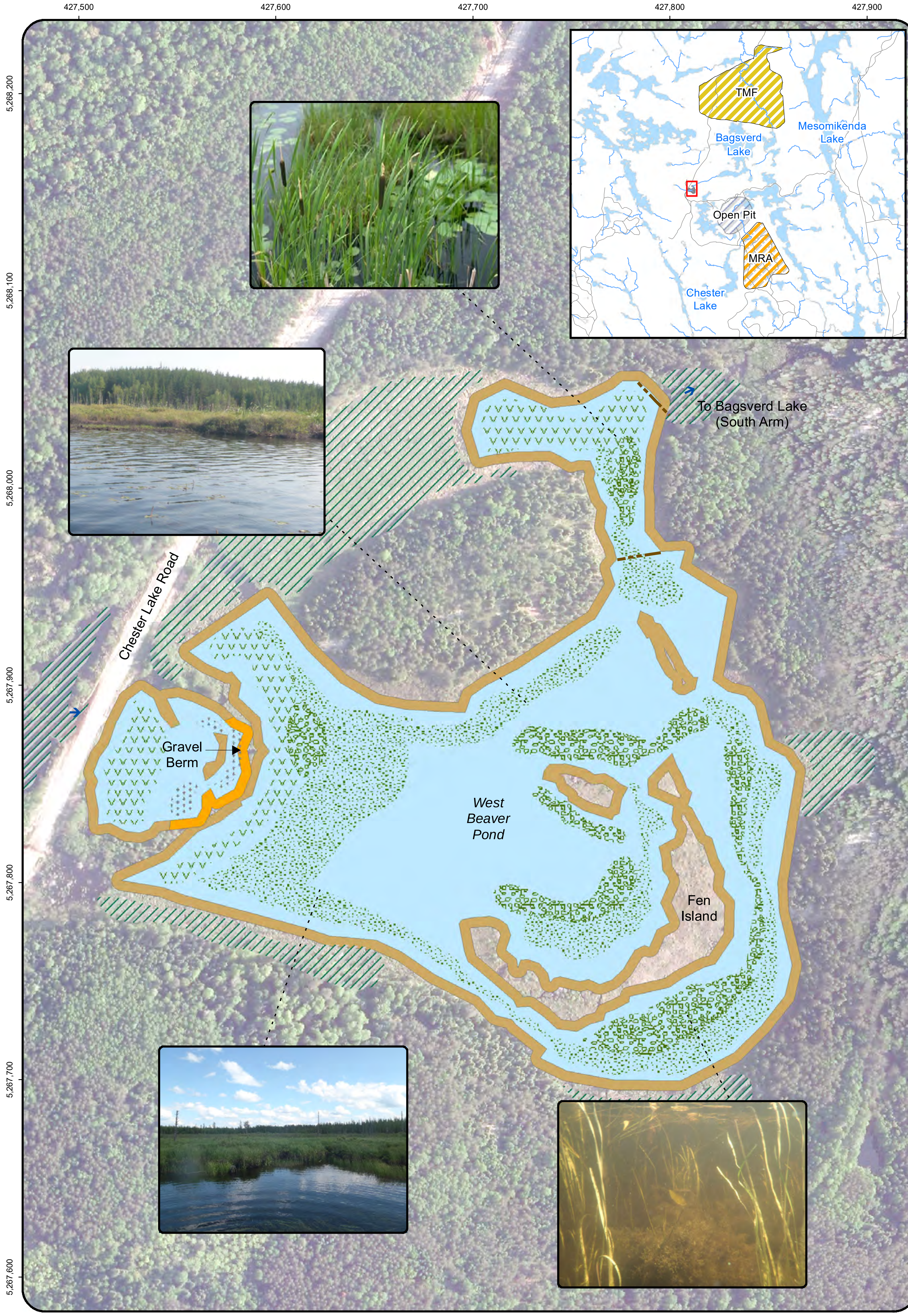
West Beaver Pond, located within the Neville Lake watershed (Figures A.25.1 and A.1), is approximately 5.4 ha and is located 1.4 km northwest of the proposed Côté Gold open pit (Figure A.1). The pond has been formed as a result of a beaver dam at its northeast end, and Chester Lake Road at its western end, resulting in a body of water approximately 350 m long by 220 m (Figure A.25.1). A gravel berm, potentially associated with a former road, occurs approximately 50 m east of Chester Lake Road, near the pond inlet (Figure A.25.1). The pond also contains a relatively large floating u-shaped fen 'island' in its main basin (Figure A.25.1). West Beaver Pond receives flow at the west end of the pond from an unnamed first order stream, with discharge from the pond flowing into the South Arm of Bagsverd Lake (see Appendix A.3 for further details).

The physical habitat and fish community characterization of West Beaver Pond was conducted during July 2012. West Beaver Pond will be influenced by the watercourse realignment of the Mollie River to accommodate the open pit (Figure A.1). West Beaver Pond will receive flow from Little Clam Lake and discharge east through the unnamed stream to the South Arm of Bagsverd Lake. Since the South Arm of Bagsverd Lake will be removed from the Neville Lake watershed, West Beaver Pond will be part of the Mollie River watershed during operations and filling of the pit. Upon closure and filling of the open pit, the original watershed will be reconnected.

A.25.1 Habitat Description

Water depth in the West Beaver Pond generally ranged from 1 to 2 m, although the area between Chester Lake Road and the gravel berm was less than 0.5 m deep. A maximum water depth of 3 m was observed within the main basin of the pond (Figure A.25.1). No water quality data were collected at the West Beaver Pond during the July 2012 field survey.

Littoral and shoreline substrate between Chester Lake Road and the gravel berm is generally dominated by gravel overlain by a variable thickness layer of organic material, whereas organic silt, muck and/or root wad vegetation are the dominate substrate in the main pond basin. Dense aquatic vegetation, including submergent pond weeds (*Potamogeton* sp.) and bladderwort (*Utricularia* sp), floating water shield (*Brasenia schreberi*) and yellow pond lily (*Nuphar variegatum*), and patchy emergent cattail (*Typha* sp.) growth occurs throughout the pond (Figure A.25.1). Wetland areas surrounding the pond include floating mats of sedges (*Carex* sp.), sweet gale (*Myrica gale*), alder (*Alnus* sp.) and dead black spruce (*Picea mariana*) with some marsh cinquefoil (*Potentilla palustris*) and bog laurel (*Kalmia polifolia*) is also present.



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MAP INFORMATION
Map Projection: NAD 1983
Data Source: Department of Natural Resources Canada. All rights reserved.
Created By: J.Wilson
Creation Date: December 2013
Project No.: 2496

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Lake Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Dam
- Beaver Lodge
- Logs and Fallen Trees
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Standing Deadwood
- Wetland

Figure A.25.1: West Beaver Pond Habitat Features

Created by:

Sedge-alder wetlands along the pond margins generally transition to black spruce and jack pine (*Pinus banksiana*) dominated forest.

A.25.2 Fish Community Composition

The fish community at West Beaver Pond consisted of eight species, including one large-bodied and seven small-bodied species (Table A.25.1, Figure A.25.2 and Appendix Table F.24). A single juvenile white sucker (*Catostomus commersonii*), captured during an overnight gill net set, was the only large-bodied fish species observed at the West Beaver Pond (Table A.25.1). The small-bodied fish community was dominated by minnow species, with high abundance of fathead minnow (*Pimephales promelas*) and finescale (*Chrosomus neogaeus*), northern redbelly (*Chrosomus eos*) and pearl dace (*Margariscus nachtriebi*) collected together with low numbers of golden shiner (*Notemigonus crysoleucas*; Table A.25.1). Central mudminnow (*Umbra limi*) occurred at moderate abundance, whereas low numbers of Iowa darter were also encountered (Table 5.1). Consistent with other water bodies sampled during the July 2012 field study, no COSEWIC (2013) listed endangered, threatened or special concern fish species were observed at the West Beaver Pond.

A.25.3 Fish Habitat Evaluation

No white sucker spawning habitat was observed in West Beaver Pond, and therefore white sucker likely migrate to either the inlet or further downstream areas to spawn. Good rearing and foraging habitat exists for white sucker in West Beaver Pond (Table A.1). The moderate numbers of fathead minnow, finescale, pearl and northern redbelly dace suggests good to excellent habitat for spawning, rearing and foraging for these species (Tables A.25.1 and A.1). Good spawning habitat is available for Iowa darter and central mudminnow through wetland vegetation macrophytes within the pond (Table A.1). The loose organic substrate coupled with abundant rooted aquatic vegetation in the shallow littoral areas likely provide good rearing, foraging and cover habitat for these species (Table A.1 and Figure A.25.1).

A.25.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed September 12, 2013.

Table A.25.1: Summary of fish catches and catch-per-unit-effort (CPUE) in West Beaver Pond, 2012.

a) Gill Netting

Species	Total Caught	CPUE (# of fish/100 m of gill net/hr)
pearl dace	71	9.18
white sucker	1	0.13
Total	**72**	**9.18**

b) Minnow Trapping

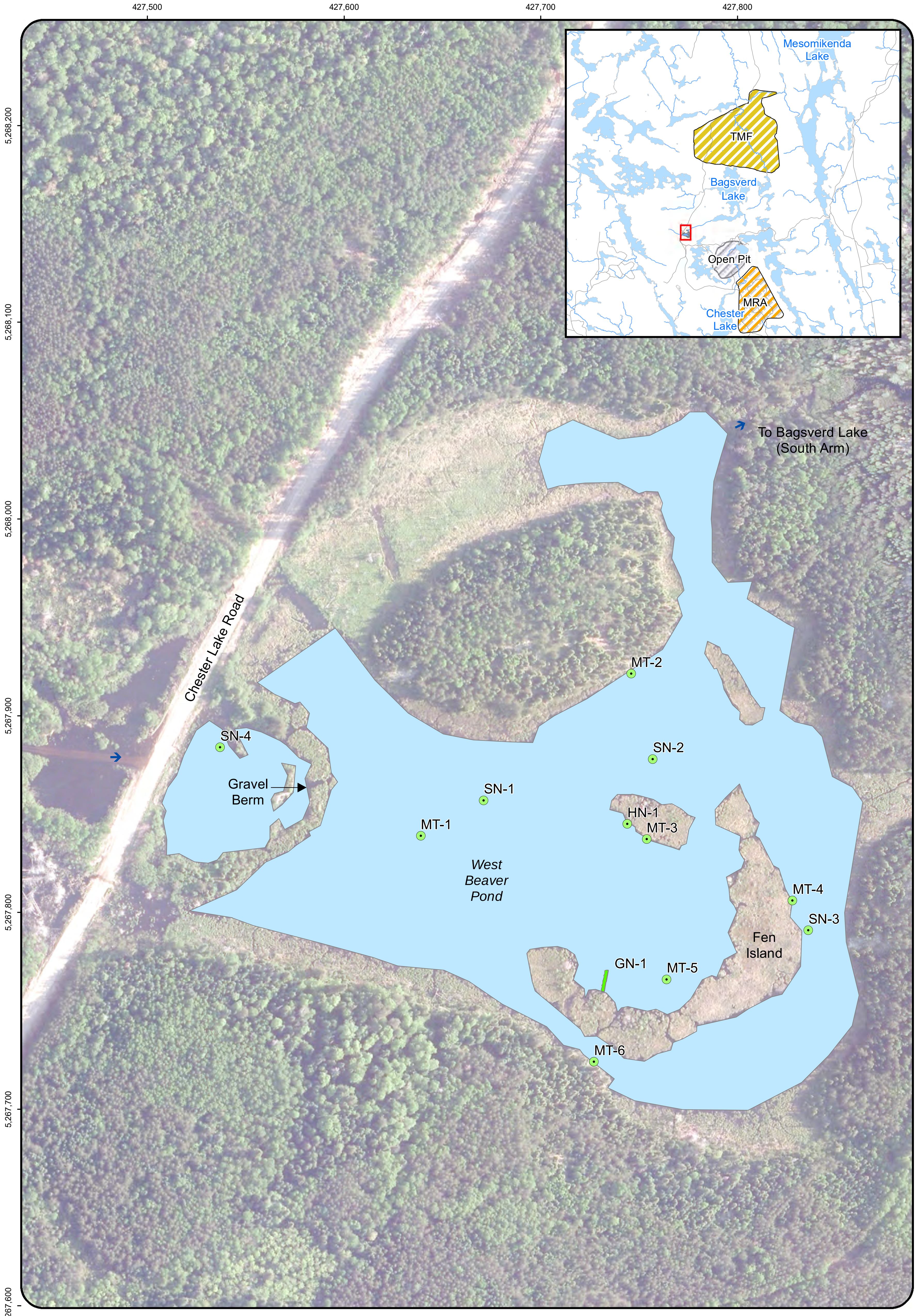
Species	Total Caught	CPUE (# of fish/trap*d)
central mudminnow	13	1.38
fathead minnow	9	0.96
finescale dace	104	11.04
Iowa darter	2	0.21
northern redbelly dace	22	2.34
pearl dace	2	0.21
Total	**152**	**16.14**

c) Seining

Species	Total Caught	CPUE (# of fish/m^2)
central mudminnow	32	0.22
fathead minnow	55	0.37
finescale dace	74	0.50
golden shiner	4	0.03
Iowa darter	15	0.10
juvenille dace spp.	800	5.41
northern redbelly dace	26	0.18
pearl dace	56	0.38
Total	**1,062**	**7.18**

d) Small Hoop Netting

Species	Total Caught	CPUE (# of fish/trap*d)
central mudminnow	19	23.90
fathead minnow	54	67.91
finescale dace	64	80.49
golden shiner	6	7.55
northern redbelly dace	24	30.18
pearl dace	49	61.62
Total	**216**	**271.65**



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Created By: J.Wilson
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Sample Location:
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- 2013 Gill Net
- Benthic Site
- Coring Site
- Water Quality Station

Other Feature:
- Water Flow Direction

Figure A.25.2: West Beaver Pond Sampling Locations

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minnow environmental inc.

APPENDIX B

DATA QUALITY ASSESSMENT

APPENDIX B: DATA QUALITY ASSESSMENT

B1.0 INTRODUCTION

Data Quality Assessment (DQA) was conducted on data collected as part of this study. The objective of DQA is to define the overall quality of the data presented in the report, and, by extension, the confidence with which the data can be used to derive conclusions.

B1.1 Background

A variety of factors can influence the chemical and biological measurements made in an environmental study and thus affect the accuracy and/or precision of the data. Inconsistencies in sampling or laboratory methods, use of instruments that are inadequately calibrated or which cannot measure to the desired level of accuracy or precision, and contamination of samples in the field or laboratory are just some of the potential factors that can lead to the reporting of data that do not accurately reflect actual environmental conditions. Depending on the magnitude of the problem, inaccuracy or imprecision have the potential to affect the reliability of any conclusions made from the data. Therefore, it is important to ensure that monitoring programs incorporate appropriate steps to control the non-natural sources of data variability (i.e., minimize the variability that does not reflect natural spatial and temporal variability in the environment) and thus assure the quality of the data.

Data quality as a concept is meaningful only when it relates to the intended use of the data. That is, one must know the context in which the data will be interpreted in order to establish a relevant basis for judging whether or not the data set is adequate. DQA involves comparison of actual field and laboratory measurement performance to data quality objectives (DQOs) established for a particular study, such as evaluation of method detection limits, blank sample data, data precision (based on field and laboratory duplicate samples), and data accuracy (based on matrix spike recoveries and/or analysis of standards or certified reference materials).

DQOs were established at the outset of the field program that reflect reasonable and achievable performance expectations (Table B.1). Programs involving a large amount of samples and analytes usually result in some results that exceed the DQOs. This is particularly so for multi-element scans (e.g., ICP scans for metals) since the analytical conditions are not necessarily optimal for every element included in the scan. Generally, scan results may be considered acceptable if no more than 20% of the parameters fail to meet the DQOs. Overall, the intent of comparing data to DQOs was not to reject any measurement that did not meet the DQO, but to ensure any questionable data received

Table B.1: Data quality objectives for environmental samples.

Quality Control Measure	Quality Control Sample Type	Study Component			
		Water Quality	Sediment Quality	Benthic Invertebrate Community	Fish Tissue Quality
Method Detection Limits (MDL)	Comparison actual MDL versus target MDL	MDL for each parameter should be at least as low as applicable guidelines, ideally ≤1/10th guideline value[a]	MDL for each parameter should be at least as low as applicable guidelines, ideally ≤1/10th guideline value[a]	n/a	MDL for each parameter should be at least as low as applicable guidelines, ideally ≤1/10th guideline value[a]
Blank Analysis	Field or Laboratory Blank	≤two-times the laboratory MDL	≤two-times the laboratory MDL	n/a	n/a
Field Precision	Field Duplicates	≤25% RPD[b]	≤40% RPD[b]	n/a	30% RPD[b] between duplicates
Laboratory Precision	Laboratory Duplicates	≤25% RPD[b]	≤35% RPD[b]	n/a	30% RPD[b] between duplicates
	Sub-Sampling Error	n/a	n/a	20% difference between sub-samples	n/a
Accuracy	Recovery of Blank Spikes	80-120%	n/a	n/a	n/a
	Recovery of Matrix Spikes	75-125%	n/a	n/a	n/a
	Recovery of Certified Reference Material, QC Standards	n/a	70-130%	n/a	70-130%
	Organism Recovery	n/a	n/a	≥ 90%	n/a

[a] or below predictions, if applicable and no guideline exists for the substance

[b] RPD - Relative Percent Difference

n/a - not applicable

more scrutiny to determine what effect, if any, this had on interpretation of results within the context of this project.

B1.2 Types of Quality Control Samples

Several types of quality control (QC) samples were assessed based on samples collected (or prepared) in the field and laboratory. These samples, and a description of each, include the following:

- **Blanks** are samples of de-ionized water and/or appropriate reagent(s) that are handled and analyzed the same way as regular samples. These samples will reflect any contamination of samples occurring in the field (in the case of field or trip blanks) or the laboratory (in the case of laboratory or method blanks). Analyte concentrations should be non-detectable although a data quality objective of twice the method detection limit allows for slight “noise” around the detection limit.

- **Field Duplicates** are replicate samples collected from a randomly selected field station using identical collection and handling methods that are then analyzed separately in the laboratory. The duplicate samples are handled and analyzed in an identical manner in the laboratory. The data from field replicate samples reflect natural variability, as well as the variability associated with sample collection methods, and therefore provide a measure of field precision.

- **Laboratory Duplicates** are replicate sub-samples created in the laboratory from randomly selected field samples which are sub-sampled and then analyzed independently using identical analytical methods. For fish tissue, laboratory duplicates represent separate aliquots of material collected after sample homogenization. The laboratory duplicate sample results reflect any variability introduced during laboratory sample handling and analysis and thus provide a measure of laboratory precision.

- **Spike Recovery Samples** are created in the laboratory by adding a known amount/concentration of a given analyte (or mixture of analytes) to a randomly selected test sample previously divided to create two sub-samples. The spiked and regular sub-samples are then analyzed in an identical manner. The spike recovery represents the difference between the measured spike amount (total amount in spiked sample minus amount in original sample) relative to the known spike amount (as a percentage). Two types of spike recovery samples are commonly analyzed. Spiked blanks (or blank spikes) are created using laboratory control materials whereas matrix spikes are created using field-collected samples. The analysis of spiked samples provides an indication of the accuracy of analytical results.

- **Certified Reference Materials and QC Standards** are samples containing known chemical concentrations that are processed and analyzed along with batches of environmental samples. The sample results are then compared to target results to provide a measure of analytical accuracy. The results are reported as the percent of the known amount that was recovered in the analysis.

Two types of QC were applied to benthic invertebrate community samples as follows:

- **Organism Recovery Checks** for benthic invertebrate community samples involve the re-processing of previously sorted material from a randomly selected sample to determine the number of invertebrates that were not recovered during the original sample processing. The reprocessing is conducted by an analyst not involved during the original processing to reduce any bias. This check allows the determination of accuracy through assessment of recovery efficiency.

- **Sub-Sampling Error** is assessed for studies in which benthic invertebrate community samples require sub-sampling (due to excessive sample volume and/or invertebrate density). By comparing the numbers of benthic invertebrates recovered between at least two sub-samples, this measure provides an evaluation of how effective the sub-sampling method was in evenly dividing the original sample. Therefore, sub-sampling error provides a measure of analytical accuracy and precision. The processing of entire benthic invertebrate community samples in representative sample fractions also allows an evaluation of sub-sampling accuracy.

B2.0 WATER SAMPLES

B2.1 Method Detection Limits

Target laboratory method detection limits (MDL) for water sample analyses were established at levels below all potentially applicable water quality guidelines (Table B.2). All reported MDLs were at or below the applicable water quality guidelines meaning that sample data for this project could be reliably interpreted relative to the guidelines.

B2.2 Laboratory Blank Sample Analysis

All samples contained very low or non-detectable analyte concentrations, indicating no inadvertent contamination of samples within the laboratory during analysis (Table B.3).

B2.3 Data Precision

Field Duplicate Samples

Two sets of duplicate water samples were collected in the field which showed fairly good agreement in analyte concentrations (Table B.4). Although results for Kjeldhal nitrogen, total phosphorus, total suspended solids, turbidity, dissolved chloride, copper, lead, thallium, uranium and zinc did not achieve the DQO, the absolute differences in concentrations between duplicate samples were low, particularly considering that concentrations were approaching the corresponding MDL's (i.e., within 10x the MDL). Zinc results were above the DQO in both samples, however these results were within 10x the MDL. Overall, the data suggest that reported sample data were adequate representations of conditions at the time of sampling.

Laboratory Duplicate Samples

Close agreement was achieved for all of the laboratory duplicate samples. Reported sample results were associated with excellent analytical precision (Table B.5).

B2.4 Data Accuracy

Blank Spike and Matrix Spike Recovery

Recoveries of all the blank spikes and matrix spikes were within the DQO range (Table B.6 and B.7). These data indicated excellent analytical accuracy associated with the analysis of water samples.

Table B.2: Laboratory method detection limits (MDLs) relative to targets and to water quality guidelines. Any highlighted values indicate MDLs that were above the target concentration.

	Analytes	Units	Method Detection Limit		Water Quality Guidelines [a]			
					Primary			Alternative
			Target	Achieved	PWQO OMOEE 1994 [b]	CWQG Environment Canada [c]		BCMOE 2006[d] unless noted
Non -metals	Acidity	mg/L		10				
	Alkalinity	mg/L		1				
	Conductivity	µS/cm		1				
	Cyanide (Total)	mg/L	0.002	0.0005	-	-		
	Cyanide (Free)	mg/L	0.002	0.0005	0.005	0.005	1987	0.009784[h]
	Total Chemical Oxygen Demand (COD)	mg/L		4				
	Dissolved Organic Carbon (DOC)	mg/L	0.5	0.2				
	Dissolved Chloride (Cl)	mg/L		0.5	-	120	2011	
	Dissolved Sulphate (SO4)	mg/L	1	0.5	-	-		218 [e,g]
	Flouride	mg/L		0.01	-	0.12	2002	
	Hardness (as $CaCO_3$)	mg/L	0.5	1				
	Nitrate (N)	mg/L	0.1	0.2	-	13	2012	
	Nitrite (N)	mg/L	0.01	0.05	-	0.06	1987	
	Nitrate plus Nitrite (as N)	mg/L		0.2				
	Orthophosphate	mg/L		0.005				
	Total Ammonia - N	mg/L	0.02	0.01	-	6.89[(e)]	2001	
	Total Carbonaceous BOD	mg/L						
	Total Kjeldhal Nitrogen (TKN)	mg/L	1	0.1				
	Total Organic Carbon (TOC)	mg/L		0.2				
	Dissolved Phophorus (P)	mg/L						
	Total Phosphorus (P)	mg/L	0.005	0.002	0.02	0.02	2004	
	Total Suspended Solids	mg/L	1	1				
	Total Unionized Ammonia	mg/L			0.02	0.019	2001	
	Turbidity	NTU		0.2				
ICP Metals	Total Aluminum (Al)	mg/L	0.0005	0.0005	0.075[e]	0.1[e]	1987	
	Total Antimony (Sb)	mg/L	0.0001	0.00002	0.02	-		
	Total Arsenic (As)	mg/L	0.0001	0.00002	0.005	0.005	1997	
	Total Barium (Ba)	mg/L	0.0005	0.00002	-	-		1.0
	Total Beryllium (Be)	mg/L	0.00005	0.00001	0.011[e]	-		
	Total Bismuth (Bi)	mg/L	0.0001	0.00001				
	Total Boron (B)	mg/L	0.05	0.05	0.2	1.5	2009	
	Total Cadmium (Cd)	mg/L	0.0001	0.000005	0.0001[e]	0.000058[e,f]	2012	
	Total Calcium (Ca)	mg/L	0.05	0.05	-	-		
	Total Chromium (Cr)	mg/L	0.0005	0.0001	0.0089[e]	0.0089[e]	1997	
	Total Cobalt (Co)	mg/L	0.00005	0.000005	0.0009	0.0025 [e]	2013	
	Total Copper (Cu)	mg/L	0.0001	0.00005	0.005[e]	0.002[e]	1987	
	Total Iron (Fe)	mg/L	0.005	0.001	0.3	0.3	1987	
	Total Lead (Pb)	mg/L	0.00005	0.000005	0.003[e]	0.001[e]	1987	
	Total Lithium (Li)	mg/L		0.0005				
	Total Magnesium (Mg)	mg/L	0.05	0.05	-	-		
	Total Manganese (Mn)	mg/L	0.0002	0.00005	-	-		0.7[e]
	Total Molybdenum (Mo)	mg/L	0.0001	0.00005	0.04	0.073	1999	
	Total Nickel (Ni)	mg/L	0.0001	0.00002	0.025	0.025[e]	1987	
	Total Potassium (K)	mg/L	0.05	0.05	-	-		373
	Total Selenium (Se)	mg/L	0.0002	0.00004	0.1	0.001	1987	
	Total Silicon (Si)	mg/L	0.1	0.1				
	Total Silver (Ag)	mg/L	0.00001	0.000005	0.0001	0.0001	1987	
	Total Sodium (Na)	mg/L	0.05	0.05	-	-		
	Total Strontium (Sr)	mg/L	0.0001	0.00005	-	-		
	Total Sulphur (S)	mg/L	3	3				
	Total Thallium (Tl)	mg/L	0.000005	0.000002	0.0003	0.0008	1999	
	Total Tin (Sn)	mg/L	0.0001	0.0002				
	Total Titanium (Ti)	mg/L	0.0005	0.0005	-	-		
	Total Uranium (U)	mg/L	0.00001	0.000002	0.005	0.015	2011	
	Total Vanadium (V)	mg/L	0.0002	0.0002	0.006	-		
	Total Zinc (Zn)	mg/L	0.0005	0.0001	0.02	0.03	1987	
	Total Zirconium (Zr)	mg/L	0.0001	0.0001	0.004	-		

(grey) achieved method detection limit greater than requested method detection limit

[a] The most recent CWQG or PWQO for the protection of aquatic life was used. If there was no federal or provincial guideline, the most recent guideline from another Canadian jurisdiction (BCMOE) was used.

[b] PWQO - Provincial Water Quality Objectives. Ministry of Environment and Energy, July 1994, re-issued in 1999 (OMOEE 1994)

[c] CWQG - Canadian Water Quality Guidelines for the protection of aquatic life. Canadian Council of Ministers of the Environment, http://st-ts.ccme.ca/, accessed September 2013 (CCME 2013). The dates for the derivation of the guideline for each substance is provided.

[d] British Columbia Ministry of Environment, Water Quality Guidelines (BCMOE 2006)

[e] Aluminum guideline depends on pH; total ammonia guideline depends on pH and temperature; beryllium, cadmium, copper, lead, manganese, nickel and sulphate guidelines depend on hardness; guidelines in table assume: pH = 7, temperature = 15°C, hardness = 33 mg/L as CaCO3 based on background water quality (Golder 2013). Guideline for trivalent chromium used for comparison purposes for total chromium.

[f] Cadmium CCME guideline is based on the Draft CCME for cadmium (Environment Canada 2012)

[g] Sulphate guideline established by BCMOE in 2013 (BCMOE 2013)

[h] USEPA free cyanide value selected for non-salmonid bearing waters, PWQG was used for Mesomikenda due to presence of salmonids.

Table B.3: Field blank results associated with analysis of water samples. Any highlighted data did not meet the data quality objective of ≤ 2x the method detection limit.

Analytes	Units	Method Detection Limit	Maxxam Job Number							
			B3F6404		B3F6454		B386032			VB386036
Acidity as CaC03	mg/L	10	<10		<10					
Total Ammonia-N	mg/L	0.01	<0.01		<0.01					
Total Chemical Oxygen Demand (COD)	mg/L	4	<4		<4					
Conductivity	umho/cm	1	<1		<1					
Total Kjeldahl Nitrogen (TKN)	mg/L	0.1	<0.1		<0.1					
Dissolved Organic Carbon	mg/L	0.2	<0.2	<0.2	<0.2	<0.2				
Total Organic Carbon (TOC)	mg/L	0.2	<0.2	<0.2	<0.2					
Total Phosphorus	mg/L	0.002	<0.002		0.003					
Total Suspended Solids	mg/L	1	<1	<1	<1					
Turbidity	NTU	0.2	0.2		0.2					
Alkalinity (Total as CaCO3)	mg/L	1	<1		<1					
Nitrite (N)	mg/L	0.0050					<0.0050			<0.0050
Strong Acid Dissoc. Cyanide (CN)	mg/L	0.00050					<0.00050			<0.00050
Weak Acid Dissoc. Cyanide (CN)	mg/L	0.00050					0.00064	<0.010		<0.00050
Fluoride (F)	mg/L	0.010								<0.010
Dissolved Sulphate (SO4)	mg/L	0.50					<0.50	<0.50	0.55	<0.50
Dissolved Chloride (Cl)	mg/L	0.50			<0.50		0.78	<0.50		<0.50
Orthophosphate (P)	mg/L	0.0050					<0.0050			<0.0050
Nitrate plus Nitrite (N)	mg/L	0.020					<0.020			<0.020
Total Aluminum (Al)	µg/L	0.50					<0.50	<0.50		<0.50
Total Antimony (Sb)	µg/L	0.020					<0.020	<0.020		<0.020
Total Arsenic (As)	µg/L	0.020					<0.020	<0.020		<0.020
Total Barium (Ba)	µg/L	0.020					<0.020	<0.020		<0.020
Total Beryllium (Be)	µg/L	0.010					<0.010	<0.010		<0.010
Total Bismuth (Bi)	µg/L	0.0050					<0.0050	<0.0050		<0.0050
Total Boron (B)	µg/L	50					<50	<50		<50
Total Cadmium (Cd)	µg/L	0.0050					<0.0050	<0.0050		<0.0050
Total Chromium (Cr)	µg/L	0.10					<0.10	<0.10		<0.10
Total Cobalt (Co)	µg/L	0.0050					<0.0050	<0.0050		<0.0050
Total Copper (Cu)	µg/L	0.050					<0.050	<0.050		<0.050
Total Iron (Fe)	µg/L	1.0					<1.0	<1.0		<1.0
Total Lead (Pb)	µg/L	0.0050					<0.0050	<0.0050		<0.0050
Total Lithium (Li)	µg/L	0.50					<0.50	<0.50		<0.50
Total Manganese (Mn)	µg/L	0.050					<0.050	<0.050		<0.050
Total Molybdenum (Mo)	µg/L	0.050					<0.050	<0.050		<0.050
Total Nickel (Ni)	µg/L	0.020					<0.020	<0.020		<0.020
Total Selenium (Se)	µg/L	0.040					<0.040	<0.040		<0.040
Total Silicon (Si)	µg/L	100					<100	<100		<100
Total Silver (Ag)	µg/L	0.0050					<0.0050	<0.0050		<0.0050
Total Strontium (Sr)	µg/L	0.050					<0.050	<0.050		<0.050
Total Thallium (Tl)	µg/L	0.0020					<0.0020	<0.0020		<0.0020
Total Tin (Sn)	µg/L	0.20					<0.20	<0.20		<0.20
Total Titanium (Ti)	µg/L	0.50					<0.50	<0.50		<0.50
Total Uranium (U)	µg/L	0.0020					<0.0020	<0.0020		<0.0020
Total Vanadium (V)	µg/L	0.20					<0.20	<0.20		<0.20
Total Zinc (Zn)	µg/L	0.10					<0.10	<0.10		<0.10
Total Zirconium (Zr)	µg/L	0.10					<0.10	<0.10		<0.10

Table B.4: Field duplicate results for analysis of water samples. Highlighted values did not meet the data quality objective of ≤ 25% relative percent difference.

Analytes	Units	Station ID WEEL (Sept 12, 2013)			Station ID UnL2 (Sept 14, 2013)		
		Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]
Acidity as CaC03	mg/L	<10	<10	0	<10	<10	0
Total Ammonia-N	mg/L	<0.01	<0.01	0	<0.01	<0.01	0
Total Chemical Oxygen Demand (COD)	mg/L	25	23.00	8	41	39	5
Conductivity	uS/cm	36.00	36.00	0	35	35	0
Total Kjeldahl Nitrogen (TKN)	mg/L	0.58	0.53	9	0.52	0.79	41
Dissolved Organic Carbon	mg/L	9.60	9.20	4	15	15	0
Total Organic Carbon (TOC)	mg/L	8.70	8.70	0	16	15	6
pH	pH units	7.16	7.14	0	7.01	7.01	0
Total Phosphorus	mg/L	0.006	0.008	29	0.01	0.01	12
Total Suspended Solids	mg/L	2.00	2.00	0	1.00	2.00	67
Turbidity	NTU	2.20	1.40	44	1.80	1.40	25
Alkalinity (Total as CaCO3)	mg/L	14.0	12.0	15	11.00	11.00	0
Nitrite (N)	mg/L	<0.005	<0.005	0	<0.005	<0.005	0
Nitrate (N)	mg/L	<0.02	<0.02	0	<0.02	<0.02	0
Strong Acid Dissoc. Cyanide (CN)	mg/L	<0.0005	<0.0005	0	0.00064	0.00068	6
Weak Acid Dissoc. Cyanide (CN)	mg/L	< 0.0005	0.00053	6	0.00062	0.00062	0
Fluoride (F)	mg/L	0.29	0.28	4	0.048	0.049	2
Dissolved Sulphate (SO4)	mg/L	0.57	0.57	0	<0.50	<0.50	0
Dissolved Chloride (Cl)	mg/L	0.62	0.77	22	0.83	1.10	28
Orthophosphate (P)	mg/L	<0.005	<0.005	0	<0.005	<0.005	0
Nitrate plus Nitrite (N)	mg/L	<0.02	<0.02	0	<0.02	<0.02	0
Total Hardness (CaCO3)	mg/L	16.9	16.5	2	17.30	16.70	4
Total Aluminum (Al)	ug/L	9.51	9.66	2	114	118	3
Total Antimony (Sb)	ug/L	0.023	0.025	8	0.03	0.03	13
Total Arsenic (As)	ug/L	0.314	0.310	1	0.46	0.43	7
Total Barium (Ba)	ug/L	5.07	5.05	0	4.33	4.33	0
Total Beryllium (Be)	ug/L	<0.010	<0.010	0	<0.010	<0.010	0
Total Bismuth (Bi)	ug/L	<0.0050	<0.0050	0	<0.0050	<0.0050	0
Total Boron (B)	ug/L	<50	<50	0	<50	<50	0
Total Cadmium (Cd)	ug/L	<0.0050	<0.0050	0	0.007	0.007	0
Total Calcium (Ca)	mg/L	5.0	4.8	4	4.72	4.50	5
Total Chromium (Cr)	ug/L	0.12	< 0.10	18	0.45	0.49	9
Total Cobalt (Co)	ug/L	0.019	0.016	17	0.08	0.09	13
Total Copper (Cu)	ug/L	0.63	0.44	37	0.73	0.70	4
Total Iron (Fe)	ug/L	55.9	53.9	4	382	363	5
Total Lead (Pb)	ug/L	0.016	0.029	58	0.13	0.12	5
Total Lithium (Li)	ug/L	<0.50	<0.50	0	<0.50	0.60	18
Total Magnesium (Mg)	mg/L	1.07	1.11	4	1.33	1.33	0
Total Manganese (Mn)	ug/L	47.2	46.8	1	27.4	28.1	3
Total Molybdenum (Mo)	ug/L	<0.050	<0.050	0	<0.050	<0.050	0
Total Nickel (Ni)	ug/L	0.180	0.178	1	0.47	0.48	2
Total Potassium (K)	mg/L	0.387	0.387	0	0.22	0.21	4
Total Selenium (Se)	ug/L	0.074	0.073	1	0.08	0.10	20
Total Silicon (Si)	ug/L	310	312	1	1280	1240	3
Total Silver (Ag)	ug/L	<0.0050	<0.0050	0	<0.0050	<0.0050	0
Total Sodium (Na)	mg/L	0.646	0.667	3	0.84	0.86	2
Total Strontium (Sr)	ug/L	12.7	12.4	2	14.8	15.0	1
Total Sulphur (S)	mg/L	<3.0	<3.0	0	<3.0	<3.0	0
Total Thallium (Tl)	ug/L	0.0020	0.0020	0	0.004	0.003	29
Total Tin (Sn)	ug/L	<0.20	<0.20	0	<0.20	<0.20	0
Total Titanium (Ti)	ug/L	<0.50	<0.50	0	0.83	1.00	19
Total Uranium (U)	ug/L	0.003	0.004	29	0.05	0.05	0
Total Vanadium (V)	ug/L	<0.20	<0.20	0	0.46	0.57	21
Total Zinc (Zn)	ug/L	0.46	0.92	67	1.72	1.33	26
Total Zirconium (Zr)	ug/L	<0.10	<0.10	0	0.14	0.16	13

[a] The method detection limit (MDL) value was used in instances where values less than the MDL were reported.

Table B.5: Laboratory duplicate results for water sample analyses. Any highlighted values did not meet data quality objective of ≤ 25% relative percent difference.

Analytes	Relative Percent Difference							
	Maxxam Job Number							
	B3F6404		B3F6454		B386032			B386036
Acidity as CaC03	NC		NC					
Total Ammonia-N	NC		NC					
Total Chemical Oxygen Demand (COD)	0.7		1.5					
Conductivity	0		0					
Total Kjeldahl Nitrogen (TKN)	NC		1.8					
Dissolved Organic Carbon	0.3	1.1	0.8					
Total Organic Carbon (TOC)	0.5	0.3	1.1	0.3				
pH								
Total Phosphorus	NC		NC					
Total Suspended Solids	0.9	2.5	2.5					
Turbidity	6.4		6.4					
Alkalinity (Total as CaCO3)	9.7		9.7					
Dissolved Chloride (Cl)			NC					
Nitrite (N)					NC	NC		NC
Strong Acid Dissoc. Cyanide (CN)					NC			NC
Weak Acid Dissoc. Cyanide (CN)					NC			NC
Fluoride (F)					NC			NC
Dissolved Sulphate (SO4)					NC	0.9	NC	0.9
Dissolved Chloride (Cl)					NC	NC		11.3
Nitrate plus Nitrite (N)					NC	NC		NC
Total Aluminum (Al)					NC	6		6
Total Antimony (Sb)					NC	NC		NC
Total Arsenic (As)					NC	4.4		4.4
Total Barium (Ba)					NC	1.3		1.3
Total Beryllium (Be)					NC	NC		NC
Total Bismuth (Bi)					NC	NC		NC
Total Boron (B)					NC	NC		NC
Total Cadmium (Cd)					NC	NC		NC
Total Chromium (Cr)					NC	NC		NC
Total Cobalt (Co)					NC	5.2		5.2
Total Copper (Cu)					NC	2.1		2.1
Total Iron (Fe)					NC	0.7		0.7
Total Lead (Pb)					NC	3.1		3.1
Total Lithium (Li)					NC	NC		NC
Total Manganese (Mn)					NC	2.8		2.8
Total Molybdenum (Mo)					NC	6.6		6.6
Total Nickel (Ni)					NC	11.3		11.3
Total Selenium (Se)					NC	NC		NC
Total Silicon (Si)					NC	3.3		3.3
Total Silver (Ag)					NC	NC		NC
Total Strontium (Sr)					NC	2.3		2.3
Total Thallium (Tl)					NC	NC		NC
Total Tin (Sn)					NC	NC		NC
Total Titanium (Ti)					NC	NC		NC
Total Uranium (U)					NC	1.4		1.4
Total Vanadium (V)					NC	NC		NC
Total Zinc (Zn)						4.9		4.9
Total Zirconium (Zr)					NC	NC		NC

NC - not calcuable due to one or both values below detection limit.

Table B.6: Laboratory spiked blank recoveries for water sample analyses. Any highlighted values did not meet data quality objective of 80 - 120% recovery.

Analytes	Percent Recovery								
	Maxxam Job Number								
	B3F6404		B3F6454			B386032			B386036
Total Ammonia-N	93		96						
Total Chemical Oxygen Demand (COD)	101		99						
Total Kjeldahl Nitrogen (TKN)	92		81						
Dissolved Organic Carbon	96	103							
Total Organic Carbon (TOC)	99	100	93	93	100				
Total Phosphorus	100		100						
Dissolved Chloride (Cl)			102			101	103		103
Nitrite (N)						101			101
Strong Acid Dissoc. Cyanide (CN)						100			98
Weak Acid Dissoc. Cyanide (CN)						97			104
Fluoride (F)						100			100
Dissolved Sulphate (SO4)						100	101	101	101
Orthophosphate (P)						107			107
Nitrate plus Nitrite (N)						104			104
Total Aluminum (Al)						98	100		100
Total Antimony (Sb)						100	98		98
Total Arsenic (As)						94	105		105
Total Barium (Ba)						95	99		99
Total Beryllium (Be)						95	95		95
Total Bismuth (Bi)						95	91		91
Total Cadmium (Cd)						96	99		99
Total Chromium (Cr)						93	103		103
Total Cobalt (Co)						93	104		104
Total Copper (Cu)						90	105		105
Total Iron (Fe)						98	108		108
Total Lead (Pb)						96	100		100
Total Lithium (Li)						100	100		100
Total Manganese (Mn)						95	104		104
Total Molybdenum (Mo)						97	99		99
Total Nickel (Ni)						93	106		106
Total Selenium (Se)						100	102		102
Total Silver (Ag)						98	99		99
Total Strontium (Sr)						98	104		104
Total Thallium (Tl)						99	105		105
Total Tin (Sn)						94	95		95
Total Titanium (Ti)						102	101		101
Total Uranium (U)						90	97		97
Total Vanadium (V)						91	103		103
Total Zinc (Zn)						96	110		110

Table B.7: Laboratory matrix spike percent recoveries for water sample analyses. Any highlighted values did not meet data quality objective of 75 - 125% recovery.

Analytes	Relative Percent Recovery						
	Maxxam Job Number						
	B3F6404		B3F6454		B386032		B386036
Total Ammonia-N	93		90				
Total Chemical Oxygen Demand (COD)	99		NC				
Total Kjeldahl Nitrogen (TKN)	98		80				
Dissolved Organic Carbon	NC	103	NC	92			
Total Organic Carbon (TOC)	NC	NC	NC				
Total Phosphorus	103		94				
Dissolved Chloride (Cl)			108		111	NC	111
Nitrite (N)					103		103
Strong Acid Dissoc. Cyanide (CN)					101		98
Weak Acid Dissoc. Cyanide (CN)					93		101
Fluoride (F)					99		99
Dissolved Sulphate (SO4)					NC	NC	NC
Orthophosphate (P)					94		94
Nitrate plus Nitrite (N)					NC		NC
Total Aluminum (Al)					100	94	94
Total Antimony (Sb)					95	97	97
Total Arsenic (As)					101	107	107
Total Barium (Ba)					97	NC	NC
Total Beryllium (Be)					98	98	98
Total Bismuth (Bi)					100	82	82
Total Cadmium (Cd)					99	98	98
Total Chromium (Cr)					97	100	100
Total Cobalt (Co)					96	100	100
Total Copper (Cu)					95	95	95
Total Iron (Fe)					102	NC	NC
Total Lead (Pb)					97	94	94
Total Lithium (Li)					98	96	96
Total Manganese (Mn)					102	NC	NC
Total Molybdenum (Mo)					99	100	100
Total Nickel (Ni)					99	101	101
Total Selenium (Se)					104	105	105
Total Silver (Ag)					105	96	96
Total Strontium (Sr)					100	NC	NC
Total Thallium (Tl)					100	98	98
Total Tin (Sn)					97	97	97
Total Titanium (Ti)					105	97	97
Total Uranium (U)					90	96	96
Total Vanadium (V)					98	102	102
Total Zinc (Zn)					107	103	103

NC - not calculated by lab if spike amount was too small relative to spike recovery to permit quantification of spike recovery.

Quality Control Standard Recovery

Recoveries of quality control standards met the DQO for all samples (Tables B.8). These data indicated good analytical accuracy associated with the analysis of water samples.

Table B.8: Recoveries of quality control (QC) standards associated with water quality analyses. Highlighted values indicate data quality objective of 70 - 130% recovery was not met.

Analytes	Percent Recovery		
	Maxxam Job Number		
	B3F6404		B3F6454
Alkalinity (Total as CaCO3)	94		94
Conductivity	101		101
Total Phosphorus	102		99
Total Kjeldahl Nitrogen (TKN)	106		90
Total Suspended Solids	99	98	98
Turbidity	101		101

B3.0 SEDIMENT SAMPLES

B3.1 Method Detection Limits

Target laboratory method detection limits (MDL) for sediment sample analyses were established at levels below all potentially applicable sediment quality guidelines (Table B.9). Not all reported MDLs were at or below the target concentrations (Table B.9), however this did not compromise interpretation of results, as the achieved detection limits were still below the selected guidelines.

B3.2 Data Precision

Field Duplicate Samples

Maxxam (Particle Size)

Eight values (three sand proportions and five clay proportions) did not meet the DQO of ≤ 40%. As particle size analyses represent proportions, each category is dependent on the others. Relative percent differences above the DQO were also flagged more frequently for lower percentages, representing smaller absolute differences, while some samples with higher percentages and larger absolute differences were not flagged. Although absolute differences between samples were large (>10%) for a number of samples, natural variability may account for some fluctuation. Overall, particle size results appear adequate for interpretation.

SRC (Analytes)

Of the 624 field duplicate values collected, 23 (3% of total) did not meet the DQO of ≤ 40%, and included just 3 analytes (boron, mercury, and silver; Table B.10). Boron and silver absolute differences in concentration between duplicate samples were generally low. Mercury displayed larger variation between duplicate samples resulting in relative percent differences above DQOs. SRC provided rechecks on these samples which returned comparable results to what was initially reported (Mr. Zimmerman, 2013) suggesting non-homogeneity within the sediment or between duplicate samples taken in the field. Since all other analytes show good results for field duplicates it is unlikely that the mercury variability was caused due to sampling and rather natural variability within the sediment.

Table B.9: Laboratory method detection limits (MDL) for sediment samples relative to targets and to guidelines. Highlighted values indicate target MDL was not achieved.

	Analytes	Units	Target MDL	Achieved MDL	Sediment Quality Ontario[a]	
					LEL[b]	SEL[c]
Non-metal	Total Kjeldahl Nitrogen (TKN)	mg/kg	50	5	550	4800
	Total Phosphorus (P)	mg/kg	300		600	2000
	Particle Size	%	0.1	0.01		
	Total Organic Carbon	mg/kg	500		10	100
ICP Metals	Total Aluminum (Al)	mg/kg	100	0.5		
	Total Antimony (Sb)	mg/kg	0.1	0.2		
	Total Arsenic (As)	mg/kg	0.2	0.1	6	33
	Total Barium (Ba)	mg/kg	0.1	0.5		
	Total Beryllium (Be)	mg/kg	0.1	0.1		
	Total Bismuth (Bi)	mg/kg	0.1			
	Total Boron (B)	mg/kg		1		
	Total Cadmium (Cd)	mg/kg	0.05	0.1	0.6	10
	Total Calcium (Ca)	mg/kg	100			
	Total Chromium (Cr)	mg/kg	1	0.5	26	110
	Total Cobalt (Co)	mg/kg	0.3	0.2		
	Total Copper (Cu)	mg/kg	0.5	0.5	16	110
	Total Iron (Fe)	mg/kg	100	0.5	20,000	40,000
	Total Lead (Pb)	mg/kg	0.1	0.1	31	250
	Total Magnesium (Mg)	mg/kg	100			
	Total Manganese (Mn)	mg/kg	0.2	0.5	460	1,100
	Total Mercury (Hg)	mg/kg	0.05	0.05	0.2	2
	Total Molybdenum (Mo)	mg/kg	0.1	0.1		
	Total Nickel (Ni)	mg/kg	0.8	0.1	16	75
	Total Phosphorus (P)	mg/kg	10		600	2,000
	Total Potassium (K)	mg/kg	100			
	Total Selenium (Se)	mg/kg	0.5	0.1		
	Total Silver (Ag)	mg/kg	0.05	0.1		
	Total Sodium (Na)	mg/kg	100			
	Total Strontium (Sr)	mg/kg	0.1	0.5		
	Total Thallium (Tl)	mg/kg	0.05	0.2		
	Total Tin (Sn)	mg/kg	0.1	0.1		
	Total Titanium (Ti)	mg/kg	1	0.5		
	Total Uranium (U)	mg/kg	0.05	0.1		
	Total Vanadium (V)	mg/kg	2	0.1		
	Total Zinc (Zn)	mg/kg	1	0.5	120	820

[a] OMOE (Ontario Ministry of Environment). 1993. Guidelines For The Protection and Management of Aquatic Sediment Quality In Ontario. August 1993, Reprinted October, 1996. MOE (1993).

[b] Lowest effect level.

[c] Severe effect level.

Table B.10: Field duplicate results for analysis of sediment samples. Highlighted values did not meet the data quality objective of ≤ 40% relative percent difference.

	Analytes	Units	Maxxam Job Number B3G8450 (Ponar)														
			Station ID UnL1-P1 (September 12, 2013)			Station ID UnL3-P1 (September 15, 2013)			Station ID ClaL-P3 (September 15, 2013)			Station ID WeeL-P1 (September 12, 2013)			Station ID MtdL-P1 (September 13, 2013)		
			Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]
Non-metals	Gravel	%	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Sand	%	15	24	46	47	12	119	52	62	18	36	22	48	<0.1	10	0
	Silt	%	56	62	10	37	45	20	39	35	11	48	60	22	73	56	26
	Clay	%	30	14	73	16	43	92	9	3	102	16	18	12	27	34	23

	Analytes	Units	SRC Group # 2013-9503 (Ponar)														
			Station ID UnL1-P1 (September 12, 2013)			Station ID UnL3-P1 (September 15, 2013)			Station ID ClaL-P3 (September 15, 2013)			Station ID WeeL-P1 (September 12, 2013)			Station ID MtdL-P1 (September 13, 2013)		
			Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]
Non-metals	Total Organic Carbon	%	22.70	22.60	0	22.50	23.80	6	8.22	0.04	198	22.50	24.90	10	20.60	18.60	10
	Total Kjeldahl Nitrogen	mg/kg	11,300	11,300	0	15,400	12,200	23	5,090	2,480	69	11,000	12,000	9	9,160	10,200	11
Metals	Total Aluminum (Al)	mg/kg	17,400	16,400	6	8,100	8,100	0	12,300	13,400	9	16,400	17,000	4	21,400	20,700	3
	Total Antimony (Sb)	mg/kg	0.2	0.2	0	0.3	0.4	29	0.2	0.2	0	0.7	0.7	0	0.4	0.4	0
	Total Arsenic (As)	mg/kg	6.5	6.5	0	4.6	4.4	4	4.5	4.5	0	16.0	15.0	6	9.1	8.7	4
	Total Barium (Ba)	mg/kg	56	52	7	48	50	4	38	52	31	75	72	4	66	65	2
	Total Beryllium (Be)	mg/kg	0.5	0.4	22	0.2	0.2	0	0.3	0.2	40	0.6	0.5	18	0.5	0.4	22
	Total Boron (B)	mg/kg	4.0	2.0	67	<1.0	3.0	100	3.0	1.0	100	7.0	6.0	15	9.0	9.0	0
	Total Cadmium (Cd)	mg/kg	1.0	1.1	10	0.8	0.8	0	0.8	0.7	13	1.7	1.7	0	1.4	1.3	7
	Total Chromium (Cr)	mg/kg	27	25	8	16	17	6	18	22	20	27	26	4	31	31	0
	Total Cobalt (Co)	mg/kg	8.3	7.3	13	4.0	3.8	5	4.4	4.8	9	9.0	8.9	1	7.9	7.7	3
	Total Copper (Cu)	mg/kg	30	28	7	24	22	9	35	33	6	47	47	0	46	44	4
	Total Iron (Fe)	mg/kg	13,600	13,100	4	5,300	5,400	2	11,200	12,200	9	35,000	37,300	6	25,200	24,800	2
	Total Lead (Pb)	mg/kg	20	24	18	26	25	4	25	24	4	52	53	2	51	49	4
	Total Manganese (Mn)	mg/kg	340	290	16	150	150	0	500	500	0	770	770	0	550	530	4
	Total Mercury (Hg)	mg/kg	0.32	0.25	25	0.41	0.58	34	0.17	0.18	6	0.39	0.28	33	0.45	1.10	84
	Total Molybdenum (Mo)	mg/kg	0.7	0.6	15	0.9	0.9	0	0.8	0.9	12	1.9	1.9	0	1.0	1.0	0
	Total Nickel (Ni)	mg/kg	21	20	5	14	14	0	11	11	0	21	21	0	23	23	0
	Total Phosphorus (P)	mg/kg	1,000	1,000	0	940	940	0	830	790	5	1,000	1,000	0	1,500	1,400	7
	Total Selenium (Se)	mg/kg	1.9	1.8	5	1.3	1.3	0	1.1	0.9	20	2.3	2.4	4	2.0	1.8	11
	Total Silver (Ag)	mg/kg	0.1	0.1	0	0.1	<0.1	0	<0.1	<0.1	0	0.2	0.2	0	0.2	0.2	0
	Total Strontium (Sr)	mg/kg	36	27	29	26	28	7	38	45	17	37	36	3	29	30	3
	Total Thallium (Tl)	mg/kg	0.2	0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	0.3	0.3	0	0.2	0.2	0
	Total Tin (Sn)	mg/kg	0.8	0.8	0	0.8	0.8	0	1.0	1.0	0	1.7	1.7	0	1.8	1.7	6
	Total Titanium (Ti)	mg/kg	610	410	39	370	420	13	970	1,020	5	770	770	0	640	650	2
	Total Uranium (U)	mg/kg	2.3	2.0	14	1.2	1.2	0	0.8	0.9	12	1.3	1.2	8	1.2	1.2	0
	Total Vanadium (V)	mg/kg	28	24	15	18	19	5	22	24	9	36	36	0	40	40	0
	Total Zinc (Zn)	mg/kg	88	85	3	60	57	5	71	67	6	130	140	7	120	120	0

[a] The method detection limit (MDL) value was used to calculate the relative percent difference in instances where values less than the MDL were reported.

Table B.10: Field duplicate results for analysis of sediment samples. Highlighted values did not meet the data quality objective of ≤ 40% relative percent difference.

	Analytes	Units	Maxxam Job Number B3G8450 (Ponar)											
			Station ID UtdL-P1 (September 12, 2013)			Station ID LtdL-P1 (September 13, 2013)			Station ID ErrC-P1 (September 15, 2013)			Station ID BagC-P1 (September 15, 2013)		
			Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]
Non-metals	Gravel	%	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Sand	%	64	43	39	14	18	25	42	45	7	82	81	1
	Silt	%	30	44	38	58	72	22	51	49	4	16	17	6
	Clay	%	6	13	75	29	10	97	8	7	18	3	3	11

	Analytes	Units	SRC Group # 2013-9503 (Ponar)											
			Station ID UtdL-P1 (September 12, 2013)			Station ID LtdL-P1 (September 13, 2013)			Station ID ErrC-P1 (September 15, 2013)			Station ID BagC-P1 (September 15, 2013)		
			Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]
Non-metals	Total Organic Carbon	%	14.10	14.40	2	19.70	19.30	2	17.00	19.30	13	7.99	7.18	11
	Total Kjeldahl Nitrogen	mg/kg	6,980	5,910	17	10,400	9,920	5	8,170	8,130	0	4,310	3,650	17
Metals	Total Aluminum (Al)	mg/kg	18,000	15,600	14	16,600	18,000	8	9,300	11,400	20	7,700	7,200	7
	Total Antimony (Sb)	mg/kg	0.3	0.3	0	0.3	0.4	29	<0.2	<0.2	0	<0.2	<0.2	0
	Total Arsenic (As)	mg/kg	7.8	7.0	11	6.6	6.4	3	9.5	13.0	31	2.8	2.3	20
	Total Barium (Ba)	mg/kg	63	50	23	57	63	10	35	37	6	37	34	8
	Total Beryllium (Be)	mg/kg	0.4	0.4	0	0.4	0.4	0	0.3	0.3	0	0.2	0.2	0
	Total Boron (B)	mg/kg	7.0	7.0	0	8.0	9.0	12	5.0	6.0	18	2.0	2.0	0
	Total Cadmium (Cd)	mg/kg	0.9	0.8	12	1.6	1.5	6	0.7	0.8	13	0.5	0.4	22
	Total Chromium (Cr)	mg/kg	32	27	17	27	29	7	19	21	10	15	14	7
	Total Cobalt (Co)	mg/kg	8.6	7.3	16	6.8	7.0	3	6.0	6.9	14	7.9	6.4	21
	Total Copper (Cu)	mg/kg	52	48	8	37	37	0	33	37	11	10	8	17
	Total Iron (Fe)	mg/kg	18,500	16,300	13	19,300	19,300	0	11,600	13,000	11	8,200	7,100	14
	Total Lead (Pb)	mg/kg	35	32	9	50	51	2	17	18	6	9	7	27
	Total Manganese (Mn)	mg/kg	590	510	15	400	410	2	140	160	13	590	510	15
	Total Mercury (Hg)	mg/kg	0.27	0.42	43	0.78	0.29	92	0.18	0.13	32	0.12	0.07	53
	Total Molybdenum (Mo)	mg/kg	1.1	0.9	20	0.8	0.9	12	1.3	1.8	32	0.3	0.2	40
	Total Nickel (Ni)	mg/kg	20	18	11	22	21	5	12	13	8	8	7	10
	Total Phosphorus (P)	mg/kg	1,200	1,100	9	1,200	1,200	0	530	590	11	470	380	21
	Total Selenium (Se)	mg/kg	1.6	1.3	21	1.7	1.7	0	1.0	1.2	18	0.6	0.5	18
	Total Silver (Ag)	mg/kg	0.2	0.1	67	0.2	0.2	0	<0.1	<0.1	0	<0.1	<0.1	0
	Total Strontium (Sr)	mg/kg	41	32	25	31	35	12	36	40	11	57	50	13
	Total Thallium (Tl)	mg/kg	0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0
	Total Tin (Sn)	mg/kg	1.4	1.2	15	1.6	1.7	6	0.5	0.6	18	0.4	0.4	0
	Total Titanium (Ti)	mg/kg	990	790	22	610	690	12	780	850	9	770	710	8
	Total Uranium (U)	mg/kg	1.2	0.9	29	1.1	1.2	9	2.1	2.4	13	1.4	1.1	24
	Total Vanadium (V)	mg/kg	37	30	21	34	35	3	22	24	9	17	16	6
	Total Zinc (Zn)	mg/kg	93	80	15	100	100	0	47	54	14	44	35	23

[a] The method detection limit (MDL) value was used to calculate the relative percent difference in instances where values less than the MDL were reported.

Table B.10: Field duplicate results for analysis of sediment samples. Highlighted values did not meet the data quality objective of ≤ 40% relative percent difference.

	Analytes	Units	SRC Group # 2013-5887 (Core)														
			Station ID UnL2-C1 (June, 2013)			Station ID UnL2-C2 (June, 2013)			Station ID UnL2-C3 (June, 2013)			Station ID UnL2-C4 (June, 2013)			Station ID UnL2-C5 (June, 2013)		
			Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]
Non-metals	Total Organic Carbon	%	23.9	24.5	2	23.8	24.4	2	23.6	24.1	2	23.0	23.5	2	23.3	23.9	3
Metals	Total Aluminum (Al)	mg/kg	16,300	16,700	2	17,700	16,600	6	16,800	17,000	1	16,600	16,800	1	17,800	17,300	3
	Total Antimony (Sb)	mg/kg	0.6	0.7	15	0.7	0.7	0	0.7	0.7	0	0.8	0.7	13	0.9	0.8	12
	Total Arsenic (As)	mg/kg	9.2	8.1	13	10.0	8.5	16	10.0	9.5	5	11.0	10.0	10	12.0	11.0	9
	Total Barium (Ba)	mg/kg	77	81	5	82	81	1	75	82	9	74	73	1	80	75	6
	Total Beryllium (Be)	mg/kg	0.6	0.5	18	0.6	0.6	0	0.6	0.5	18	0.6	0.5	18	0.6	0.6	0
	Total Boron (B)	mg/kg	4	4	0	10	4	86	6	4	40	6	2	100	4	3	29
	Total Cadmium (Cd)	mg/kg	1.1	1.1	0	1.3	1.2	8	1.2	1.2	0	1.3	1.1	17	1.4	1.2	15
	Total Chromium (Cr)	mg/kg	29	28	4	29	27	7	28	28	0	28	27	4	30	29	3
	Total Cobalt (Co)	mg/kg	10.0	9.4	6	11.0	10.0	10	10.0	10.0	0	10.0	9.9	1	11.0	10.0	10
	Total Copper (Cu)	mg/kg	27	26	4	29	27	7	28	28	0	29	28	4	31	29	7
	Total Iron (Fe)	mg/kg	25,400	26,900	6	25,200	26,800	6	24,300	27,300	12	23,900	25,900	8	25,500	27,000	6
	Total Lead (Pb)	mg/kg	68	64	6	77	68	12	79	74	7	88	80	10	101	92	9
	Total Manganese (Mn)	mg/kg	480	470	2	470	520	10	420	480	13	410	440	7	430	430	0
	Total Mercury (Hg)	mg/kg	0.34	0.26	27	0.18	0.28	43	0.56	0.27	70	0.53	0.49	8	0.65	0.37	55
	Total Molybdenum (Mo)	mg/kg	0.9	0.9	0	1.0	0.9	11	0.9	1.0	11	1.0	0.9	11	1.0	0.9	11
	Total Nickel (Ni)	mg/kg	19	17	11	20	18	11	20	19	5	20	19	5	21	20	5
	Total Selenium (Se)	mg/kg	2.2	2.1	5	2.3	2.2	4	2.2	2.2	0	2.1	2.1	0	2.4	2.3	4
	Total Silver (Ag)	mg/kg	0.2	0.2	0	0.2	0.2	0	0.2	0.2	0	0.2	0.2	0	0.2	0.2	0
	Total Strontium (Sr)	mg/kg	27	26	4	31	27	14	28	27	4	27	26	4	28	26	7
	Total Thallium (Tl)	mg/kg	0.2	<0.2	0	0.2	0.2	0	0.2	0.2	0	0.2	0.2	0	0.2	0.2	0
	Total Thorium (Th)	mg/kg	4.9	4.8	2	5.1	4.7	8	4.9	4.9	0	5.0	4.9	2	5.2	5.1	2
	Total Tin (Sn)	mg/kg	2.0	1.9	5	2.4	1.9	23	2.2	2.2	0	2.4	2.2	9	2.7	2.5	8
	Total Titanium (Ti)	mg/kg	420	420	0	450	410	9	450	430	5	440	420	5	470	440	7
	Total Uranium (U)	mg/kg	1.8	1.8	0	1.9	1.8	5	1.9	1.8	5	1.9	1.8	5	2.0	1.9	5
	Total Vanadium (V)	mg/kg	80	80	0	82	82	0	79	84	6	81	81	0	87	84	4
	Total Zinc (Zn)	mg/kg	110	110	0	120	120	0	120	110	9	110	110	0	120	110	9

[a] The method detection limit (MDL) value was used to calculate the relative percent difference in instances where values less than the MDL were reported.

Table B.10: Field duplicate results for analysis of sediment samples. Highlighted values did not meet the data quality objective of ≤ 40% relative percent difference.

	Analytes	Units	SRC Group # 2013-5887 (Core)														
			Station ID DelL-C1 (June, 2013)			Station ID DelL-C2 (June, 2013)			Station ID DelL-C3 (June, 2013)			Station ID DelL-C4 (June, 2013)			Station ID DelL-C5 (June, 2013)		
			Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]
Non-metals	Total Organic Carbon	%	20.0	20.9	4	19.5	20.8	6	20.8	20.8	0	20.9	20.8	0	20.0	20.9	4
Metals	Total Aluminum (Al)	mg/kg	11,300	11,600	3	11,200	11,400	2	11,900	11,000	8	11,000	9,600	14	11,500	11,300	2
	Total Antimony (Sb)	mg/kg	0.3	0.2	40	0.3	0.2	40	0.2	0.2	0	0.2	0.2	0	0.2	0.3	40
	Total Arsenic (As)	mg/kg	3.8	4.0	5	3.6	3.6	0	3.8	3.5	8	3.6	3.4	6	4.4	4.7	7
	Total Barium (Ba)	mg/kg	52	54	4	51	50	2	54	51	6	47	44	7	50	51	2
	Total Beryllium (Be)	mg/kg	0.2	0.2	0	0.2	0.2	0	0.2	0.2	0	0.2	0.2	0	0.2	0.2	0
	Total Boron (B)	mg/kg	1	3	100	2	3	40	9	3	100	7	3	80	4	3	29
	Total Cadmium (Cd)	mg/kg	1.4	1.1	24	1.4	1.3	7	1.2	1.2	0	1.2	1.1	9	1.3	1.2	8
	Total Chromium (Cr)	mg/kg	25	24	4	25	25	0	26	24	8	24	22	9	25	25	0
	Total Cobalt (Co)	mg/kg	4.7	4.6	2	4.5	4.4	2	4.6	4.3	7	4.1	3.8	8	4.3	4.5	5
	Total Copper (Cu)	mg/kg	19	18	5	19	18	5	19	18	5	17	16	6	18	18	0
	Total Iron (Fe)	mg/kg	13,700	12,800	7	12,000	11,800	2	12,000	11,100	8	11,000	9,600	14	11,200	10,800	4
	Total Lead (Pb)	mg/kg	31	29	7	31	30	3	32	30	6	28	27	4	30	31	3
	Total Manganese (Mn)	mg/kg	270	290	7	260	250	4	260	230	12	220	200	10	220	220	0
	Total Mercury (Hg)	mg/kg	0.37	0.37	0	0.40	0.19	71	0.29	0.16	58	0.43	0.37	15	0.37	0.42	13
	Total Molybdenum (Mo)	mg/kg	0.4	0.4	0	0.4	0.4	0	0.4	0.4	0	0.4	0.4	0	0.5	0.4	22
	Total Nickel (Ni)	mg/kg	19	18	5	19	20	5	19	18	5	18	16	12	18	18	0
	Total Selenium (Se)	mg/kg	1.4	1.3	7	1.4	1.4	0	1.5	1.4	7	1.4	1.2	15	1.4	1.4	0
	Total Silver (Ag)	mg/kg	0.1	<0.1	0	0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	0.1	0
	Total Strontium (Sr)	mg/kg	33	32	3	33	31	6	34	31	9	30	27	11	32	32	0
	Total Thallium (Tl)	mg/kg	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0
	Total Thorium (Th)	mg/kg	3.3	3.1	6	3.1	3.3	6	3.4	3.1	9	3.1	2.9	7	3.3	3.4	3
	Total Tin (Sn)	mg/kg	1.2	1.2	0	1.1	1.1	0	1.2	1.1	9	1.1	1.0	10	1.2	1.2	0
	Total Titanium (Ti)	mg/kg	630	620	2	630	620	2	650	620	5	610	550	10	660	660	0
	Total Uranium (U)	mg/kg	0.9	0.9	0	0.9	0.9	0	0.9	0.9	0	0.9	0.8	12	0.9	0.9	0
	Total Vanadium (V)	mg/kg	22	22	0	22	22	0	23	22	4	21	19	10	22	22	0
	Total Zinc (Zn)	mg/kg	77	73	5	78	74	5	79	75	5	72	67	7	77	78	1

[a] The method detection limit (MDL) value was used to calculate the relative percent difference in instances where values less than the MDL were reported.

Table B.10: Field duplicate results for analysis of sediment samples. Highlighted values did not meet the data quality objective of ≤ 40% relative percent difference.

	Analytes	Units	SRC Group # 2013-5887 (Core)														
			Station ID UnL3-C1 (June, 2013)			Station ID UnL3-C2 (June, 2013)			Station ID UnL3-C3 (June, 2013)			Station ID UnL3-C4 (June, 2013)			Station ID UnL3-C5 (June, 2013)		
			Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]
Non-metals	Total Organic Carbon	%	27.9	25.5	9	28.2	27.0	4	27.6	26.7	3	26.9	26.9	0	27.0	27.5	2
Metals	Total Aluminum (Al)	mg/kg	9,400	10,700	13	11,800	9,800	19	9,600	9,400	2	9,300	8,600	8	9,300	8,000	15
	Total Antimony (Sb)	mg/kg	0.7	0.9	25	1.1	0.9	20	0.8	0.9	12	0.8	0.7	13	0.7	0.5	33
	Total Arsenic (As)	mg/kg	8.0	9.2	14	11	9	20	8.1	8.0	1	7.1	6.8	4	6.2	5.9	5
	Total Barium (Ba)	mg/kg	53	59	11	70	56	22	58	56	4	55	56	2	54	53	2
	Total Beryllium (Be)	mg/kg	0.2	0.2	0	0.2	0.2	0	0.2	0.2	0	0.2	0.2	0	0.2	0.2	0
	Total Boron (B)	mg/kg	4	5	22	4	4	0	3	4	29	6	3	67	5	6	18
	Total Cadmium (Cd)	mg/kg	1.7	2.0	16	1.9	1.7	11	1.5	1.6	6	1.2	1.3	8	1.1	1.2	9
	Total Chromium (Cr)	mg/kg	15	17	13	19	15	24	15	15	0	14	16	13	14	14	0
	Total Cobalt (Co)	mg/kg	6.4	7.9	21	7.7	6.2	22	5.4	5.0	8	4.6	5.2	12	3.9	4.5	14
	Total Copper (Cu)	mg/kg	29	31	7	32	26	21	25	25	0	24	25	4	22	24	9
	Total Iron (Fe)	mg/kg	11,400	14,100	21	14,100	11,700	19	10,600	9,800	8	9,300	8,300	11	7,900	7,300	8
	Total Lead (Pb)	mg/kg	97	104	7	93	71	27	66	64	3	56	51	9	41	39	5
	Total Manganese (Mn)	mg/kg	140	150	7	180	140	25	150	140	7	140	160	13	150	160	6
	Total Mercury (Hg)	mg/kg	0.77	0.26	99	0.13	0.25	63	0.87	0.24	114	0.43	0.47	9	0.17	0.54	104
	Total Molybdenum (Mo)	mg/kg	1.1	1.2	9	1.4	1.1	24	1.1	1.1	0	1.1	1.2	9	0.9	1.0	11
	Total Nickel (Ni)	mg/kg	20	22	10	23	18	24	17	16	6	16	20	22	14	14	0
	Total Selenium (Se)	mg/kg	2.0	2.1	5	2.2	1.7	26	1.6	1.6	0	1.5	1.5	0	1.4	1.4	0
	Total Silver (Ag)	mg/kg	0.2	0.2	0	0.2	0.2	0	0.2	0.2	0	0.2	0.2	0	0.1	0.1	0
	Total Strontium (Sr)	mg/kg	21	23	9	29	22	27	24	23	4	22	24	9	24	23	4
	Total Thallium (Tl)	mg/kg	0.2	0.3	40	0.3	0.2	40	0.2	0.2	0	<0.2	<0.2	0	<0.2	<0.2	0
	Total Thorium (Th)	mg/kg	2.5	2.9	15	3.4	2.8	19	2.7	2.8	4	2.6	2.7	4	2.7	2.6	4
	Total Tin (Sn)	mg/kg	2.2	2.6	17	2.6	2.1	21	1.9	2.0	5	1.6	1.6	0	1.2	1.2	0
	Total Titanium (Ti)	mg/kg	330	370	11	420	350	18	360	330	9	340	380	11	330	310	6
	Total Uranium (U)	mg/kg	0.8	0.9	12	1.2	1.0	18	1	1	0	1.0	1.1	10	1.0	1.0	0
	Total Vanadium (V)	mg/kg	25	26	4	30	24	22	24	24	0	22	22	0	20	20	0
	Total Zinc (Zn)	mg/kg	100	120	18	130	100	26	92	95	3	82	81	1	72	74	3

[a] The method detection limit (MDL) value was used to calculate the relative percent difference in instances where values less than the MDL were reported.

Laboratory Duplicate Samples

Close agreement was achieved for the majority of reported laboratory duplicate sample results, with the exception of ten values (Table B.11). The absolute differences in concentrations for these samples were low, with all concentrations approaching the corresponding MDLs (i.e., within 10x the MDL). Overall these results indicate good laboratory precision (Table B.11).

B3.3 Data Accuracy

Recoveries of quality control standards met the DQO for the majority of samples with the exception of two titanium samples and one mercury sample. These results were close to the DQO (Tables B.12). Overall, these data indicated good analytical accuracy associated with the analysis of sediment samples.

Table B.11: Laboratory duplicate results for analysis of sediment samples. Highlighted values did not meet the data quality objective of ≤ 35% relative percent difference.

Analytes	Relative Percent Difference SRC Group # 2013-5887 (Core)																							
	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]
Moisture																								
Total Organic Carbon	20.7	21.0	1	12.0	12.0	0	21.8	21.7	0															
Total Kjeldahl Nitrogen																								
Aluminum (Al)	14,800	15,100	2	16,300	16,400	1	17,300	16,900	2	11,200	10,300	8	9,400	10,000	6	9,400	8,800	7	18,000	19,100	6	20,300	17,100	17
Antimony (Sb)	0.6	0.6	0	0.6	0.6	0	0.8	0.8	0	0.3	0.2	40	0.7	0.8	13	0.9	0.8	12	0.5	0.6	18	1.0	0.8	22
Arsenic (As)	12.0	13.0	8	9.2	8.8	4	11.0	11.0	0	3.6	3.4	6	8.0	8.3	4	8.0	7.5	6	7.4	8.0	8	18.0	16.0	12
Barium (Ba)	55	64	15	77	77	0	75	74	1	51	47	8	53	55	4	56	52	7	76	82	8	190	160	17
Beryllium (Be)	0.3	0.3	0	0.6	0.5	18	0.6	0.6	0	0.2	0.2	0	0.2	0.2	0	0.2	0.2	0	0.5	0.6	18	0.6	0.5	18
Boron (B)	12.0	12.0	0	4.0	4.0	0	3.0	4.0	29	2.0	1.0	67	4.0	4.0	0	4.0	4.0	0	4.0	4.0	0	5.0	4.0	22
Cadmium (Cd)	1.3	1.4	7	1.1	1.2	9	1.2	1.2	0	1.4	1.2	15	1.7	1.8	6	1.6	1.4	13	1.2	1.3	8	2.2	1.9	15
Chromium (Cr)	28	30	7	29	28	4	29	29	0	25	23	8	15	15	0	15	14	7	34	36	6	34	29	16
Cobalt (Co)	6.0	6.3	5	10.0	10.0	0	10.0	10.0	0	4.5	4.2	7	6.4	6.8	6	5.0	4.6	8	7.8	8.0	3	18.0	15.0	18
Copper (Cu)	32	32	0	27	27	0	29	29	0	19	17	11	29	30	3	25	24	4	22	23	4	28	23	20
Iron (Fe)	15,000	15,200	1	25,400	25,200	1	27,000	26,200	3	12,000	11,100	8	11,400	11,900	4	9,800	9,000	9	22,300	23,200	4	82,600	69,200	18
Lead (Pb)	69	70	1	68	67	1	92	93	1	31	29	7	97	100	3	64	58	10	71	74	4	88	74	17
Manganese (Mn)	380	400	5	480	470	2	430	430	0	260	240	8	140	150	7	140	140	0	530	550	4	9,800	8,100	19
Mercury (Hg)	0.36	0.33	9	0.25	0.26	4	0.43	0.43	0	0.87	0.87	0	0.25	0.26	4	0.34	0.35	3	0.66	0.67	2	0.61	0.63	3
Molybdenum (Mo)	0.9	1.0	11	0.9	0.9	0	0.9	1.0	11	0.4	0.4	0	1.1	1.2	9	1.1	1.1	0	0.9	1.0	11	2.8	2.4	15
Nickel (Ni)	22	22	0	19	18	5	20	20	0	19	18	5	20	21	5	16	15	6	22	22	0	21	18	15
Phosphorus (P)																								
Selenium (Se)	2.1	2.0	5	2.2	2.1	5	2.3	2.3	0	1.4	1.3	7	2.0	2.0	0	1.6	1.6	0	1.4	1.4	0	2.0	1.7	16
Silver (Ag)	0.2	0.2	0	0.2	0.2	0	0.2	0.2	0	0.1	0.1	0	0.2	0.2	0	0.2	0.2	0	0.2	0.2	0	0.2	0.2	0
Strontium (Sr)	31	34	9	27	27	0	26	26	0	33	29	13	21	22	5	23	21	9	37	38	3	29	24	19
Tin (Sn)	1.9	2.0	5	2.0	1.9	5	2.5	2.5	0	1.1	1.1	0	2.2	2.4	9	2.0	1.7	16	2.2	2.4	9	3.4	2.9	16
Thallium (Tl)	<0.2	<0.2	0	0.2	<0.2	0	0.2	0.2	0	<0.2	<0.2	0	0.2	0.2	0	0.2	<0.2	0	0.2	0.3	40	0.4	0.3	29
Thorium (Tr)	3.8	3.8	0	4.9	4.8	2	5.1	5.1	0	3.1	3.1	0	2.5	2.6	4	2.8	2.6	7	6.5	7.9	19	5.7	4.8	17
Titanium (Ti)	580	590	2	420	420	0	440	440	0	630	590	7	330	340	3	330	320	3	1,100	1,200	9	1,000	970	3
Uranium (U)	0.9	0.9	0	1.8	1.7	6	1.9	1.9	0	1.9	1.9	0	0.9	0.8	12	0.8	0.9	12	1.0	0.9	11	2.7	3.3	20
Vanadium (V)	30	31	3	80	80	0	84	85	1	22	20	10	25	26	4	24	22	9	54	56	4	70	59	17
Zinc (Zn)	99	100	1	110	110	0	110	110	0	78	70	11	100	110	10	95	90	5	120	130	8	150	130	14

Analytes	Relative Percent Difference SRC Group # 2013-9503 (Ponar)																							
	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]
Moisture	94.93	97.82	3	94.70	97.09	2																		
Total Organic Carbon																								
Total Kjeldahl Nitrogen	17,600	16,400	7	4,530	4,520	0																		
Aluminum (Al)	6,000	6,200	3	12,100	12,000	1	15,700	16,400	4	6,100	6,300	3	12,700	12,300	3	7,000	7,400	6	17,900	18,600	4	8,200	8,500	4
Antimony (Sb)	<0.2	<0.2	0	1.1	1.1	0	0.4	0.4	0	0.4	0.4	0	0.2	0.2	0	0.4	0.4	0	0.4	0.4	0	0.4	0.4	0
Arsenic (As)	1.8	1.7	6	10.0	11.0	10	8.0	8.1	1	7.4	7.8	5	6.5	6.1	6	12.0	13.0	8	9.1	9.8	7	4.7	4.8	2
Barium (Ba)	14	14	0	49	49	0	50	52	4	45	45	0	52	51	2	49	50	2	61	63	3	49	49	0
Beryllium (Be)	0.2	0.2	0	0.4	0.4	0	0.4	0.4	0	0.2	0.2	0	0.4	0.4	0	0.2	0.2	0	0.4	0.4	0	0.2	0.2	0
Boron (B)	2	1	67	8	8	0	4	4	0	8	8	0	2	2	0	4	4	0	<1	<1	0	4	4	0
Cadmium (Cd)	0.3	0.3	0	1.9	2.0	5	1.0	1.1	10	1.4	1.5	7	1.1	1.1	0	1.0	1.0	0	1.0	0.9	11	1.5	1.6	6
Chromium (Cr)	10	10	0	22	22	0	23	24	4	13	14	7	25	25	0	22	22	0	28	29	4	16	17	6
Cobalt (Co)	3.9	3.9	0	7.4	7.5	1	6.4	6.6	3	4.4	4.6	4	7.3	7.2	1	5.1	5.4	6	11.0	11.0	0	4.0	4.1	2
Copper (Cu)	5.3	5.8	9	56.0	56.0	0	57.0	57.0	0	29.0	30.0	3	28.0	28.0	0	38.0	40.0	5	23.0	24.0	4	25.0	26.0	4
Iron (Fe)	10,800	10,800	0	26,800	26,400	2	15,700	16,300	4	6,800	6,900	1	10,600	10,700	1	10,600	11,500	8	18,600	19,800	6	5,400	5,500	2
Lead (Pb)	8	8	1	51	52	2	32	32	0	35	36	3	24	24	0	46	49	6	38	40	5	31	32	3
Manganese (Mn)	150	160	6	470	480	2	470	480	2	330	350	6	290	280	4	220	240	9	430	460	7	150	150	0
Mercury (Hg)	0.27	0.27	0	0.17	0.18	6	0.15	0.16	6	0.37	0.38	3	0.18	0.19	5	0.23	0.23	0	0.24	0.24	0	0.30	0.31	3
Molybdenum (Mo)	0.3	0.4	29	2.6	2.7	4	1.4	1.4	0	1.2	1.3	8	0.6	0.7	15	1.5	1.6	6	0.8	0.9	12	1.0	1.0	0
Nickel (Ni)	5.8	6.0	3	24.0	24.0	0	15.0	16.0	6	21.0	22.0	5	20.0	20.0	0	23.0	23.0	0	17.0	18.0	6	15.0	15.0	0
Phosphorus (P)	410	460	11	1,200	1,300	8	960	950	1	1,400	1,400	0	1,000	1,000	0	700	760	8	1,200	1,200	0	880	920	4
Selenium (Se)	0.2	0.2	0	2.8	2.9	4	1.5	1.5	0	1.9	2.0	5	1.8	1.8	0	1.7	1.8	6	1.6	1.6	0	1.4	1.5	7
Silver (Ag)	<0.1	<0.1	0	0.1	0.2	67	0.1	0.2	67	0.1	0.1	0	0.1	0.1	0	0.1	0.1	0	0.1	0.1	0	0.1	0.1	0
Strontium (Sr)	18	18	0	31	30	3	33	34	3	23	24	4	27	27	0	29	32	10	31	32	3	27	27	0
Tin (Sn)	0.4	0.4	0	1.6	1.6	0	1.2	1.2	0	0.9	0.8	12	0.8	0.8	0	1.2	1.4	15	1.2	1.2	0	1.0	1.1	10
Thallium (Tl)	<0.2	<0.2	0	0.2	0.2	0	0.2	0.2	0	<0.2	<0.2	0	0.2	0.2	0	<0.2	<0.2	0	0.3	0.3	0	<0.2	<0.2	0
Thorium (Tr)	5.6	5.4	4																					
Titanium (Ti)	610	570	7	600	600	0	770	840	9	270	270	0	410	400	2	510	550	8	660	670	2	380	380	0
Uranium (U)	0.4	0.4	0	1.3	1.3	0	1.1	1.1	0	0.6	0.6	0	2.0	2.0	0	0.6	0.6	0	2.8	3.0	7	1.2	1.3	8
Vanadium (V)	15	16	6	25	25	0	27	28	4	11	11	0	24	24	0	19	20	5	40	41	2	18	18	0
Zinc (Zn)	36	36	0	120	130	8	100	100	0	97	100	3	85	84	1	91	94	3	89	93	4	68	69	1

Analytes	Relative Percent Difference Maxxam Job Number B3G8450 (Ponar)
Gravel	11.3
Sand	0.5
Silt	1.4
Clay	13.5

[a] The method detection limit (MDL) value was used to calculate the relative percent difference in instances where values less than the MDL were reported.

Table B.11: Laboratory duplicate results for analysis of sediment samples. Highlighted values did not meet the data quality objective of ≤ 35% relative percent difference.

Analytes	Relative Percent Difference SRC Group # 2013-5887 (Core)																	
	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]
Moisture																		
Total Organic Carbon																		
Total Kjeldahl Nitrogen																		
Aluminum (Al)	16,100	16,900	5	16,100	18,100	12	15,000	14,800	1	15,100	14,900	1	16,900	16,100	5			
Antimony (Sb)	0.6	0.6	0	0.3	0.3	0	0.3	0.3	0	0.3	0.3	0	<0.2	<0.2	0			
Arsenic (As)	37.0	38.0	3	5.1	5.6	9	4.8	4.9	2	6.9	6.8	1	4.1	4.0	2			
Barium (Ba)	420	430	2	71	80	12	53	54	2	60	58	3	58	56	4			
Beryllium (Be)	0.6	0.6	0	0.3	0.3	0	0.3	0.3	0	0.3	0.2	40	0.4	0.3	29			
Boron (B)	5.0	5.0	0	7.0	7.0	0	3.0	3.0	0	3.0	3.0	0	3.0	2.0	40			
Cadmium (Cd)	2.0	2.0	0	1.2	1.4	15	1.2	1.2	0	1.2	1.1	9	0.8	0.8	0			
Chromium (Cr)	29	29	0	30	33	10	27	28	4	32	30	6	25	24	4			
Cobalt (Co)	13.0	13.0	0	5.6	6.2	10	6.5	6.5	0	6.8	6.7	1	3.9	3.7	5			
Copper (Cu)	28	28	0	58	64	10	27	28	4	30	29	3	71	71	0			
Iron (Fe)	62,000	63,400	2	15,500	17,400	12	16,500	17,000	3	13,700	13,400	2	11,400	11,100	3			
Lead (Pb)	99	100	1	49	53	8	40	41	2	41	40	2	12	12	0			
Manganese (Mn)	24,600	26,000	6	390	420	7	380	390	3	400	380	5	290	280	4			
Mercury (Hg)	0.58	0.52	11	0.31	0.32	3												
Molybdenum (Mo)	8.7	8.8	1	0.8	0.8	0	0.6	0.6	0	0.7	0.7	0	1.6	1.6	0			
Nickel (Ni)	23	24	4	20	22	10	17	18	6	22	22	0	13	12	8			
Phosphorus (P)																		
Selenium (Se)	2.2	2.3	4	1.6	1.8	12	1.2	1.2	0	1.8	1.8	0	1.4	1.4	0			
Silver (Ag)	0.2	0.2	0	0.2	0.2	0	0.2	0.2	0	0.2	0.1	67	0.2	0.2	0			
Strontium (Sr)	31	32	3	30	33	10	32	34	6	33	31	6	20	19	5			
Tin (Sn)	2.4	2.3	4	1.6	1.7	6	1.4	1.4	0	1.4	1.4	0	0.4	0.4	0			
Thallium (Tl)	0.3	0.3	0	<0.2	<0.2	0	<0.2	<0.2	0	0.2	<0.2	0	<0.2	<0.2	0			
Thorium (Tr)	4.8	5.0	4	4.1	4.7	14	3.8	4.0	5	4.3	4.1	5	3.6	3.5	3			
Titanium (Ti)	780	830	6	710	750	5	800	800	0	730	680	7	390	410	5			
Uranium (U)	2.5	2.1	17	2.9	3.0	3	1.0	1.1	10	0.9	0.9	0	1.1	1.0	10	1.2	1.2	0
Vanadium (V)	56	58	4	31	35	12	33	34	3	32	30	6	28	28	0			
Zinc (Zn)	150	150	0	84	92	9	83	87	5	82	80	6	84	82	2			

Analytes	Relative Percent Difference SRC Group # 2013-9503 (Ponar)								
	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]
Moisture									
Total Organic Carbon									
Total Kjeldahl Nitrogen									
Aluminum (Al)	6,600	6,000	10	24,400	23,600	3			
Antimony (Sb)	0.3	0.2	40	1.1	1.1	0			
Arsenic (As)	6.9	6.7	3	27.0	26.0	4			
Barium (Ba)	49	49	0	460	450	2			
Beryllium (Be)	0.2	0.2	0	0.8	0.9	12			
Boron (B)	5	4	22	6	6	0			
Cadmium (Cd)	2.9	2.9	0						
Chromium (Cr)	12	12	0	34	34	0			
Cobalt (Co)	5.6	5.5	2	15.0	14.0	7			
Copper (Cu)	32.0	32.0	0	37.0	37.0	0			
Iron (Fe)	7,400	6,900	7	76,600	74,600	3			
Lead (Pb)	29	29	0	189	184	3			
Manganese (Mn)	240	230	4	15,600	15,200	3			
Mercury (Hg)	0.59	0.56	5	0.10	0.09	11	<0.05	<0.05	0
Molybdenum (Mo)	2.1	2.2	5	3.3	3.1	6			
Nickel (Ni)	12.0	12.0	0	29.0	28.0	4			
Phosphorus (P)	740	710	4	3,800	3,700	3			
Selenium (Se)	1.9	1.9	0	2.8	2.8	0			
Silver (Ag)	<0.1	<0.1	0	0.3	0.3	0			
Strontium (Sr)	32	32	0	34	33	3			
Tin (Sn)	0.8	0.8	0	4.2	4.0	5			
Thallium (Tl)	<0.2	<0.2	0	0.4	0.4	0			
Thorium (Tr)									
Titanium (Ti)	310	320	3	810	790	3			
Uranium (U)	1.6	1.6	0	4.6	4.5	2			
Vanadium (V)	15	14	7	87	86	1			
Zinc (Zn)	260	260	0						

[a] The method detection limit (MDL) value was used to calculate the relative percent difference in instances where values less than the MDL were reported.

Table B.12: Recoveries of quality control (QC) standards associated with sediment analyses. Highlighted values indicate data quality objective of 70 - 130% recovery was not met.

Analyte		Units	SRC Group # 2013-5887 (Cores)																				
			Percent Recoveries of QC			Percent Recoveries of QC			Percent Recoveries of QC			Percent Recoveries of QC			Percent Recoveries of QC			Percent Recoveries of QC			Percent Recoveries of QC		
			Target	Obtained	Recovery	Target	Obtained	Recovery	Target	Obtained	Recovery	Target	Obtained	Recovery	Target	Obtained	Recovery	Target	Obtained	Recovery	Target	Obtained	Recovery
Non-Metals	Total Organic Carbon	%	6.22	6.33	102%																		
	Sand	%																					
	Silt	%																					
	Clay	%																					
	Total Kjeldahl Nitrogen	µg/g																					
Metals	Aluminum	µg/g	23,600	24,100	102%	23,600	21,900	93%	23,600	24,400	103%	23,600	23,600	100%	23,600	22,500	95%	23,600	21,200	90%			
	Arsenic	µg/g	16.8	16.0	95%	16.8	15.0	89%	16.8	16.2	96%	16.8	15.8	94%	16.8	13.9	83%	16.8	15.1	90%			
	Barium	µg/g	96.9	92.6	96%	96.9	79.2	82%	96.9	88.1	91%	96.9	88.9	92%	96.9	79.9	82%	96.9	83.6	86%			
	Beryllium	µg/g	0.561	0.622	111%	0.561	0.527	94%	0.561	0.513	91%	0.561	0.564	101%	0.561	0.530	94%	0.561	0.591	105%			
	Cadmium	µg/g	0.255	0.204	80%	0.255	0.209	82%	0.255	0.271	106%	0.255	0.284	111%	0.255	0.227	89%	0.255	0.257	101%			
	Chromium	µg/g	39.6	35.9	91%	39.6	30.8	78%	39.6	35.2	89%	39.6	36.1	91%	39.6	32.3	82%	39.6	33.7	85%			
	Cobalt	µg/g	14.3	12.5	87%	14.3	10.9	76%	14.3	11.7	82%	14.3	13.5	94%	14.3	11.9	83%	14.3	12.4	87%			
	Copper	µg/g	44.7	41.5	93%	44.7	39.3	88%	44.7	41.1	92%	44.7	40.9	91%	44.7	37.0	83%	44.7	39.3	88%			
	Iron	µg/g	40,500	38,200	94%	40,500	35,500	88%	40,500	38,300	95%	40,500	37,200	92%	40,500	36,000	89%	40,500	33,800	83%			
	Lead	µg/g	14.0	13.2	94%	14.0	12.2	87%	14.0	12.9	92%	14.0	13.1	94%	14.0	11.6	83%	14.0	12.2	87%			
	Manganese	µg/g	1,290	1,190	92%	1,290	1,080	84%	1,290	1,160	90%	1,290	1,150	89%	1,290	1,110	86%	1,290	1,040	81%			
	Mercury	µg/g	0.099	0.102	103%	0.099	0.079	80%	0.099	0.081	82%												
	Molybdenum	µg/g	0.833	0.766	92%	0.833	0.702	84%	0.833	0.732	88%	0.833	0.724	87%	0.833	0.651	78%	0.833	0.694	83%			
	Nickel	µg/g	19.8	19.9	101%	19.8	16.7	84%	19.8	17.8	90%	19.8	18.4	93%	19.8	16.9	85%	19.8	17.9	90%			
	Phosphorus	µg/g																					
	Selenium	µg/g	0.400	0.421	105%	0.400	0.381	95%	0.400	0.460	115%	0.400	0.422	106%	0.400	0.363	91%	0.400	0.398	100%			
	Silver	µg/g	0.231	0.222	96%	0.231	0.222	96%	0.231	0.220	95%	0.231	0.217	94%	0.231	0.190	82%	0.231	0.204	88%			
	Strontium	µg/g	25.9	23.7	92%	25.9	18.9	73%	25.9	21.8	84%	25.9	22.9	88%	25.9	21.1	81%	25.9	21.1	81%			
	Tin	µg/g	1.40	1.41	101%	1.40	1.19	85%	1.40	1.31	94%	1.40	1.35	96%	1.40	1.13	81%	1.40	1.25	89%			
	Titanium	µg/g	2,600	2,010	77%	2,600	1,800	69%	2,600	2,130	82%	2,600	1,960	75%	2,600	1,710	66%	2,600	1,820	70%			
	Uranium	µg/g	1.08	1.10	102%	1.08	0.92	85%	1.08	1.02	94%	1.08	1.13	105%	1.08	1.01	94%	1.08	0.92	85%	1.08	1.02	94%
	Vanadium	µg/g	75.1	70.1	93%	75.1	61.8	82%	75.1	68.3	91%	75.1	71.2	95%	75.1	63.7	85%	75.1	66.3	88%			
	Zinc	µg/g	74.8	72.0	96%	74.8	64.0	86%	74.8	68.4	91%	74.8	69.3	93%	74.8	63.5	85%	74.8	66.1	88%			

Table B.12: Recoveries of quality control (QC) standards associated with sediment analyses. Highlighted values indicate data quality objective of 70 - 130% recovery was not met.

	Analyte	Units	SRC Group # 2013-9503 (Ponar)																	
			Percent Recoveries of QC			Percent Recoveries of QC			Percent Recoveries of QC			Percent Recoveries of QC			Percent Recoveries of QC			Percent Recoveries of QC		
			Target	Obtained	Recovery	Target	Obtained	Recovery	Target	Obtained	Recovery	Target	Obtained	Recovery	Target	Obtained	Recovery	Target	Obtained	Recovery
Non-Metals	Total Organic Carbon	%																		
	Sand	%	17.2	19.6	114%	17.2	16.0	93%												
	Silt	%	48.6	49.2	101%															
	Clay	%	34.2	33.5	98%															
	Total Kjeldahl Nitrogen	µg/g	722	556	77%	722	670	93%												
Metals	Aluminum	µg/g	23,600	24,400	103%	23,600	26,300	111%	23,600	24,300	103%	23,600	25,300	107%	23,600	25,900	110%			
	Arsenic	µg/g	16.2	16.3	101%	16.2	17.0	105%	16.2	16.9	104%	16.2	15.8	98%	16.2	16.1	99%	16.2	16.3	101%
	Barium	µg/g	90.5	84.1	93%	90.5	89.1	98%	90.5	91.4	101%	90.5	95.7	106%	90.5	86.3	95%	90.5	84.2	93%
	Beryllium	µg/g	0.561	0.573	102%	0.561	0.630	112%	0.561	0.623	111%	0.561	0.577	103%	0.561	0.573	102%	0.561	0.525	94%
	Cadmium	µg/g	0.255	0.231	91%	0.255	0.222	87%	0.255	0.267	105%	0.255	0.239	94%	0.255	0.220	86%	0.255	0.272	107%
	Chromium	µg/g	37.2	32.7	88%	37.2	34.2	92%	37.2	37.8	102%	37.2	34.0	91%	37.2	34.1	92%	37.2	36.5	98%
	Cobalt	µg/g	13.7	12.5	91%	13.7	12.8	93%	13.7	13.5	99%	13.7	13.6	99%	13.7	12.8	93%	13.7	13.5	99%
	Copper	µg/g	43.6	43.8	100%	43.6	45.0	103%	43.6	45.2	104%	43.6	42.9	98%	43.6	40.9	94%	43.6	42.9	98%
	Iron	µg/g	40,500	41,200	102%	40,500	40,400	100%	40,500	39,200	97%	40,500	39,100	97%	40,500	45,200	112%	40,500	43,100	106%
	Lead	µg/g	14.0	13.4	96%	14.0	13.9	99%	14.0	14.7	105%	14.0	14.1	101%	14.0	13.2	94%	14.0	14.8	106%
	Manganese	µg/g	1,210	1,200	99%	1,210	1,420	117%	1,210	1,240	102%	1,210	1,190	98%	1,210	1,250	103%			
	Mercury	µg/g	0.099	0.095	96%	0.099	0.109	110%	0.099	0.136	137%	0.099	0.094	95%						
	Molybdenum	µg/g	0.766	0.744	97%	0.766	0.815	106%	0.766	0.828	108%	0.766	0.751	98%	0.766	0.745	97%	0.766	0.669	87%
	Nickel	µg/g	19.8	18.9	95%	19.8	19.2	97%	19.8	19.4	98%	19.8	19.1	96%	19.8	17.9	90%	19.8	18.4	93%
	Phosphorus	µg/g	810	872	108%	810	855	106%	810	885	109%	810	820	101%	810	805	99%	810	836	103%
	Selenium	µg/g	0.400	0.454	114%	0.400	0.501	125%	0.400	0.51	128%	0.400	0.424	106%	0.400	0.419	105%	0.400	0.372	93%
	Silver	µg/g	0.231	0.206	89%	0.231	0.232	100%	0.231	0.242	105%	0.231	0.228	99%	0.231	0.208	90%	0.231	0.234	101%
	Strontium	µg/g	23.1	21.0	91%	23.1	21.7	94%	23.1	24.2	105%	23.1	26.3	114%	23.1	23.1	100%	23.1	19.8	86%
	Tin	µg/g	1.40	1.20	86%	1.40	1.33	95%	1.40	1.42	101%	1.40	1.40	100%	1.40	1.33	95%	1.40	1.30	93%
	Titanium	µg/g	2,600	2,980	115%	2,600	2,080	80%	2,600	2,010	77%	2,600	2,500	96%	2,600	2,310	89%			
	Uranium	µg/g	1.08	0.97	90%	1.08	0.99	92%	1.08	1.06	98%	1.08	1.03	95%	1.08	0.89	82%	1.08	1.13	105%
	Vanadium	µg/g	72.9	65.1	89%	72.9	68.2	94%	72.9	72.2	99%	72.9	71.3	98%	72.9	67.0	92%	72.9	68.3	94%
	Zinc	µg/g	74.8	73.4	98%	74.8	76.0	102%	74.8	79.5	106%	74.8	78.3	105%	74.8	73.0	98%	74.8	66.0	88%

B4.0 BENTHIC MACROINVERTEBRATE SAMPLES

B4.1 Organism Recovery

The objective for percent organism recovery was not met for three of the ten samples that were re-sorted (Table B.13a). The samples from Bagsverd Creek, Bagsverd Lake Main and Bagsverd Lake South were all high in fines organics with low densities. Since organism recovery was not met for these samples, all samples from these three locations were re-sorted to ensure high quality data. Average percent recovery was approximately 92% (Table B.13a).

B4.2 Subsampling Error

Precision and accuracy of the sub-sampled benthic invertebrate community samples met the data quality objective of 20% for all three samples (Table B.13b). Overall, subsampling precision and accuracy were of acceptable quality.

Table B.13.a: Percent recovery of benthic invertebrates. Any highlighted values indicate that percent recovery of >90% was not met.

Station	Number of Organisms Recovered (initial sort)	Number of Organisms in Re-sort	Percent Recovery
BagC-1*	60	71	84.5%
BagLM-1*	28	33	84.8%
BagLM-2*	64	69	92.8%
BagLS-1*	31	40	77.5%
CheL-3	24	26	92.3%
ClaL-3	103	111	92.8%
DelL-3	120	121	99.2%
MTDL-1	241	244	98.8%
NeuL-4	49	51	96.1%
UTDL-2	180	181	99.4%
		Average % Recovery	**91.8%**

* All samples in the BagC, BagLM and BagLS series were resorted. Samples were high in fine organics with low densities.

Table B.13.b: Calculation of subsampling error for benthic invertebrate samples. Any highlighted value indicate that the target difference between sub-samples of <20% was not met.

Station	Whole Organisms	Number of Organisms in Fraction				Actual Density*	Precision % range		Accuracy	
		#1	#3	#5	#7				min	max
MTDL-1	1	55	58	63	67	243	5.2	17.9	3.7	10.3
UTDL-1	0	44	47	50	52	193	3.8	15.4	2.6	8.8
BagLM-5	0	52	64	-	-	116	18.8	-	10.3	-

* whole large organisms excluded in calculations.
min = minimum absolute % error. max = maximum absolute % error.

Table B.13.c: Sample fractions sorted from bethic invertebrate samples.

Fraction Sorted	Station	Fraction Sorted	Station
1/2	BagLS-4, CheL-2, ClaL-2, DelL-5, NevL-1, SchLS-2, SchLS-4, SchLS-5, UnL1-4, UnL1-5, UnL3-1, WeeL-1	1/8	BagC-1, BagC-2, ErrC-1
1/4	BagLS-1, CheL-1, CheL-3, CheL-4, CheL-5, ClaL-3, ClaL-4, SchLS-1, SchLS-3, UnL2-4, WeeL-4	1/16	BagC-3, BagC-4, BagC-5, ErrC-2, ErrC-3, ErrC-4, ErrC-5

If not listed above, the entire sample was sorted.
[a] four quarters sorted for subsampling error calculations.
[b] two halves sorted for subsampling error calculations.

QA/QC Notes

Pupae were not counted toward total number of taxa unless they were the sole representative of their taxa group. Immatures were not counted toward total number of taxa unless they were the sole representative of their taxa group.

Reported fractions averaged 4 hours to sort due to high quantities of organic matter. ZEAS has shown that subsampling precision and accuracy are density dependent (Zaranko and Keene 2005). Specifically, small absolute differences between subsampled fractions become increasingly large, when expressed as a percentage of total organisms, as organism densities decline. Therefore, the probability of meeting precision and accuracy criteria is reduced in samples with low organism densities (i.e., <150 organisms/subsample). It would take an extaordinary effort (>10 hours) to report accuracy on 1/8ths or smaller fractions. Based on the low densities, there would be a low probability of attaining the accuracy criteria.

Zaranko, D.T. and J. Keene. 2005. Are the costs to meet environmental effects monitoring (EEM) benthic sample precision and accuracy criteria justified? In Dixon, D.G., S. Munro and A.J. Niimi (eds). Proceedings of the 32nd Annual Aquatic Toxicity Workshop: October 3 to 5, 2005, Waterloo, Ontario. Can. Tech. Rep. Fish. Aquat. Sci: 2617. 120p.

B5.0 FISH TISSUE SAMPLES

B5.1 Method Detection Limits

Target laboratory MDLs for fish tissue sample analyses were established at levels below potentially applicable human consumption guidelines or as industry standards if no consumption guidelines were available. All analytes met the target MDLs (Table B.14), meaning that sample data for this project could be reliably interpreted relative to the guidelines.

B5.2 Data Precision

Field Duplicates

Field duplicate values did not meet the DQO for 24% of samples (Table B.15). The majority of these had low absolute differences between samples, and were often approaching the corresponding MDLs. Approximately 6% of samples had higher concentrations and also exceeded the DQO, and included aluminum, barium, copper, manganese, nickel, strontium, and titanium. This small percentage likely reflects natural variability. Overall, the data suggest that reported sample data were reasonable representations of conditions at the time of sampling.

Laboratory Duplicate Samples

Of the 494 laboratory duplicate values, only 62 (12.5%) did not meet the DQO (Table B.16). No analytes consistently exceeded the DQO, and some of the concentrations were close to the MDL. Overall laboratory precision appears adequate.

B5.3 Data Accuracy

Recoveries of quality control standards met the DQO for all but two samples (Tables B.17), indicating good analytical accuracy associated with the analysis of fish tissue samples.

Table B.14: Laboratory method detection limits (MDL) for fish tissue samples relative to targets and human consumption benchmarks. Highlighted values indicate target MDL was not achieved.

Analytes	Units	Target MDL	Achieved MDL	Ontario Ministry of the Environment Fish Tissue Ingestion (µg/g) (ILCR = 0.000001)	Health Canada Fish Tissue Ingestion (µg/g) (HQ = 0.2)	Health Canada Fish Tissue Ingestion (µg/g) (ILCR = 0.00001)	United States Environmental Protection Agency Fish Tissue Ingestion (µg/g) (HQ = 1)
Total Aluminum (Al)	µg/g	280		-	280	-	1400
Total Antimony (Sb)	µg/g	0.108	0.02	-	0.108	-	0.54
Total Arsenic (As)	µg/g	0.0021		0.0021	0.082	0.021	0.41
Total Barium (Ba)	µg/g	54	0.01	-	54	-	270
Total Beryllium (Be)	µg/g	0.54	0.002	-	0.54	-	2.7
Total Boron (B)	µg/g	54	0.2	-	54	-	270
Total Cadmium (Cd)	µg/g	0.28	0.002	-	0.28	-	1.4
Total Chromium (Cr)	µg/g	400	0.1	-	400	-	2000
Total Cobalt (Co)	µg/g	0.082	0.002	-	0.082	-	0.41
Total Copper (Cu)	µg/g	10.8		-	10.8	-	54
Total Iron (Fe)	µg/g	190	0.5	-	190	-	950
Total Lead (Pb)	µg/g	0.002	0.002	-	-	-	-
Total Manganese (Mn)	µg/g	38		-	38	-	190
Total Mercury (Hg)	µg/g	0.028		-	0.028	-	0.14
Total Molybdenum (Mo)	µg/g	1.36	0.02	-	1.36	-	6.8
Total Nickel (Ni)	µg/g	5.4	0.01	-	5.4	-	27
Total Selenium (Se)	µg/g	1.36		-	1.36	-	6.8
Total Silver (Ag)	µg/g	1.36	0.002	-	1.36	-	6.8
Total Strontium (Sr)	µg/g	162		-	162	-	810
Total Thallium (Tl)	µg/g	0.0028		-	0.0028	-	0.014
Total Tin (Sn)	µg/g	162	0.01	-	162	-	810
Total Titanium (Ti)	µg/g			-	-	-	-
Total Uranium (U)	µg/g	0.82	0.001	-	0.82	-	4.1
Total Vanadium (Vn)	µg/g	6.8	0.02	-	1.36	-	6.8
Total Zinc (Zn)	µg/g	82		-	82	-	410

ILCR - Incremental Lifetime Cancer Risk
HQ - Health Quotient

Table B.15: Field duplicate results for analysis of fish muscle, Côté Gold 2013. Highlighted values did not meet the data quality objective of ≤ 30% relative percent difference.

Analytes	Units	SRC Group # 2013-5888																	
		WeeL-NP04 muscle (June 2013)			NevL-WA01 muscle (June, 2013)			CheL-NP08 muscle (June, 2013)			ClaL-NP01 muscle (June, 2013)			MtdL-WA01 muscle (June, 2013)			MesL-WA02 muscle (June, 2013)		
		Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]	Replicate 1	Replicate 2	Relative Percent Difference[a]
Moisture	%	78.29	78.57	0	77.65	77.90	0	81.83	81.54	0	78.28	78.77	1	80.48	80.82	0	76.75	79.59	4
Total Aluminum (Al)	ug/g	8.6	6.3	31	9.5	7.8	20	0.8	1.1	32	8.5	7.3	15	6.6	7.0	6	1.5	1.3	14
Total Antimony (Sb)	ug/g	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Total Arsenic (As)	ug/g	0.16	0.17	6	0.18	0.19	5	0.14	0.12	15	0.11	0.10	10	0.14	0.14	0	0.14	0.12	15
Total Barium (Ba)	ug/g	0.25	0.25	0	<0.01	<0.01	0	<0.01	0.05	133	0.39	0.44	12	0.11	0.27	84	<0.01	<0.01	0
Total Beryllium (Be)	ug/g	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	< 0.002	0	<0.002	<0.002	0	<0.002	<0.002	0
Total Boron (B)	ug/g	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0
Total Cadmium (Cd)	ug/g	0.002	0.003	40	0.003	0.003	0	0.004	0.004	0	0.007	0.005	33	0.003	0.003	0	0.003	0.004	29
Total Chromium (Cr)	ug/g	<0.1	0.1	0	0.2	<0.1	67	<0.1	<0.1	0	<0.1	<0.1	0	0.20	<0.10	67	<0.1	<0.1	0
Total Cobalt (Co)	ug/g	0.015	0.010	40	0.008	0.012	40	0.005	0.005	0	0.038	0.019	67	0.008	0.011	32	0.004	0.007	55
Total Copper (Cu)	ug/g	0.60	0.64	6	0.76	0.72	5	0.50	0.59	17	0.61	0.89	37	1.10	0.63	54	0.74	0.63	16
Total Iron (Fe)	ug/g	8.7	11.0	23	11	11	0	<0.5	<0.5	0	17	14	19	11.0	13.0	17	5.9	5.0	17
Total Lead (Pb)	ug/g	0.02	0.02	0	0.019	0.020	5	0.010	0.009	11	0.040	0.029	32	0.027	0.038	34	0.013	0.008	48
Total Manganese (Mn)	ug/g	2.2	1.0	75	0.78	0.95	20	0.75	1.00	29	2.4	1.6	40	1.00	0.90	11	0.31	0.38	20
Total Mercury (Hg)	ug/g	4.1	4.7	14	3.7	3.6	3	21	23	9	3.4	3.1	9	2.4	2.2	9	7.3	7.3	0
Total Molybdenum (Mo)	ug/g	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Total Nickel (Ni)	ug/g	0.04	0.05	22	0.02	0.04	67	0.02	0.04	67	0.09	0.04	77	0.21	0.10	71	0.02	0.06	100
Total Selenium (Se)	ug/g	1.3	1.3	0	1.4	1.5	7	0.90	0.93	3	1.2	1.3	8	1.4	1.4	0	1.5	1.5	0
Total Silver (Ag)	ug/g	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.002	0	0.017	0.009	62	<0.002	0.011	138	0.002	<0.002	0
Total Strontium (Sr)	ug/g	0.51	0.19	91	0.49	0.33	39	0.37	0.48	26	0.80	0.97	19	0.08	0.18	77	0.08	0.08	0
Total Thallium (Tl)	ug/g	0.02	0.02	0	0.06	0.06	0	0.03	0.03	0	0.04	0.04	0	0.04	0.04	0	0.06	0.06	0
Total Tin (Sn)	ug/g	0.04	0.06	40	<0.01	<0.01	0	0.01	<0.01	0	0.01	<0.01	0	0.01	0.02	67	0.02	<0.01	67
Total Titanium (Ti)	ug/g	0.51	0.58	13	0.75	0.73	3	0.32	0.34	6	0.84	0.60	33	0.99	0.71	33	0.48	0.57	17
Total Uranium (U)	ug/g	0.004	<0.001	120	0.001	0.002	67	<0.001	<0.001	0	0.001	< 0.001	0	0.007	<0.001	150	<0.001	<0.001	0
Total Vanadium (V)	ug/g	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Total Zinc (Zn)	ug/g	22	18	20	19	19	0	20	20	0	32	34	6	18	22	20	20	20	0

Table B.16: Laboratory duplicate results for fish muscle tissue analyses, Cote Gold 2012 and 2013. Highlighted values did not meet the data quality objective of ≤ 30% relative percent difference.

Analytes	Units	SRC Group # 2013-5888 (2013 fish data)																				
		Percent Recovery			Percent Recovery			Percent Recovery			Percent Recovery			Percent Recovery			Percent Recovery			Percent Recovery		
		Replicate 1	Replicate 2	RPD	Replicate 1	Replicate 2	RPD	Replicate 1	Replicate 2	RPD	Replicate 1	Replicate 2	RPD	Replicate 1	Replicate 2	RPD	Replicate 1	Replicate 2	RPD	Replicate 1	Replicate 2	RPD
Moisture	%	76.75	76.57	0.2	79.07	79.11	0.1	80.68	80.96	0.3				74.88	75.70	1.1	74.41	75.68	1.7	79.35	79.57	0.3
Aluminum	µg/g	8.5	8.3	2.4	5.8	5.7	1.7	1.4	1.4	0.0	7.0	6.9	1.4	3.4	3.2	6.1	4.2	3.7	12.7	48	37	25.9
Antimony	µg/g	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0
Arsenic	µg/g	0.11	0.11	0.0	0.06	0.06	0.0	0.11	0.10	9.5	0.14	0.15	6.9	0.14	0.15	6.9	0.09	0.08	11.8	0.08	0.11	31.6
Boron	µg/g	<0.2	<0.2	0.0	<0.2	<0.2	0.0	<0.2	<0.2	0.0	<0.2	<0.2	0.0	<0.2	<0.2	0.0	<0.2	<0.2	0.0	<0.2	<0.2	0.0
Barium	µg/g	0.49	0.39	22.7	3.6	3.5	2.8	<0.01	<0.01	0.0	0.22	0.27	20.4	0.22	0.30	30.8	6.0	5.5	8.7	2.5	2.3	8.3
Beryllium	µg/g	<0.002	<0.002	0.0	<0.002	<0.002	0.0	<0.002	<0.002	0.0	<0.002	<0.002	0.0	<0.002	<0.002	0.0	<0.002	<0.002	0.0	<0.002	<0.002	0.0
Cadmium	µg/g	0.007	0.016	78.3	0.082	0.077	6.3	0.004	0.003	28.6	0.003	0.004	28.6	0.005	0.005	0.0	0.045	0.040	11.8	0.065	0.090	32.3
Cobalt	µg/g	0.038	0.032	17.1	0.041	0.036	13.0	0.010	0.012	18.2	0.011	0.010	9.5	0.007	0.009	25.0	0.054	0.041	27.4	0.077	0.100	26.0
Chromium	µg/g	<0.1	<0.1	0.0	<0.1	<0.1	0.0	<0.1	<0.1	0.0	<0.1	0.1	0.0	0.2	0.2	0.0	0.4	0.1	120.0	0.2	0.2	0.0
Copper	µg/g	0.61	0.48	23.9	1.5	1.5	0.0	0.28	0.36	25.0	0.63	0.83	27.4	0.97	0.98	1.0	1.9	1.6	17.1	2.0	2.8	33.3
Iron	µg/g	17	18	5.7	55	52	5.6	10	10	0.0	13	12	8.0	12	14	15.4	52	56	7.4	90	100	10.5
Mercury	µg/g	3.4	3.3	3.0	0.15	0.14	6.9	4.7	4.6	2.2	2.3	2.2	4.4	0.60	0.54	10.5	3.6	3.7	2.7	2.0	1.8	10.5
Manganese	µg/g	2.4	1.9	23.3	24	22	8.7	3.3	2.1	44.4	0.90	0.98	8.5	0.74	0.69	7.0	100	90	10.5	82	85	3.6
Molybdenum	µg/g	<0.02	<0.02	0.0	<0.02	<0.02	0.0	0.07	0.07	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	0.07	0.06	15.4	0.11	0.15	30.8
Nickel	µg/g	0.09	0.05	57.1	0.09	0.10	10.5	0.06	0.05	18.2	0.10	0.08	22.2	0.11	0.12	8.7	0.20	0.16	22.2	0.15	0.18	18.2
Lead	µg/g	0.040	0.037	7.8	0.030	0.031	3.3	0.007	0.011	44.4	0.038	0.055	36.6	0.032	0.040	22.2	0.027	0.016	51.2	0.091	0.120	27.5
Selenium	µg/g	1.2	1.2	0.0	1.4	1.6	13.3	0.99	0.97	2.0	1.4	1.5	6.9	1.3	1.2	8.0	1.4	1.3	7.4	1.1	1.4	24.0
Tin	µg/g	0.01	0.06	142.9	0.04	0.04	0.0	<0.01	<0.01	0.0	0.02	0.02	0.0	0.03	0.03	0.0	0.06	0.02	100.0	0.02	0.02	0.0
Strontium	µg/g	0.89	0.80	10.7	19	16	17.1	0.84	1.3	43.0	0.18	0.17	5.7	0.29	0.16	57.8	29	25	14.8	20	16	22.2
Titanium	µg/g	0.84	0.81	3.6	0.67	0.66	1.5	0.42	0.40	4.9	1.3	1.1	16.7	1.1	1.1	0.0	0.83	0.80	3.7	1.8	1.7	5.7
Thallium	µg/g	0.04	0.04	0.0	0.03	0.03	0.0	0.04	0.04	0.0	0.04	0.04	0.0	0.04	0.04	0.0	0.02	0.02	0.0	0.04	0.04	0.0
Uranium	µg/g	0.001	0.001	0.0	0.002	0.004	66.7	<0.001	<0.001	0.0	<0.001	<0.001	0.0	0.002	0.002	0.0	0.002	0.005	85.7	0.004	0.005	22.2
Silver	µg/g	0.026	0.016	47.6	0.004	0.004	0.0	<0.002	<0.002	0.0	0.011	0.011	0.0	0.021	0.019	10.0	0.010	0.009	10.5	0.010	0.016	46.2
Vanadium	µg/g	<0.02	<0.02	0.0	<0.02	<0.02	0.0	0.04	0.04	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	0.15	0.23	42.1
Zinc	µg/g	32	36	11.8	100	99	1.0	17	17	0.0	22	24	8.7	15	15	0.0	110	91	18.9	90	84	6.9

Analytes	Units	SRC Group # 2013-5422 (2012 fish data)														
		Percent Recovery			Percent Recovery			Percent Recovery			Percent Recovery			Percent Recovery		
		Replicate 1	Replicate 2	RPD	Replicate 1	Replicate 2	RPD	Replicate 1	Replicate 2	RPD	Replicate 1	Replicate 2	RPD	Replicate 1	Replicate 2	RPD
Moisture	%	77.40	79.37	2.5	77.03	77.47	0.6	78.27	78.93	0.8	76.20	76.07	0.2	75.09	75.09	0.0
Aluminum	µg/g	0.7	0.9	25.0	2.8	2.6	7.4	3.2	2.7	16.9	13	14	7.4			
Antimony	µg/g	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0			
Arsenic	µg/g	0.16	0.18	11.8	0.16	0.17	6.1	0.19	0.19	0.0	0.23	0.21	9.1			
Boron	µg/g	<0.2	<0.2	0.0	<0.2	<0.2	0.0	<0.2	<0.2	0.0	0.2	<0.2	0.0			
Barium	µg/g	0.2	0.22	9.5	0.14	0.14	0.0	0.13	0.15	14.3	0.22	0.22	0.0			
Beryllium	µg/g	<0.002	<0.002	0.0	<0.002	<0.002	0.0	<0.002	<0.002	0.0	<0.002	<0.002	0.0			
Cadmium	µg/g	<0.002	0.002	0.0	<0.002	<0.002	0.0	0.003	0.005	50.0	0.008	0.006	28.6			
Cobalt	µg/g	0.006	0.008	28.6	0.006	0.006	0.0	0.017	0.018	5.7	0.006	0.009	40.0			
Chromium	µg/g	<0.1	0.2	66.7	0.4	0.3	28.6	0.9	0.9	0.0	0.1	0.3	100.0			
Copper	µg/g	0.63	1.00	45.4	2.3	1.8	24.4	1.2	1.7	34.5	0.75	0.97	25.6			
Iron	µg/g	5.4	5.7	5.4	14	13	7.4	18	17	5.7	12	23	62.9			
Mercury	µg/g	3.5	3.3	5.9	1.9	1.8	5.4	2.1	2.2	4.7	5.1	5.4	5.7	2.1	2	4.9
Manganese	µg/g	2.2	2	9.5	0.70	0.71	1.4	4.1	3.6	13.0	1.7	1.2	34.5			
Molybdenum	µg/g	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0			
Nickel	µg/g	0.13	0.16	20.7	0.08	0.06	28.6	0.06	0.06	0.0	0.07	0.12	52.6			
Lead	µg/g	0.005	0.006	18.2	0.050	0.049	2.0	0.046	0.030	42.1	0.030	0.057	62.1			
Selenium	µg/g	1.6	1.8	11.8	1.6	1.6	0.0	0.84	0.85	1.2	1.1	1.2	8.7			
Tin	µg/g	<0.01	<0.01	0.0	<0.01	<0.01	0.0	0.10	0.07	35.3	0.05	0.05	0.0			
Strontium	µg/g	1.2	1.0	18.2	0.17	0.16	6.1	1.1	1.0	9.5	1.0	1.4	33.3			
Titanium	µg/g	0.28	0.36	25.0	0.42	0.37	12.7	0.64	0.62	3.2	1.6	1.5	6.5			
Thallium	µg/g	0.02	0.02	0.0	0.01	0.01	0.0	0.04	0.04	0.0	0.03	0.03	0.0			
Uranium	µg/g	0.001	0.002	66.7	<0.001	0.001	0.0	<0.001	<0.001	0.0	0.002	<0.001	66.7			
Silver	µg/g	<0.002	<0.002	0.0	<0.002	<0.002	0.0	<0.002	<0.002	0.0	<0.002	0.002	0.0			
Vanadium	µg/g	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	0.08	0.04	66.7			
Zinc	µg/g	17	18	5.7	19	19	0.0	25	24	4.1	18	17	5.7			

RPD - Relative percent differnece

Table B.16: Laboratory duplicate results for fish muscle tissue analyses, Cote Gold 2012 and 2013. Highlighted values did not meet the data quality objective of ≤ 30% relative percent difference.

Analytes	Units	SRC Group # 2013-5888 (2013 fish data)																				
		Percent Recovery			Percent Recovery			Percent Recovery			Percent Recovery			Percent Recovery			Percent Recovery			Percent Recovery		
		Replicate 1	Replicate 2	RPD	Replicate 1	Replicate 2	RPD	Replicate 1	Replicate 2	RPD	Replicate 1	Replicate 2	RPD	Replicate 1	Replicate 2	RPD	Replicate 1	Replicate 2	RPD	Replicate 1	Replicate 2	RPD
Moisture	%	78.04	77.77	0.3	77.40	76.44	1.2	81.02	81.82	1.0	78.59	79.94	1.7	79.64	80.63	1.2	79.13	77.44	2.2			
Aluminum	µg/g	4.6	4.1	11.5	7.8	7.9	1.3	1.5	1.8	18.2	1.6	2.1	27.0	6.4	5.0	24.6	1.5	0.9	50.0			
Antimony	µg/g	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0			
Arsenic	µg/g	0.06	0.05	18.2	0.19	0.18	5.4	0.08	0.09	11.8	0.12	0.13	8.0	0.26	0.25	3.9	0.08	0.08	0.0			
Boron	µg/g	<0.2	<0.2	0.0	<0.2	<0.2	0.0	<0.2	<0.2	0.0	<0.2	<0.2	0.0	<0.2	<0.2	0.0	<0.2	<0.2	0.0			
Barium	µg/g	3.3	2.6	23.7	<0.01	<0.01	0.0	<0.01	<0.01	0.0	<0.01	<0.01	0.0	0.13	0.10	26.1	<0.01	<0.01	0.0			
Beryllium	µg/g	<0.002	<0.002	0.0	<0.002	<0.002	0.0	<0.002	<0.002	0.0	<0.002	<0.002	0.0	<0.002	<0.002	0.0	<0.002	<0.002	0.0	<0.002	<0.002	0.0
Cadmium	µg/g	0.074	0.059	22.6	0.003	0.003	0.0	<0.002	<0.002	0.0	0.004	0.003	28.6	0.002	0.003	40.0	<0.002	<0.002	0.0			
Cobalt	µg/g	0.046	0.036	24.4	0.012	0.010	18.2	0.003	0.005	50.0	0.023	0.012	62.9	0.010	0.005	66.7	0.006	0.004	40.0			
Chromium	µg/g	<0.1	0.1	0.0	<0.1	<0.1	0.0	0.2	<0.1	66.7	<0.1	<0.1	0.0	0.1	<0.1	0.0	<0.1	<0.1	0.0			
Copper	µg/g	1.3	1.1	16.7	0.72	0.50	36.1	0.46	0.51	10.3	0.54	0.61	12.2	0.47	0.48	2.1	0.55	0.60	8.7			
Iron	µg/g	75	73	2.7	11	14	24.0	5.2	6.3	19.1	<0.5	1.0	66.7	8.6	7.4	15.0	7.1	10.0	33.9			
Mercury	µg/g	0.09	0.14	43.5	5.6	5.9	5.2	0.29	0.36	21.5	19	21	10.0	7.4	7.5	1.3	2.9	2.8	3.5			
Manganese	µg/g	49	37	27.9	1.2	1.4	15.4	0.63	0.66	4.7	1.1	1.4	24.0	0.94	0.95	1.1	0.44	0.51	14.7			
Molybdenum	µg/g	0.06	0.04	40.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0
Nickel	µg/g	0.16	0.15	6.5	0.04	0.03	28.6	0.01	0.03	100.0	0.06	0.11	58.8	0.06	0.04	40.0	0.04	0.02	66.7			
Lead	µg/g	0.11	0.11	0.0	0.027	0.019	34.8	0.010	0.010	0.0	0.013	0.017	26.7	0.018	0.014	25.0	0.010	0.002	133.3			
Selenium	µg/g	1.7	1.7	0.0	1.5	1.5	0.0	1.4	1.4	0.0	0.95	0.99	4.1	1.3	1.3	0.0	1.1	1.1	0.0			
Tin	µg/g	0.09	0.09	0.0	<0.01	<0.01	0.0	<0.01	<0.01	0.0	0.02	0.02	0.0	0.03	0.02	40.0	<0.01	<0.01	0.0			
Strontium	µg/g	24	21	13.3	0.27	0.33	20.0	0.12	0.17	34.5	0.60	0.93	43.1	1.4	1.4	0.0	0.08	0.06	28.6			
Titanium	µg/g	0.83	0.76	8.8	0.73	0.92	23.0	0.61	0.58	5.0	0.39	0.40	2.5	0.52	0.55	5.6	0.54	0.46	16.0			
Thallium	µg/g	0.04	0.04	0.0	0.06	0.06	0.0	0.04	0.04	0.0	0.02	0.02	0.0	0.03	0.03	0.0	0.06	0.05	18.2			
Uranium	µg/g	0.005	0.003	50.0	0.007	<0.001	150.0	<0.001	<0.001	0.0	<0.001	<0.001	0.0	0.003	<0.001	100.0	0.011	<0.001	166.7			
Silver	µg/g	0.007	0.004	54.5	<0.002	0.003	40.0	<0.002	<0.002	0.0	<0.002	<0.002	0.0	<0.002	<0.002	0.0	<0.002	<0.002	0.0			
Vanadium	µg/g	0.26	0.19	31.1	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0	<0.02	<0.02	0.0
Zinc	µg/g	100	88	12.8	19	17	11.1	15	17	12.5	18	20	10.5	16	18	11.8	19	19	0.0			

RPD - Relative percent differnece

Table B.17: Recoveries of quality control (QC) standards associated with fish tissue analyses. Highlighted values indicate data quality objective of 70 - 130% recovery was not met.

Analyte		Units	SRC Group # 2013-5888 (2013 Fish Data)																	
			Percent Recoveries of QC			Percent Recoveries of QC			Percent Recoveries of QC			Percent Recoveries of QC			Percent Recoveries of QC			Percent Recoveries of QC		
			Target	Obtained	Recovery	Target	Obtained	Recovery	Target	Obtained	Recovery	Target	Obtained	Recovery	Target	Obtained	Recovery	Target	Obtained	Recovery
Metals	Aluminum	µg/g	1,200	1,220	102%	1,200	1,210	101%	1,200	1,200	100%	1,200	1,120	93%	1,200	1,220	102%			
	Arsenic	µg/g	6.52	7.80	120%	6.52	7.79	119%	6.52	7.19	110%	6.52	7.00	107%	6.52	7.30	112%			
	Cadmium	µg/g	0.290	0.294	101%	0.290	0.281	97%	0.290	0.282	97%	0.290	0.266	92%	0.290	0.302	104%			
	Chromium	µg/g	1.61	1.57	98%	1.61	1.51	94%	1.61	1.49	93%	1.61	1.41	88%	1.61	1.61	100%			
	Copper	µg/g	15.0	14.8	99%	15.0	14.6	97%	15.0	14.7	98%	15.0	13.5	90%	15.0	14.8	99%			
	Iron	µg/g	302	319	106%	302	313	104%	302	304	101%	302	294	97%	302	332	110%			
	Lead	µg/g	0.314	0.289	92%	0.314	0.283	90%	0.343	0.285	83%	0.343	0.295	86%	0.343	0.356	104%			
	Manganese	µg/g	2.87	2.81	98%	2.87	2.73	95%	2.87	2.69	94%	2.87	2.68	93%	2.87	2.93	102%			
	Mercury	µg/g	0.292	0.331	113%	0.348	0.370	106%	0.382	0.414	108%	0.382	0.383	100%	0.382	0.368	96%	0.382	0.348	91%
	Nickel	µg/g	1.24	1.19	96%	1.24	1.17	94%	1.24	1.15	93%	1.24	1.09	88%	1.24	1.28	103%			
	Selenium	µg/g	3.490	4.03	115%	3.490	4.01	115%	3.490	3.75	107%	3.49	3.64	104%	3.490	3.89	111%			
	Silver	µg/g	0.0250	0.0239	96%	0.0250	0.0240	96%	0.0250	0.0241	96%	0.0250	0.0232	93%	0.0250	0.0236	94%			
	Zinc	µg/g	49.2	50.8	103%	49.2	49.8	101%	49.2	46.8	95%	49.2	44.1	90%	49.2	51.4	104%			

Analyte		Units	SRC Group # 2013-5422 (2012 Fish Data)								
			Percent Recoveries of QC			Percent Recoveries of QC			Percent Recoveries of QC		
			Target	Obtained	Recovery	Target	Obtained	Recovery	Target	Obtained	Recovery
Metals	Aluminum	µg/g	1,200	1,440	120%	1,200	1,250	104%	1,200	1,220	102%
	Arsenic	µg/g	6.52	9.54	146%	6.52	6.79	104%	6.52	6.81	104%
	Cadmium	µg/g	0.290	0.356	123%	0.290	0.293	101%	0.290	0.292	101%
	Chromium	µg/g	1.61	1.88	117%	1.61	1.57	98%	1.61	1.54	96%
	Copper	µg/g	15.0	17.3	115%	15.0	14.5	97%	15.0	14.7	98%
	Iron	µg/g	302	377	125%	302	322	107%	302	317	105%
	Lead	µg/g	0.314	0.360	115%	0.314	0.334	106%	0.314	0.325	104%
	Manganese	µg/g	2.87	3.36	117%	2.87	2.92	102%	2.87	2.86	100%
	Mercury	µg/g	0.382	0.337	88%	0.382	0.353	92%	0.382	0.390	102%
	Nickel	µg/g	1.24	1.43	115%	1.24	1.29	104%	1.24	1.34	108%
	Selenium	µg/g	3.49	4.98	143%	3.49	3.59	103%	3.49	3.62	104%
	Silver	µg/g	0.0250	0.0244	98%	0.0250	0.0236	94%	0.0250	0.0240	96%
	Zinc	µg/g	49.2	55.3	112%	49.2	47.4	96%	49.2	47.2	96%

B6.0 DATA QUALITY STATEMENT

Collectively, method detection limits, blank sample data, data precision and/or data accuracy generally met prescribed water, sediment, benthic invertebrate and fish tissue DQOs with the exception of a few field duplicates (sediment and fish tissue). Overall the quality of data was adequate to serve the project objectives.

APPENDIX C

WATER QUALITY DATA

Table C.1: *In situ* water quality of Bagsverd Creek, Côté Gold Baseline, 2012 and 2013.

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	pH	Sp. Cond (µS/cm)
Water Quality Criteria[a]					-	-	**5[b]**	**57%[b]**	**6.5-8.5**	-
Lower Bagsverd Creek	9-Jul-12	17T 0430093 5273632	-	-	0.5	19.0	7.58	86.2	7.13	60.2
Water Quality Criteria[a]					-	-	**5[c]**	**63%[c]**	**6.5-8.5**	-
Upper Bagsverd Creek (Permanent Pond)	13-Jul-12	17T 0431477 5270318	5.0	4.5	0.5	24.6	7.35	94.1	7.66	60.9
					1.0	24.4	7.43	92.0	7.68	60.7
					2.0	23.7	7.69	95.2	7.63	60.5
					3.0	23.4	7.51	92.2	7.48	60.9
					4.0	21.2	2.9	34.1	6.96	71.1
					4.7	18.2	0.5	5.9	6.76	79.2
Water Quality Criteria[a]					-	-	**5[c]**	**63%[c]**	**6.5-8.5**	-
Lower Bagsverd Creek	15-Jul-12	17T 0430455 5277436	-	-	0.5	24.7	5.7	71.6	6.99	64.0
Water Quality Criteria[a]					-	-	**6[d]**	**54%[d]**	**6.5-8.5**	-
Lower Bagsverd Creek	14-Sep-13	17T 430058 5274483	1.4	-	0.3	11.34	8.8	74.8	6.34	40.0
					1.2	11.31	8.1	74	6.27	40.0

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 15 - 20°C.

[c] dissolved oxygen concentration for the protection of coldwater biota at temperature of 20 - 25°C.

[d] dissolved oxygen concentrations for the protection of coldwater biota at temperatures of 10 - 15°C.

Table C.2: *In situ* water quality of Bagsverd Lake, Côté Gold Baseline, 2012 and 2013.

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved oxygen		pH	Sp. Cond (µS/cm)
							(mg/L)	(% sat)		
Water Quality Criteria[a]						-	**5[b]**	**63%[b]**	**6.5-8.5**	-
Bagsverd Lake - South Arm	12-Jul-12	17T 0430107 5268754	-	2.8	0.2	24.6	6.96	85.9	7.36	60.3
Water Quality Criteria[a]						-	**5[b]**	**63%[b]**	**6.5-8.5**	-
Bagsverd Lake - East Arm	13-Jul-12	17T 0431388 5270047	3.2	3.1	0.5	24.90	8.02	102.1	7.73	61.2
					1.0	24.90	8.02	101.1	7.70	60.9
					2.0	24.80	8.04	101.2	7.64	60.9
					3.0	23.40	7.62	94.0	7.47	66.3
Water Quality Criteria[a]						-	**6[c]**	**54%[c]**	**6.5-8.5**	-
Bagsvered Lake - South Arm	4-Jun-13	17T 0430117 5268774	5.6	2.6	0.2	14.12	8.76	85.1	6.67	72
					1.0	13.98	8.61	83.3	6.68	72
					2.0	13.68	8.56	82.4	6.68	71
					3.0	12.56	8.37	78.7	6.66	71
					4.0	10.25	6.08	54.2	6.44	72
					5.0	9.15	1.28	11.5	6.41	120
Water Quality Criteria[a]						-	**6[c]**	**54%[c]**	**6.5-8.5**	-
Bagsvered Lake - Main Body	4-Jun-13	17T 0429649 5270200	7.6	3.2	0.2	14.15	9.11	88.4	6.85	74
					1.0	14.02	8.88	86.0	6.66	74
					2.0	13.81	8.73	84.3	6.78	74
					3.0	13.69	8.61	82.9	6.84	74
					4.0	13.40	8.50	81.5	6.76	73
					5.0	11.73	8.14	75.8	6.67	75
					6.0	10.63	7.85	70.4	6.63	76
					7.0	9.99	6.53	57.6	6.58	77
Water Quality Criteria[a]						-	**5[d]**	**57%[d]**	**6.5-8.5**	-
Bagsvered Lake - South Arm	12-Sep-13	17T 430132 5268779	5.1	2.2	0.2	17.76	8.49	89.3	8.06	53
					1	17.76	8.47	89.0	7.91	53
					2	17.72	8.42	88.5	7.86	53
					3	17.44	8.07	84.1	7.71	53
					4	16.87	7.14	73.6	7.54	54
					4.5	16.11	3.47	35.9	7.16	68
Water Quality Criteria[a]						-	**5[d]**	**57%[d]**	**6.5-8.5**	-
Bagsvered Lake - Main Body	12-Sep-13	17T 429942 5270236	7.9	2.1	0.2	17.46	8.24	86.2	7.54	54
					1.0	17.46	8.25	86.1	7.49	54
					2.0	17.48	8.22	86.0	7.48	54
					3.0	17.48	8.21	85.9	7.47	54
					4.0	17.48	8.20	85.8	7.46	54
					5.0	17.48	8.24	86.6	7.47	54
					6.0	17.47	8.18	85.6	7.45	54
					7.0	15.17	0.50	5.2	6.90	117

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 20 - 25°C.

[c] dissolved oxygen concentrations for the protection of coldwater biota at temperatures of 10 - 15°C.

[d] dissolved oxygen concentrations for the protection of coldwater biota at temperatures of 15 - 20°C.

Table C.3: *In situ* water quality of Bagsverd Pond, Côté Gold Baseline, 2012.

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved oxygen		pH	Sp. Cond (µS/cm)
							(mg/L)	(% sat)		
Water Quality Criteria[a]						**-**	**5[b]**	**63%[b]**	**6.5-8.5**	**-**
Bagsverd Pond	14-Jul-12	17T 0430398 5268320	2.0	-	1.0	25.3	7.46	96.4	6.74	37.6

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 20 - 25°C.

Table C.4: ***In situ*** **water quality of Beaver Pond, Côté Gold Baseline, 2012.**

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	pH	Sp. Cond (µS/cm)
Water Quality Criteria[a]						**-**	**5[b]**	**63%[b]**	**6.5-8.5**	**-**
Beaver Pond	15-Jul-12	17T 0429548 5266172	-	-	Surface	22.2	5.19	62.5	6.51	64.0

[shaded] value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 20 - 25°C.

Table C.5: *In situ* water quality of Chester Lake, Côté Gold Baseline, 2013.

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen		pH	Sp. Cond (µS/cm)
							(mg/L)	(% sat)		
Water Quality Criteria[a]						**-**	**5[b]**	**57%[b]**	**6.5-8.5**	**-**
Chester Lake	9-Jun-13	17T 0429637 5263898	2.8	1.7	0.2	17.97	8.64	91.1	7.01	53.0
					1.0	17.82	8.51	89.7	7.02	53.0
					2.0	17.46	8.45	88.3	6.87	53.0
					2.5	14.39	7.61	74.6	6.61	54.0
Water Quality Criteria[a]						**-**	**5[b]**	**57%[b]**	**6.5-8.5**	**-**
Chester Lake	13-Sep-13	17T 454662 5263946	2.6	1.4	0.2	15.49	8.83	88.4	7.72	39.0
					1.0	15.49	8.81	88.3	7.70	39.0
					2.0	15.47	8.79	88.2	7.67	39.0
					2.5	15.06	5.15	46.1	7.30	39.0

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 15 - 20°C.

Table C.6: *In situ* water quality of Clam Lake, Côté Gold Baseline, 2012 and 2013.

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	pH	Sp. Cond (µS/cm)
Water Quality Criteria[a]						**-**	**5[b]**	**63%[b]**	**6.5-8.5**	**-**
Clam Lake	6-Jul-12	17T 0428204 5267054	9.9	3.46	0.5	25.13	8.00	97.5	7.14	55.0
					1.0	25.10	7.94	96.3	6.96	55.0
					2.0	24.94	7.89	95.4	6.75	55.0
					3.0	22.04	7.72	88.5	6.70	55.0
					4.0	20.48	6.75	75.4	6.62	51.0
					4.5	16.30	5.66	58.0	6.57	48.0
					5.0	13.54	5.16	50.4	6.56	47.0
					5.5	12.12	4.38	41.5	6.50	47.0
					6.0	9.96	2.27	20.1	6.41	48.0
					6.5	8.96	0.92	8.2	6.31	48.0
					7.0	8.16	0.36	3.1	6.24	48.0
					7.5	7.65	0.29	2.4	6.14	53.0
					8.0	7.35	0.27	2.2	6.07	59.0
					9.0	7.17	0.25	2.1	6.07	61.0
					9.5	7.06	0.24	2.0	6.04	65.0
Water Quality Criteria[a]						**-**	**5[b]**	**63%[b]**	**6.5-8.5**	**-**
East Clam Lake	6-Jul-12	17T 0428678 5267240	2.8	-	0.5	26.66	7.81	97.5	5.92	63.0
					1.0	26.16	7.84	96.8	6.07	63.0
					2.0	22.97	5.63	65.9	6.09	63.0
					2.5	22.04	3.45	39.6	6.01	59.0
Water Quality Criteria[a]						**-**	**5[c]**	**57%[c]**	**6.5-8.5**	**-**
Clam Lake	9-Jun-13	17T 0428328 5266251	9.2	3.85	0.2	17.44	9.56	99.8	7.45	61.0
					1.0	17.44	9.50	99.0	7.44	61.0
					2.0	16.52	9.63	98.6	7.22	61.0
					3.0	14.23	9.70	94.6	7.06	61.0
					4.0	11.84	9.59	88.6	6.89	61.0
					5.0	10.24	8.99	80.1	6.81	62.0
					6.0	9.60	7.86	69.0	6.70	62.0
					7.0	9.09	4.94	42.8	6.46	64.0
					8.0	8.87	3.04	26.1	6.31	66.0
					8.5	8.68	1.54	13.0	6.24	67.0
Water Quality Criteria[a]						**-**	**6[d]**	**54%[d]**	**6.5-8.5**	**-**
Clam Lake	15-Sep-13	17T 0428349 5266192	7.8	2.85	0.2	15.46	9.71	97.5	7.15	39.0
					1.0	15.47	9.71	96.9	7.11	39.0
					2.0	15.47	9.65	96.2	7.09	38.0
					3.0	15.47	9.51	95.1	7.10	39.0
					4.0	15.45	9.60	96.1	7.10	39.0
					5.0	15.45	9.54	95.3	7.13	38.0
					6.0	15.19	9.04	89.3	6.97	39.0
					7.0	10.96	0.39	3.2	6.49	50.0

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 20 - 25°C.

[c] dissolved oxygen concentration for the protection of coldwater biota at temperature of 15 - 20°C.

[d] dissolved oxygen concentration for the protection of coldwater biota at temperature of 10 - 15°C.

Table C.7: *In situ* water quality of Côté Lake, Côté Gold Baseline, 2012.

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen		pH	Sp. Cond (µS/cm)
							(mg/L)	(% sat)		
Water Quality Criteria[a]						-	5[b]	63%[b]	6.5-8.5	-
Cote Lake	8-Jul-12	17T 430223 5267136	3.6	2.2	0.5	24.02	7.69	91.4	7.05	45
					1	23.96	7.67	90.9	7.00	45
					2	22.90	5.87	68.6	6.82	46
					2.5	20.31	3.09	34.1	6.52	45
					3	17.06	0.42	4.5	6.43	51

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 20 - 25°C.

Table C.8: *In situ* water quality of Delaney Lake, Côté Gold Baseline, 2013.

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	pH	Sp. Cond (µS/cm)
Water Quality Criteria[a]						**-**	**5[b]**	**57%[b]**	**6.5-8.5**	**-**
Delaney Lake	7-Jun-13	17T 0430975 5262875	2.0	1.0	0.0	20.5	7.77	92.5	6.01	23.3
					1.0	20.4	8.10	94.5	5.91	23.4
					2.0	15.0	7.61	79.2	5.68	23.5
Water Quality Criteria[a]						-	**5[b]**	**57%[b]**	**6.5-8.5**	-
Delaney Lake	16-Sep-13	17T 430911 5262910	2.1	0.8	0.2	13.11	11.62	110.6	7.80	46.0
					1.0	12.76	11.86	111.8	7.86	46.0
					2.0	12.73	11.17	105.5	7.69	46.0

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 15 - 20°C.

Table C.9: *In situ* water quality of East Beaver Pond, Côté Gold Baseline, 2012.

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen		pH	Sp. Cond (µS/cm)
							(mg/L)	(% sat)		
Water Quality Criteria[a]						**-**	**5**[b]	**63%**[b]	**6.5-8.5**	**-**
East Beaver Ponds	15-Jul-12	17T 0430538 5265524	-	-	Surface	23.4	6.2	76.5	6.6	49.7

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 20 - 25°C.

Table C.10: ***In situ*** **water quality of Errington Creek, Côté Gold Baseline, 2013.**

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen		pH	Sp. Cond (µS/cm)
							(mg/L)	(% sat)		
Water Quality Criteria[a]						**-**	**6[b]**	**54%[b]**	**6.5-8.5**	**-**
Errington Creek	15-Oct-12	17T 0435672 5270361	1.1	-	Surface	13.41	6.26	59.4	6.27	39

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 10 - 15°C.

Table C.11: ***In situ*** **water quality of Little Clam Lake, Côté Gold Baseline, 2012.**

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	pH	Sp. Cond (µS/cm)
Water Quality Criteria[a]						**-**	**5[b]**	**63%[b]**	**6.5-8.5**	**-**
Little Clam Lake	4-Jul-12	17T 0428270 5267435	5.8	3.5	0.5	26.1	9.85	121.7	5.80	42.0
					1.0	25.2	10.22	123.6	5.98	42.0
					2.0	22.6	10.04	116.1	6.07	41.0
					3.0	18.1	8.73	92.9	6.05	40.0
					3.5	14.4	5.12	50.3	5.82	41.0
					4.0	11.9	1.96	19.1	5.81	40.0
					4.5	9.5	1.22	11.0	5.74	44.0
					5.0	8.7	1.02	8.8	5.66	52.0
					5.5	8.4	0.90	7.7	5.64	54.0

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 20 - 25°C.

Table C.12: ***In situ*** **water quality of Lower Three Duck Lake, Côté Gold Baseline, 2013.**

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen		pH	Sp. Cond (µS/cm)
							(mg/L)	(% sat)		
Water Quality Criteria[a]						**-**	**6[b]**	**54%[b]**	**6.5 - 8.5**	**-**
Lower Three Duck Lake	9-Jun-13	17T 0432768 5264018	5.1	1.7	0	18.8	8.97	100.3	6.61	30.0
					1.0	18.3	8.42	94.9	6.63	30.0
					2.0	17.9	8.71	95.7	6.58	25.9
					3	16.2	8.39	88.7	6.49	30.0
					4.0	13.6	7.55	74.7	6.34	29.8
					5.0	12.8	3.34	32.6	6.19	40.8
Water Quality Criteria[a]						-	**6[b]**	**54%[b]**	**6.5 - 8.5**	-
Lower Three Duck Lake	13-Sep-13	17T 432521 5264382	4.7	2.0	0	15.77	9.03	91.3	6.91	35.0
					1.0	15.71	8.92	89.7	6.90	35.0
					2.0	15.62	8.79	88.2	6.90	35.0
					3	15.58	8.87	88.8	6.91	35.0
					4.0	15.43	8.76	87.7	6.91	35.0

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 10 - 15°C.

Table C.13: ***In situ*** **water quality of Mesomikenda Lake, Côté Gold Baseline, 2013.**

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved oxygen (mg/L)	Dissolved oxygen (% sat)	pH	Sp. Cond (µS/cm)
Water Quality Criteria[a]						-	**6[b]**	**54%[b]**	**6.5 - 8.5**	-
Mesomikenda Lake (C1)	8-Jun-13	17T 0433961 5279119	48.0	2.4	0.2	16.0	9.80	99.2	7.44	72.0
					1.0	15.7	9.65	97.1	7.33	72.0
					2.0	15.0	9.72	96.3	7.23	71.0
					3.0	13.6	9.86	94.9	7.25	74.0
					4.0	12.5	9.96	93.6	7.15	75.0
					5.0	12.0	9.85	92.3	7.19	73.0
					6.0	11.8	9.85	90.7	7.14	73.0
					7.0	11.6	9.87	90.7	7.10	74.0
					8.0	11.3	9.90	90.3	7.05	75.0
					9.0	10.5	10.00	89.8	7.04	75.0
					10.0	9.4	10.18	88.9	6.93	76.0
					11.0	8.5	10.36	88.5	6.91	76.0
					12.0	7.8	10.48	88.1	6.86	76.0
					13.0	7.5	10.56	88.2	6.74	77.0
					14.0	7.4	10.55	87.9	6.74	77.0
					15.0	7.2	10.56	87.4	6.74	77.0
					16.0	7.1	10.63	87.5	6.79	77.0
					19.0	6.8	10.62	87.1	6.83	77.0
					22.0	6.7	10.62	86.9	6.82	77.0
					25.0	6.6	10.62	86.6	6.83	77.0
					28.0	6.4	10.62	86.2	6.81	77.0
					30.0	6.3	10.61	85.9	6.76	77.0
Water Quality Criteria[a]						-	**6[b]**	**54%[b]**	**6.5 - 8.5**	-
Mesomikenda Lake (C2)	8-Jun-13	17T 0434009 5276393	17.8	2.4	0.2	16.5	10.00	102.9	7.23	73.0
					1.0	14.9	9.96	98.5	7.21	74.0
					2.0	14.7	9.86	96.9	7.24	73.0
					3.0	13.9	9.79	94.9	7.16	74.0
					4.0	12.6	9.90	93.3	7.16	75.0
					5.0	12.0	9.84	91.3	6.99	74.0
					6.0	11.7	9.82	90.5	7.11	75.0
					7.0	11.5	9.81	90.2	7.06	75.0
					8.0	11.2	9.92	90.3	6.96	81.0
					9.0	10.5	10.00	89.4	6.95	78.0
					10.0	9.4	10.08	88.2	6.93	79.0
					11.0	8.3	10.20	86.6	6.94	76.0
					12.0	7.8	10.24	85.9	6.87	76.0
					13.0	7.6	10.25	85.7	6.85	76.0
					14.0	7.4	10.25	85.2	6.82	76.0
					15.0	7.2	10.26	84.9	6.77	76.0
					16.0	7.1	10.22	84.4	6.74	76.0
					17.0	6.7	2.81	17.2	6.61	118.0
Water Quality Criteria[a]						-	**6[b]**	**54%[b]**	**6.5 - 8.5**	-
Mesomikenda Lake (C3)	8-Jun-13	17T 0433432 5274070	60.0	2.5	0.2	16.1	10.18	103.3	7.14	93.0
					1.0	15.9	10.04	101.5	7.23	93.0
					2.0	14.3	10.25	100.0	7.23	94.0
					3.0	13.4	10.32	98.5	7.24	96.0
					4.0	12.2	10.36	96.5	7.23	97.0
					5.0	11.1	10.43	94.1	7.25	97.0
					6.0	10.8	10.36	93.7	7.24	98.0
					7.0	10.4	10.45	92.9	7.19	98.0
					8.0	7.9	10.78	90.9	7.12	99.0
					9.0	7.2	10.93	90.4	7.07	100.0
					10.0	7.0	10.92	89.9	7.08	100.0
					11.0	6.5	10.94	88.9	7.05	100.0
					12.0	6.1	11.03	88.8	7.02	100.0
					15.0	5.6	11.08	88.0	7.02	100.0
					18.0	5.3	11.02	87.0	7.01	100.0
					21.0	5.2	11.00	86.5	7.01	100.0
					24.0	5.1	11.00	86.3	7.02	100.0
					27.0	5.1	11.00	86.4	6.95	101.0
					30.0	5.0	11.00	86.1	6.96	101.0
Water Quality Criteria[a]						-	**6[b]**	**54%[b]**	**6.5 - 8.5**	-
Mesomikenda Lake (C4)	8-Jun-13	17T 0433682 5271110	36.0	3.0	0.2	16.8	10.46	107.3	7.35	98.0
					1.0	16.5	10.16	104.0	7.32	98.0
					2.0	15.5	10.26	103.0	7.38	97.0
					3.0	13.5	10.44	100.2	7.45	99.0
					4.0	11.8	10.62	97.8	7.39	99.0
					5.0	11.1	10.45	95.0	7.37	98.0
					6.0	10.7	10.43	93.9	7.33	99.0
					7.0	9.8	10.57	93.2	7.30	98.0
					8.0	8.7	10.73	92.0	7.28	100.0
					9.0	8.4	10.71	91.4	7.28	100.0
					10.0	8.0	10.78	91.1	7.25	100.0
					11.0	7.5	10.85	91.0	7.24	100.0
					12.0	7.0	10.91	90.0	7.20	100.0
					15.0	6.1	11.04	89.0	7.18	100.0
					18.0	5.7	11.19	89.3	7.17	100.0
					21.0	5.4	10.97	86.8	7.15	100.0
					24.0	5.2	10.94	86.1	7.10	100.0
					27.0	5.1	10.92	85.6	7.08	100.0
					30.0	5.0	10.90	85.4	7.05	100.0
Water Quality Criteria[a]						-	**6[b]**	**54%[b]**	**6.5 - 8.5**	-
Mesomikenda Lake (C6)	16-Sep-13	17T 433389 5281558	45.0	3.1	0.2	16.37	10.59	106.6	7.47	69.0
					1.0	15.46	10.21	102.2	7.63	67.0
					2.0	15.27	10.05	100.2	7.71	68.0
					3.0	15.17	9.97	99.0	7.72	68.0
					4.0	15.17	10.12	100.9	7.72	68.0
					5.0	15.16	9.96	99.1	7.83	68.0
					6.0	15.15	9.94	99.0	7.86	68.0
					7.0	15.14	9.95	98.9	7.76	68.0
					8.0	15.14	9.99	99.3	7.82	67.0
					9.0	15.14	10.14	101.0	7.85	67.0
					10.0	15.12	10.01	99.6	7.81	67.0
					11.0	15.09	9.99	99.3	7.90	68.0
					12.0	10.26	9.23	82.6	7.81	70.0
					13.0	8.68	9.93	85.4	7.67	69.0
					14.0	8.24	9.72	82.3	7.63	68.0
					15.0	8.06	9.70	82.4	7.54	69.0

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 10 - 15°C.

Table C.14: ***In situ*** **water quality of Middle Three Duck Lake, Côté Gold Baseline, 2013.**

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	pH	Sp. Cond (µS/cm)
Water Quality Criteria[a]						**-**	**6[b]**	**54%[b]**	**6.5 - 8.5**	**-**
Middle Three Duck Lake	5-Jun-13	17T 0431889 5265890	7.9	1.9	0	15.5	9.42	97.6	6.96	33.3
					1.0	14.9	9.11	92.9	6.96	33.4
					2.0	14.3	9.14	92.3	6.87	33.4
					3.0	14.0	9.02	90.5	6.51	33.3
					4.0	13.3	8.56	84.9	6.41	33.5
					5.0	11.9	7.12	68.4	6.21	34.3
					6.0	10.4	5.75	53.4	6.05	34.9
					7.0	10.0	2.41	22.2	5.90	37.2
					7.5	9.9	2.17	19.9	5.88	37.5
Water Quality Criteria[a]						-	**6[b]**	**54%[b]**	**6.5 - 8.5**	-
Middle Three Duck Lake	13-Sep-13	17T 431950 5266103	6.3	1.6	0	15.46	9.47	94.6	7.01	38.0
					1.0	15.47	9.34	93.7	6.95	37.0
					2.0	15.46	9.40	94.1	6.80	37.0
					3.0	15.5	9.30	92.7	6.97	38.0
					4.0	15.36	9.30	92.6	7.00	38.0
					5.0	15.25	9.37	93.3	7.02	37.0
					6.0	15.04	9.33	92.6	7.03	38.0

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 10 - 15°C.

Table C.15: *In situ* water quality of the Mollie River, Côté Gold Baseline, 2013.

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen		pH	Sp. Cond (µS/cm)
							(mg/L)	(% sat)		
Water Quality Criteria[a]						**-**	**5[b]**	**63%[b]**	**6.5-8.5**	**-**
Mollie River	11-Jul-13	17T 429938 5265885	-	-	-	23.56	8.04	94.2	7.36	51

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 20 - 25°C.

Table C.16: *In situ* water quality of Neville Lake, Côté Gold Baseline, 2013.

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved oxygen		pH	Sp. Cond (µS/cm)
							(mg/L)	(% sat)		
Water Quality Criteria[a]						-	**6[b]**	**54%[b]**	**6.5 - 8.5**	-
Neville Lake	5-Jun-13	17T 0431441 5277446	11.0	1.40	0.2	15.90	8.39	85.0	6.52	61.0
					1.0	14.74	8.34	82.2	6.53	61.0
					2.0	13.77	7.89	76.1	6.59	61.0
					3.0	13.57	8.01	77.0	6.49	61.0
					4.0	12.04	7.42	68.9	6.24	61.0
					5.0	9.65	7.19	62.9	6.14	60.0
					6.0	7.97	6.94	58.4	6.05	59.0
					7.0	7.30	6.18	51.2	6.00	59.0
					8.0	6.55	4.59	37.3	5.74	59.0
					9.0	6.11	3.64	29.1	5.69	59.0
					10.0	5.99	2.89	23.1	5.81	60.0
Water Quality Criteria[a]						-	**6[b]**	**54%[b]**	**6.5 - 8.5**	-
Neville Lake	14-Sep-13	17T 431439 5277443	10.8	1.05	0.2	15.83	7.84	79.2	6.83	43.0
					1.0	15.25	7.79	77.8	6.80	43.0
					2.0	15.00	7.67	76.1	6.76	43.0
					3.0	14.50	7.60	74.5	6.73	43.0
					4.0	13.90	6.19	60.6	6.63	43.0
					5.0	12.93	4.97	47.9	6.55	44.0
					6.0	11.44	2.71	24.9	6.36	44.0
					7.0	9.47	0.93	8.6	6.33	56.0
					8.0	7.57	0.37	3.5	6.49	59.0
					9.0	7.26	0.30	2.5	6.46	63.0
					10.0	7.10	0.28	2.3	6.46	66.0

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 10 - 15°C.

Table C.17: *In situ* water quality of North Beaver Pond, Côté Gold Baseline, 2012.

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	pH	Sp. Cond (µS/cm)
Water Quality Criteria[a]						**-**	**5[b]**	**63%[b]**	**6.5-8.5**	**-**
North Beaver Pond	15-Jul-12	17T 0430310 5267869	-	-	Surface	23.4	3.59	44.2	6.88	71.5

[shaded] value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 20 - 25°C.

Table C.18: ***In situ*** **water quality of Schist Lake, Côté Gold Baseline, 2013.**

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen		pH	Sp. Cond (µS/cm)
							(mg/L)	(% sat)		
Water Quality Criteria[a]						**-**	**6[b]**	**54%[b]**	**6.5 - 8.5**	**-**
Schist Lake	7-Jun-13	17T 0426565 5270592	6.0	3.4	0	16.7	9.43	102.1	7.53	43.4
					1	16.6	9.46	101.8	7.41	43.4
					2	15.9	9.37	100.6	7.40	43.4
					3	15.3	9.13	97.2	7.24	43.4
					4	14.6	9.04	92.7	7.09	43.4
					5	13.2	6.90	67.2	6.89	46.5
					6	11.5	2.59	26.6	6.67	64.5
Water Quality Criteria[a]						**-**	**6[b]**	**54%[b]**	**6.5 - 8.5**	**-**
Schist Lake	13-Sep-13	17T 0426565 5270592	6.1	3.1	0.2	16.21	12.23	124.8	8.26	66.0
					1	16.12	12.01	122.0	8.25	66.0
					2	15.91	11.89	120.2	8.27	65.0
					3	15.74	11.79	118.7	8.23	65.0
					4	15.73	11.69	117.7	8.23	65.0
					5	15.34	11.61	116.1	8.19	65.0
					6	15.75	2.00	20.2	8.06	78.0

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 10 - 15°C.

Table C.19: *In situ* water quality of Unnamed Lake #1, Côté Gold Baseline, 2013.

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	pH	Sp. Cond (µS/cm)
Water Quality Criteria[a]						**-**	**5[b]**	**63%[b]**	**6.5-8.5**	**-**
Unnamed Lake #1	13-Jul-12	17T 0429317 5273665	1.5	-	Surface	23.34	7.57	88.6	7.94	44.0
					Bottom	23.17	0.39	4.5	6.86	44.0
Water Quality Criteria[a]						-	**6[c]**	**54[c]**	**6.5-8.5**	-
Unnamed Lake #1	6-Jun-13	T17 0429462 5273687	1.8	1.3	0.2	16.5	8.46	86.4	6.20	53.0
					1.0	16.4	8.38	85.5	6.18	53.0
					1.5	14.8	8.20	81.3	6.12	52.0
Water Quality Criteria[a]						-	**6[c]**	**54%[c]**	**6.5-8.5**	-
Unnamed Lake #1	12-Sep-13	T17 0429462 5273687	1.4	1.4	0.2	17.04	9.63	99.5	7.74	51.0
					1.0	17.03	9.62	99.6	7.81	51.0
					1.5	17.00	9.55	98.8	7.81	51.0

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 20 - 25°C.

[c] dissolved oxygen concentration for the protection of coldwater biota at temperature of 10 - 15°C.

Table C.20: *In situ* water quality of Unnamed Lake #2, Côté Gold Baseline, 2013.

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	pH	Sp. Cond (µS/cm)
Water Quality Criteria[a]						**-**	**6[b]**	**54%[b]**	**6.5 - 8.5**	**-**
Unnamed Lake #2	6-Jun-13	17T 0427027 5272920	11	1.4	0.2	15.7	9.34	94.0	6.07	101.0
					1	15.7	9.28	93.4	6.02	89.0
					2	15.4	9.23	92.6	6.10	68.0
					3	13.1	8.82	83.1	6.05	68.0
					4	9.0	8.56	73.8	5.77	70.0
					5	8.0	7.62	64.4	5.72	73.0
					6	6.6	5.36	43.5	5.69	79.0
					7	5.5	3.06	24.2	5.73	84.0
					8	5.2	2.51	19.8	5.71	85.0
					9	5.1	2.24	17.5	5.78	88.0
					10	5.0	1.30	9.7	6.19	135.0
Water Quality Criteria[a]						-	**6[b]**	**54%[b]**	**6.5 - 8.5**	-
Unnamed Lake #2	14-Sep-13	17T 427029 5272958	11.3	1.15	0.2	14.89	11.12	110.0	7.61	47.0
					1	14.81	11.08	109.3	7.55	47.0
					2	14.68	10.97	107.9	7.50	47.0
					3	14.42	9.85	95.2	7.55	48.0
					4	13.80	8.16	78.7	7.35	48.0
					5	9.94	0.86	7.6	7.06	53.0
					6	7.79	0.65	5.6	6.93	57.0
					7	6.54	0.64	5.1	6.89	63.0
					8	6.27	0.64	5.1	6.84	64.0
					9	6.11	0.67	5.3	6.81	67.0
					10	6.11	2.67	22.9	6.93	67.0

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 10 - 15°C.

Table C.21: ***In situ*** **water quality of Unnamed Lake #3, Côté Gold Baseline, 2013.**

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	pH	Sp. Cond (µS/cm)
Water Quality Criteria[a]						**-**	**6[b]**	**54%[b]**	**6.5 - 8.5**	**-**
Unnamed Lake #3	8-Jun-13	17T 0431697 5263540	6.5	0.97	0	20.3	8.01	90.6	6.20	25.4
					1	17.0	8.45	88.2	6.01	25.1
					2	11.7	8.37	79.3	5.84	23.5
					3	9.0	7.33	66.1	5.71	25.8
					4	7.9	5.25	45.1	5.59	26.3
					5	7.5	3.80	32.4	5.44	26.8
					6	7.3	3.27	28.4	5.35	27.3
					6.5	7.2	2.24	19.6	5.46	29.9
Water Quality Criteria[a]						**-**	**6[b]**	**54%[b]**	**6.5 - 8.5**	-
Unnamed Lake #3	15-Sep-13	17T 431682 5263552	6.2	0.8	0	14.76	10.57	104.1	7.21	43.0
					1	14.76	10.49	103.9	7.18	43.0
					2	14.14	9.60	93.2	7.12	43.0
					3	9.74	1.98	18.4	6.69	52.0
					4	8.21	1.08	9.1	6.64	54.0
					5	8.21	1.08	9.0	6.63	54.0
					6	7.78	0.72	6.2	6.53	56.0

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 10 - 15°C.

Table C.22: *In situ* water quality of Unnamed Pond, Côté Gold Baseline, 2012.

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen		pH	Sp. Cond (µS/cm)
							(mg/L)	(% sat)		
Water Quality Criteria[a]						**-**	**5[b]**	**63%[b]**	**6.5-8.5**	**-**
Unnamed Pond	11-Jul-12	17T 0429731 5265769	-	-	0.5	22.4	5.61	67.5	6.88	39.4

[grey box] value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 20 - 25°C.

Table C.23: *In situ* water quality of Upper Three Duck Lake, Côté Gold Baseline, 2012 and 2013.

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen		pH	Sp. Cond (µS/cm)
							(mg/L)	(% sat)		
Water Quality Criteria[a]						**-**	**5[b]**	**63%[b]**	**6.5-8.5**	**-**
Upper Three Duck Lake	15-Jul-12	17T 0430426 5267504	3	2.4	0.5	26.1	6.88	88.5	7.33	45.2
					1.0	26.1	6.68	86.3	7.18	45.0
					2.0	24.1	7.14	89.1	7.12	45.0
					2.7	22.6	6.03	73.1	7.01	46.4
Water Quality Criteria[a]						**-**	**6[c]**	**54%[c]**	**6.5 - 8.5**	-
Upper Three Duck Lake	4-Jun-13	17T 0431509 5267903	-	2.6	0.0	15.5	9.43	97.7	6.74	32.5
					1.0	14.8	9.36	96.6	6.60	32.5
					2.0	13.9	8.87	89.4	6.63	32.6
					3.0	13.6	8.66	87.1	6.54	32.7
					4.0	13.6	8.28	82.9	6.47	32.8
					5.0	10.4	5.12	47.5	6.36	34.6
					6.0	9.5	2.44	23.0	6.10	39.1
Water Quality Criteria[a]						**-**	**6[c]**	**54%[c]**	**6.5 - 8.5**	-
Upper Three Duck Lake	12-Sep-13	17T 431475 5267874	5.7	1.6	0.0	17.13	9.16	94.7	6.93	39.0
					1.0	17.13	9.06	94.1	6.93	39.0
					2.0	17.11	9.10	94.1	6.96	38.0
					3.0	17.09	9.13	94.7	6.95	39.0
					4.0	17.04	8.94	92.5	6.93	38.0
					5.0	16.86	8.52	87.8	6.76	38.0

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 20 - 25°C.

[c] dissolved oxygen concentration for the protection of coldwater biota at temperature of 10 - 15°C.

Table C.24: ***In situ*** **water quality of Weeduck Lake, Côté Gold Baseline, 2013.**

Waterbody	Date	UTM (NAD 83)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen		pH	Sp. Cond (µS/cm)
							(mg/L)	(% sat)		
Water Quality Criteria[a]						**-**	**6[c]**	**54%[c]**	**6.5 - 8.5**	**-**
Weeduck Lake	4-Jun-13	17T 0431072 5268382	-	3.19	0.0	14.3	10.65	108.3	7.36	34.7
					1.0	14.2	10.43	106.2	7.06	34.6
					2.0	14.0	10.61	108.4	6.99	34.6
					3.0	12.7	11.05	108.2	7.05	34.7
					4.0	10.5	11.32	106.4	6.99	34.8
					5.0	9.1	8.63	77.1	6.74	35.8
					6.0	7.8	4.92	42.9	6.44	38.0
					7.0	6.8	1.65	13.9	6.23	44.3
					8.0	6.3	0.27	2.2	6.23	49.5
Water Quality Criteria[a]						-	**6[c]**	**54%[c]**	**6.5 - 8.5**	-
Weeduck Lake	12-Sep-13	17T 431078 5268391	8.7	2.27	0.0	17.04	9.08	94.2	6.63	34.0
					1.0	17.06	8.98	93.0	6.64	34.0
					2.0	17.04	9.05	93.6	6.65	34.0
					3.0	16.90	8.76	90.3	6.64	34.0
					4.0	15.40	4.33	42.5	6.27	37.0
					5.0	11.56	0.07	0.5	6.01	42.0
					6.0	9.18	0.00	0.0	6.01	47.0

value does not meet criteria.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen concentration for the protection of coldwater biota at temperature of 10 - 15°C.

Table C.25: Water quality values for Lakes, Cote Gold, September 2013. Shading denotes water quality values greater than selected benchmark.

	Analyte	Units	Water Quality Guidelines [a]				Baseline (95th Percentile)	Benchmark	Mollie River Watershed								Neville Lake Watershed							Mettagami River Watershed
			Primary			Alternative																		
			PWQO[b]	CWQG[c]	Date	BCMOE 2006[d] unless noted			Chester Lake	Clam Lake	Weeduck Lake	Upper Three Duck Lake	Middle Three Duck Lake	Lower Three Duck Lake	Unnamed Lake #3	Delaney Lake	Schist Lake	Bagsver Lake (South Arm)	Bagsverd Lake (Main)	Unnamed Lake #2	Unnamed Lake #1	Neville Lake	Mesomikenda Lake
Non-Metals	Acidity as CaC03	mg/L	-	-		-	**2.5**	2.5	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
	Ammonia-N	mg/L	-	**6.89**[f]	2001	-	0.21	6.89	< 0.01	< 0.01	< 0.01	< 0.01	0.02	0.01	0.01	0.03	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01
	Un-ionized Ammonia	mg/L	**0.02**	0.019	2001	-	0.00049	0.02	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	0.0001	0.0001	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001
	Total Chemical Oxygen Demand	mg/L	-	-		-	**39**	39	39	26	25	31	32	40	62	48	32	24	24	41	37	46	20
	Conductivity	umho/cm	-	-		-	**79.7**	79.7	39	41	36	41	40	38	31	34	54	52	53	35	39	42	55
	Total Kjeldahl Nitrogen	mg/L	-	-		-	**1.2**	1.2	0.65	0.39	0.58	0.50	0.51	0.47	0.76	0.57	0.98	0.52	0.46	0.52	0.84	0.60	0.68
	Dissolved Organic Carbon	mg/L	-	-		-	**18**	18	13	8.6	9.6	13	12	13	9.8	18	9.0	11	9.9	15	14	19	8.6
	Total Organic Carbon	mg/L	-	-		-	**16**	16	13	7.7	8.7	12	12	13	21	19	9.7	11	9.4	16	13	19	8.7
	pH	pH	**6.5 - 8.5**	6.5 - 8.5	1994	-	7.16	6.5 - 8.5	7.11	7.15	7.16	7.13	7.09	7.07	6.64	6.95	7.35	7.37	7.35	7.01	7.06	7.07	7.38
	Phosphorus (Total) [h]	mg/L	0.02	0.02	2004	-	**0.035**	0.035	0.005	0.006	0.006	0.013	0.014	0.012	0.019	0.018	0.008	0.013	0.005	0.009	0.009	0.008	0.003
	Total Suspended Solids	mg/L	-	-		-	**5**	5	3	1	2	< 1	2	1	1	3	1	2	2	1	< 1	2	< 1
	Turbidity	NTU	-	-		-	-	-	1.8	1.0	2.2	1.5	2.0	1.4	1.2	1.7	1.2	1.4	1.6	1.8	1.2	1.1	0.6
	Alkalinity (Total as CaCO3)	mg/L	-	-		-	**29**	29	12	13	14	12	13	12	7.2	9.6	23	22	22	11	13	13	21
	Nitrite (N)	mg/L	-	**0.06**	1987	-	< 0.05	0.06	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
	Nitrate (N)	mg/L	-	**13**	2012	-	0.13	13	< 0.020	0.056	< 0.020	< 0.020	< 0.020	< 0.020	< 0.20	< 0.20	< 0.020	< 0.020	< 0.020	< 0.20	< 0.020	< 0.20	0.036
	Cyanide (Total)	mg/L	-	-		-	**0.001**	0.001	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00070	0.00078	< 0.00050	< 0.00050	< 0.00050	0.00064	< 0.00050	0.00077	< 0.00050
	Cyanide (Free)[k]	mg/L	**0.005**	-	1987	0.009784[k]	-	0.005	0.00076	0.00060	< 0.00050	< 0.00050	< 0.00050	0.00053	< 0.00050	0.00057	< 0.00050	0.00078	0.00050	0.00062	0.00051	0.00077	0.00070
	Fluoride	mg/L	-	**0.12**	2002	-	0.025	0.12	0.032	0.026	0.029	0.031	0.030	0.030	0.029	0.028	0.022	0.023	0.023	0.048	0.043	0.041	0.046
	Dissolved Sulphate	mg/L	-	-		**218** [f,j]	4.092	218	< 0.50	2.18	0.57	< 0.50	< 0.50	0.55	< 0.50	< 0.50	1.58	1.11	1.79	< 0.50	< 0.50	< 0.50	0.86
	Dissolved Chloride	mg/L	-	**120**	2011	-	1.2	120	0.72	0.84	0.62	1.0	1.1	1.2	1.5	1.4	<0.50	0.95	0.93	0.83	1.1	1.3	1.7
	Orthophosphate	mg/L	-	-		-	-	-	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0055	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
	Nitrate plus Nitrite	mg/L	-	-		-	-	-	< 0.020	0.056	< 0.020	< 0.020	< 0.020	< 0.020	< 0.20	< 0.20	< 0.020	< 0.020	< 0.020	< 0.20	< 0.020	< 0.20	0.036
	Total Hardness	mg/L	-	-		-	**33.5**	33.5	18.8	18.6	16.9	19.3	18.7	18.3	15.7	17.0	25.4	23.7	25.0	17.3	19.0	20.9	23.1
Total Metals	Aluminum	mg/L	0.075[f]	0.1[f]	1987	-	**0.1182**	0.118	0.073	0.016	0.010	0.048	0.039	0.045	0.132	0.116	0.016	0.015	0.011	0.114	0.078	0.108	0.043
	Antimony	mg/L	**0.02**	-		-	< 0.006	0.02	0.000027	0.000023	0.000023	0.000029	0.000027	0.000029	0.000029	0.000031	0.000031	0.000032	0.000031	0.000028	0.000025	0.000028	0.000024
	Arsenic	mg/L	0.005	**0.005**	1997	-	< 0.003	0.005	0.00042	0.00034	0.00031	0.00046	0.00045	0.00045	0.00056	0.00066	0.00076	0.00072	0.00073	0.00046	0.00042	0.00067	0.00030
	Barium	mg/L	-	-		**1.0**	0.007	1.0	0.0050	0.0042	0.0051	0.0046	0.0042	0.0043	0.0051	0.0038	0.0059	0.0046	0.0048	0.0043	0.0041	0.0050	0.0040
	Beryllium	mg/L	**0.011**[f]	-		-	< 0.001	0.011	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
	Bismuth	mg/L	-	-		-	-	-	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005
	Boron	mg/L	0.2	**1.5**	2009	-	< 0.01	1.5	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Cadmium	mg/L	0.0001[f]	0.000058[f,g]	2012	-	0.00005	0.0001	0.00001	0.000009	< 0.000005	0.000019	0.000006	0.000006	0.000014	0.000007	0.000005	< 0.000005	< 0.000005	0.000007	0.000007	0.000006	0.000005
	Calcium	mg/L	-	-		-	**10.465**	10.465	5.87	5.89	5.00	5.91	5.69	5.61	4.65	5.00	8.13	7.44	7.92	4.72	5.36	6.13	6.70
	Chromium	mg/L	**0.0089**[f]	0.0089[f]	1997	-	< 0.003	0.0089	0.00030	0.00011	0.00012	0.00027	0.00026	0.00029	0.00039	0.00037	0.00012	0.00028	0.00011	0.00045	0.00030	0.00027	0.00019
	Cobalt	mg/L	0.0009	**0.0025** [f]	2013	-	0.00025	0.0025	0.000048	0.000031	0.000019	0.00004	0.000042	0.000027	0.000151	0.000071	0.000019	0.000023	0.00002	0.000082	0.000046	0.000081	0.000019
	Copper	mg/L	**0.005**[f]	0.002[f]	1987	-	0.001	0.005	0.000648	0.00105	0.000634	0.00112	0.000879	0.000864	0.000446	0.000629	0.000393	0.000451	0.000421	0.000731	0.000496	0.000616	0.000503
	Iron	mg/L	0.3	0.3	1987	-	**0.369**	0.369	0.208	0.060	0.056	0.183	0.313	0.210	0.364	0.370	0.041	0.061	0.071	0.382	0.236	0.330	0.063
	Lead	mg/L	0.003[f]	0.001[f]	1987	-	0.0005	0.003	0.000203	0.000059	0.000016	0.000162	0.000096	0.00011	0.000253	0.000324	0.000077	0.000059	0.000051	0.00013	0.000081	0.000123	0.00003
	Lithium	mg/L	-	-		-	-	-	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.00054	0.00065
	Magnesium	mg/L	-	-		-	**2.003**	2.003	1.01	0.931	1.07	1.11	1.08	1.05	0.990	1.09	1.24	1.23	1.27	1.33	1.37	1.35	1.54
	Manganese	mg/L	-	-		**0.7** [f]	0.0878	0.7	0.0195	0.0281	0.0472	0.0229	0.0412	0.0172	0.0339	0.0147	0.0307	0.0531	0.0698	0.0274	0.0162	0.0304	0.00405
	Molybdenum	mg/L	0.04	**0.073**	1999	-	< 0.002	0.073	0.000071	0.000073	< 0.00005	0.000129	0.00011	0.000103	< 0.00005	< 0.00005	< 0.00005	0.000064	0.000068	< 0.00005	< 0.00005	< 0.00005	0.000057
	Nickel	mg/L	**0.025**	0.025[f]	1987	-	0.0015	0.025	0.000401	0.000189	0.00018	0.000414	0.000296	0.000369	0.00045	0.000421	0.000223	0.000265	0.000235	0.000474	0.000349	0.000454	0.000323
	Potassium	mg/L	-	-		**373**	0.49	373	0.26	0.39	0.39	0.32	0.34	0.33	0.20	0.23	0.29	0.27	0.27	0.22	0.23	0.18	0.30
	Selenium [i]	mg/L	0.1	**0.001**	1987	-	< 0.004	0.001	0.000116	0.000069	0.000074	0.000093	0.000072	0.000084	0.000109	0.000149	0.000061	0.000075	0.000079	0.000084	0.000088	0.0001	0.000067
	Silicon	mg/L		-		-	-	-	1.87	0.663	0.31	1.24	1.37	1.42	2.04	1.32	1.08	1.14	1.28	1.28	1.19	1.59	1.4
	Silver	mg/L	**0.0001**	0.0001	1987	-	0.00005	0.0001	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005
	Sodium	mg/L	-	-		-	**1.3365**	1.3365	0.784	0.698	0.646	0.867	0.814	0.761	0.740	0.752	0.698	0.693	0.692	0.837	0.769	0.963	1.400
	Strontium	mg/L	-	-		-	**0.026**	0.026	0.013	0.013	0.013	0.014	0.013	0.013	0.011	0.012	0.023	0.020	0.020	0.015	0.017	0.019	0.016
	Sulphur	mg/L	-	-		-	-	-	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
	Thallium	mg/L	0.0003	**0.0008**	1999	-	0.00015	0.0008	0.000003	0.000002	0.000002	0.000003	0.000003	0.000003	0.000004	0.000002	0.000002	< 0.000002	0.000002	0.000004	0.000003	0.000003	0.000003
	Tin	mg/L	-	-		-	-	-	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Titanium	mg/L	-	-		-	**0.002**	0.002	0.00118	< 0.0005	< 0.0005	0.00064	< 0.0005	< 0.0005	0.00143	0.00151	< 0.0005	< 0.0005	< 0.0005	0.00083	0.00078	0.00098	< 0.0005
	Uranium	mg/L	0.005	**0.015**	2011	-	< 0.002	0.015	0.000014	0.000005	0.000003	0.000015	0.000016	0.000015	0.000016	0.000024	0.000003	0.00001	0.000006	0.00005	0.000029	0.000053	0.000078
	Vanadium	mg/L	**0.006**	-		-	< 0.002	0.006	0.00038	< 0.0002	< 0.0002	0.00026	0.00025	0.00023	0.00033	0.00061	< 0.0002	0.00023	< 0.0002	0.00046	0.00024	0.00035	< 0.0002
	Zinc	mg/L	0.02	0.03	1987	-	**0.032**	0.032	0.0015	0.0015	0.0005	0.0037	0.0008	0.0013	0.0025	0.0016	0.0011	0.0011	0.0003	0.0017	0.0013	0.0014	0.0012
	Zirconium	mg/L	**0.004**	-		-	< 0.004	0.004	0.00011	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.00011	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.00014	0.00011	< 0.0001	< 0.0001

Notes:

Bold denotes selected criteria for benchmark.

[a] The most recent CWQG or PWQO for the protection of aquatic life was used. If there was no federal or provincial guideline, the most recent guideline from another Canadian jurisdiction (BCMOE) was used.

[b] PWQO - Provincial Water Quality Objectives. Ministry of Environment and Energy, July 1994, re-issued in 1999 (OMOEE 1994).

[c] CWQG - Canadian Water Quality Guidelines for the protection of aquatic life. Canadian Council of Ministers of the Environment, http://st-ts.ccme.ca/, accessed September 2013 (CCME 2013). The dates for the derivation of the guideline for each substance is provided.

[d] British Columbia Ministry of Environment, Water Quality Guidelines (BCMOE 2006).

[e] Selected water quality benchmark was the most recent water quality guideline of the upper limit of background whichever was higher.

[f] Aluminum guideline depends on pH; total ammonia guideline depends on pH and temperature; beryllium, cadmium, copper, lead, manganese, nickel and sulphate guidelines depend on hardness; guidelines in table assume: pH = 7, temperature = 15 °C, hardness = 33 mg/L as CaCO3 based on background water quality (Golder 2013). Guideline for trivalent chromium used for comparison purposes for total chromium.

[g] Cadmium CCME guideline is based on the Draft CCME for cadmium (Environment Canada 2012).

[h] The 95th percentile total phosphorus concentration was calculated based on data from samples collected by IAMGOLD in August 2013 and analyzed via spectrophotometer.

[i] The CCME guideline was selected as the PWQO value is not consistent with other jurisdictions in Canada (BCMOE 2006) or internationally (USEPA 2004).

[j] Sulphate guideline established by BCMOE in 2013 (BCMOE 2013)

[k] USEPA free cyanide value selected for non-salmonid bearing waters, PWQG was used for Mesomikenda due to presence of salmonids.

Table C.26: Water quality values for Lakes, Cote Gold, September 2013. Shading denotes water quality values greater than selected benchmark.

	Analyte	Units	Water Quality Guidelines [a]				Baseline (95th Percentile)	Benchmark	Bagsverd Creek	Errington Creek
			Primary			Alternative				
			PWQO[b]	CWQG[c]	Date	BCMOE 2006[d] unless noted				
Non-Metals	Acidity as CaC03	mg/L	-	-		-	**2.5**	2.5	< 10	< 10
Non-Metals	Ammonia-N	mg/L	-	**6.89**[f]	2001	-	0.21	6.89	< 0.01	< 0.01
Non-Metals	Un-ionized Ammonia	mg/L	**0.02**	0.019	2001	-	0.00049	0.02	-	-
Non-Metals	Total Chemical Oxygen Demand	mg/L	-	-		-	**39**	39	58	37
Non-Metals	Conductivity	umho/cm	-	-		-	**79.7**	79.7	43	41
Non-Metals	Total Kjeldahl Nitrogen	mg/L	-	-		-	**1.2**	1.2	0.81	0.46
Non-Metals	Dissolved Organic Carbon	mg/L	-	-		-	**18**	18	19	14
Non-Metals	Total Organic Carbon	mg/L	-	-		-	**16**	16	20	14
Non-Metals	pH	pH	**6.5 - 8.5**	6.5 - 8.5	1994	-	7.16	6.5 - 8.5	6.92	6.80
Non-Metals	Phosphorus (Total) [h]	mg/L	0.02	0.02	2004	-	**0.035**	0.035	0.010	0.006
Non-Metals	Total Suspended Solids	mg/L	-	-		-	**5**	5	1	< 1
Non-Metals	Turbidity	NTU	-	-		-	-	-	1.0	0.7
Non-Metals	Alkalinity (Total as CaCO3)	mg/L	-	-		-	**29**	29	15	14
Non-Metals	Nitrite (N)	mg/L	-	**0.06**	1987	-	< 0.05	0.06	< 0.050	< 0.050
Non-Metals	Nitrate (N)	mg/L	-	**13**	2012	-	0.13	13	< 0.20	< 0.020
Non-Metals	Cyanide (Total)	mg/L	-	-		-	**0.001**	0.001	0.00073	0.00055
Non-Metals	Cyanide (Free)	mg/L	**0.005**	-	1987	0.009784[k]	-	0.005	0.00073	< 0.00050
Non-Metals	Fluoride	mg/L	-	**0.12**	2002	-	0.025	0.12	0.033	0.029
Non-Metals	Dissolved Sulphate	mg/L	-	-		**218** [f,j]	4.092	218	< 0.50	< 0.50
Non-Metals	Dissolved Chloride	mg/L	-	**120**	2011	-	1.2	120	1.5	1.1
Non-Metals	Orthophosphate	mg/L	-	-		-	-	-	< 0.0050	< 0.0050
Non-Metals	Nitrate plus Nitrite	mg/L	-	-		-	-	-	< 0.20	< 0.020
Non-Metals	Total Hardness	mg/L	-	-		-	33.5	33.5	22.8	20.3
Total Metals	Aluminum	mg/L	0.075[f]	0.1[f]	1987	-	**0.1182**	0.118	0.104	0.0677
Total Metals	Antimony	mg/L	**0.02**	-		-	< 0.006	0.02	0.000035	0.000027
Total Metals	Arsenic	mg/L	0.005	**0.005**	1997	-	< 0.003	0.005	0.00065	0.000471
Total Metals	Barium	mg/L	-	-		**1.0**	0.007	1.0	0.00491	0.00324
Total Metals	Beryllium	mg/L	**0.011**[f]	-		-	< 0.001	0.011	< 0.00001	< 0.00001
Total Metals	Bismuth	mg/L	-	-		-	-	-	0.000008	< 0.000005
Total Metals	Boron	mg/L	0.2	**1.5**	2009	-	< 0.01	1.5	< 0.05	< 0.05
Total Metals	Cadmium	mg/L	0.0001[f]	0.000058[f,g]	2012	-	0.00005	0.0001	0.000012	0.000008
Total Metals	Calcium	mg/L	-	-		-	**10.465**	10.465	7.01	6.38
Total Metals	Chromium	mg/L	**0.0089**[f]	0.0089[f]	1997	-	< 0.003	0.0089	0.00035	0.00030
Total Metals	Cobalt	mg/L	0.0009	**0.0025** [f]	2013	-	0.00025	0.0025	0.000064	0.000056
Total Metals	Copper	mg/L	**0.005**[f]	0.002[f]	1987	-	0.001	0.005	0.00052	0.00045
Total Metals	Iron	mg/L	0.3	0.3	1987	-	**0.369**	0.369	0.276	0.160
Total Metals	Lead	mg/L	0.003[f]	0.001[f]	1987	-	0.0005	0.003	0.000197	0.000089
Total Metals	Lithium	mg/L	-	-		-	-	-	< 0.0005	< 0.0005
Total Metals	Magnesium	mg/L	-	-		-	**2.003**	2.003	1.29	1.05
Total Metals	Manganese	mg/L	-	-		**0.7** [f]	0.0878	0.7	0.0176	0.0101
Total Metals	Molybdenum	mg/L	0.04	**0.073**	1999	-	< 0.002	0.073	< 0.00005	0.000097
Total Metals	Nickel	mg/L	**0.025**	0.025[f]	1987	-	0.0015	0.025	0.000483	0.000255
Total Metals	Potassium	mg/L	-	-		**373**	0.49	373	0.165	0.133
Total Metals	Selenium [i]	mg/L	0.1	**0.001**	1987	-	< 0.004	0.001	0.000124	0.000061
Total Metals	Silicon	mg/L		-		-	-	-	2.15	1.68
Total Metals	Silver	mg/L	**0.0001**	0.0001	1987	-	0.00005	0.0001	< 0.000005	< 0.000005
Total Metals	Sodium	mg/L	-	-		-	**1.3365**	1.3365	0.748	0.775
Total Metals	Strontium	mg/L	-	-		-	**0.026**	0.026	0.0184	0.0113
Total Metals	Sulphur	mg/L	-	-		-	-	-	< 3.0	< 3.0
Total Metals	Thallium	mg/L	0.0003	**0.0008**	1999	-	0.00015	0.0008	0.000003	0.000003
Total Metals	Tin	mg/L	-	-		-	-	-	< 0.0002	< 0.0002
Total Metals	Titanium	mg/L	-	-		-	**0.002**	0.002	0.00134	< 0.0005
Total Metals	Uranium	mg/L	0.005	**0.015**	2011	-	< 0.002	0.015	0.000018	0.000015
Total Metals	Vanadium	mg/L	**0.006**	-		-	< 0.002	0.006	0.00023	< 0.0002
Total Metals	Zinc	mg/L	0.02	0.03	1987	-	**0.032**	0.032	0.00242	0.00139
Total Metals	Zirconium	mg/L	**0.004**	-		-	< 0.004	0.004	< 0.0001	< 0.0001

Notes:

Bold denotes selected criteria for benchmark.

[a] The most recent CWQG or PWQO for the protection of aquatic life was used. If there was no federal or provincial guideline, the most recent guideline from another Canadian jurisdiction (BCMOE) was used.

[b] PWQO - Provincial Water Quality Objectives. Ministry of Environment and Energy, July 1994, re-issued in 1999 (OMOEE 1994).

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Guideline for trivalent chromium used for comparison purposes for total chromium.

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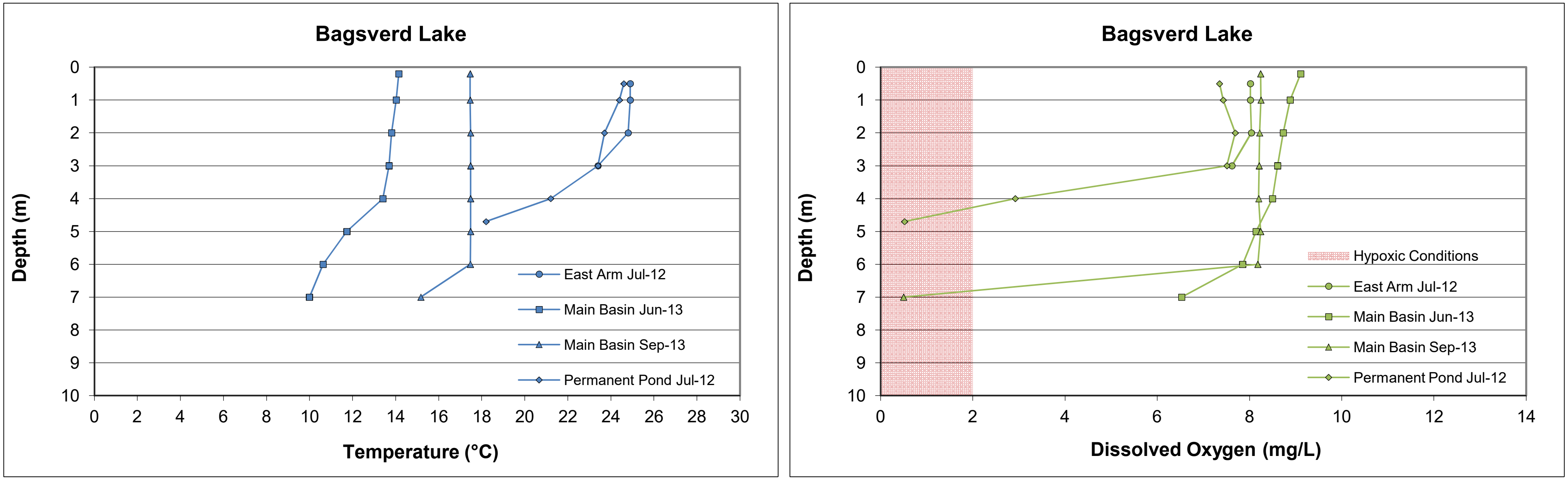
[j] Sulphate guideline established by BCMOE in 2013 (BCMOE 2013)

[k] USEPA free cyanide value selected for non-salmonid bearing waters, PWQG was used for Mesomikenda due to presence of salmonids.

a)



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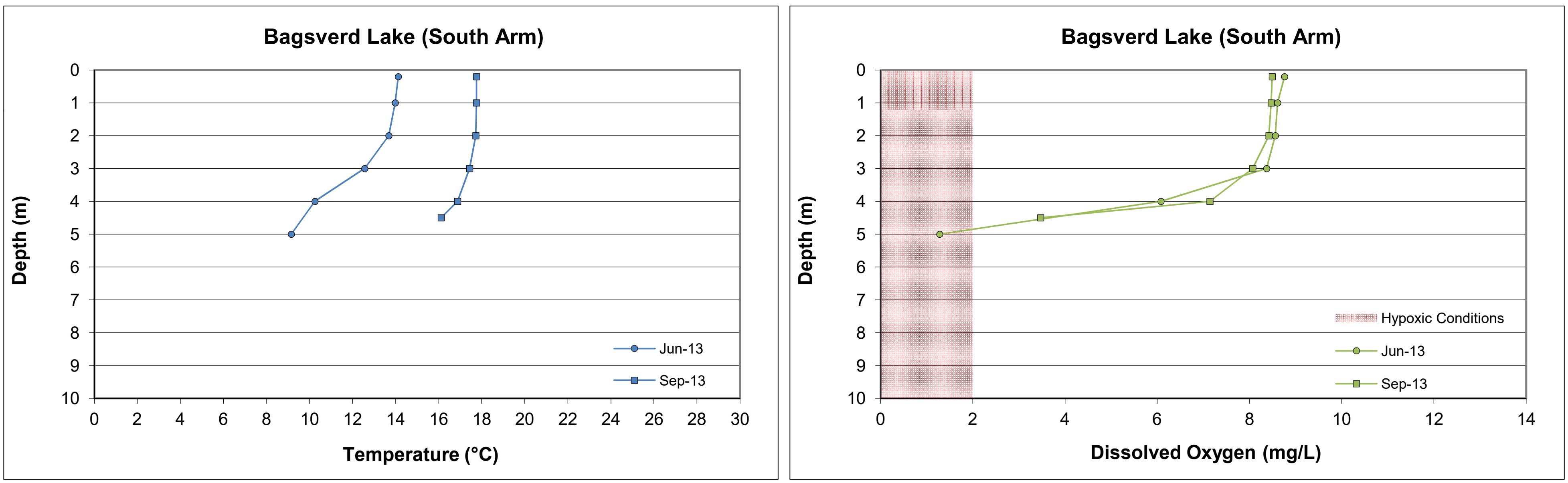
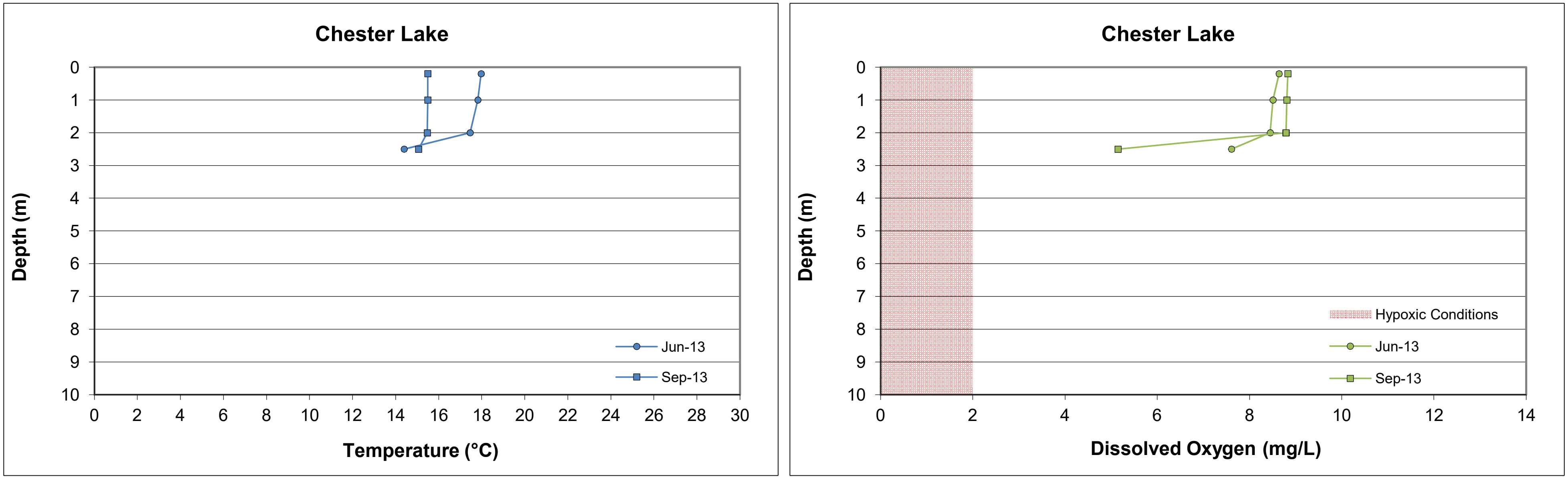


Figure C.1: ***In situ*** **water quality profiles taken for Côté Gold area waternbodies, 2012 - 2013: a) Bagsverd Lake, b) Bagsverd Lake (South Arm), c) Chester Lake, d) Clam Lake, e) Côté Lake, f) Delaney Lake, g) Little Clam Lake, h) Lower Three Duck Lake, i) Mesomikenda Lake, j) Middle Three Duck Lake, k) Neville Lake, l) Schist Lake, m) Unnamed Lake #1, n) Unnamed Lake #2, o) Unnamed Lake #3, p) Upper Three Duck Lake, and q) Weeduck Lake.**

c)



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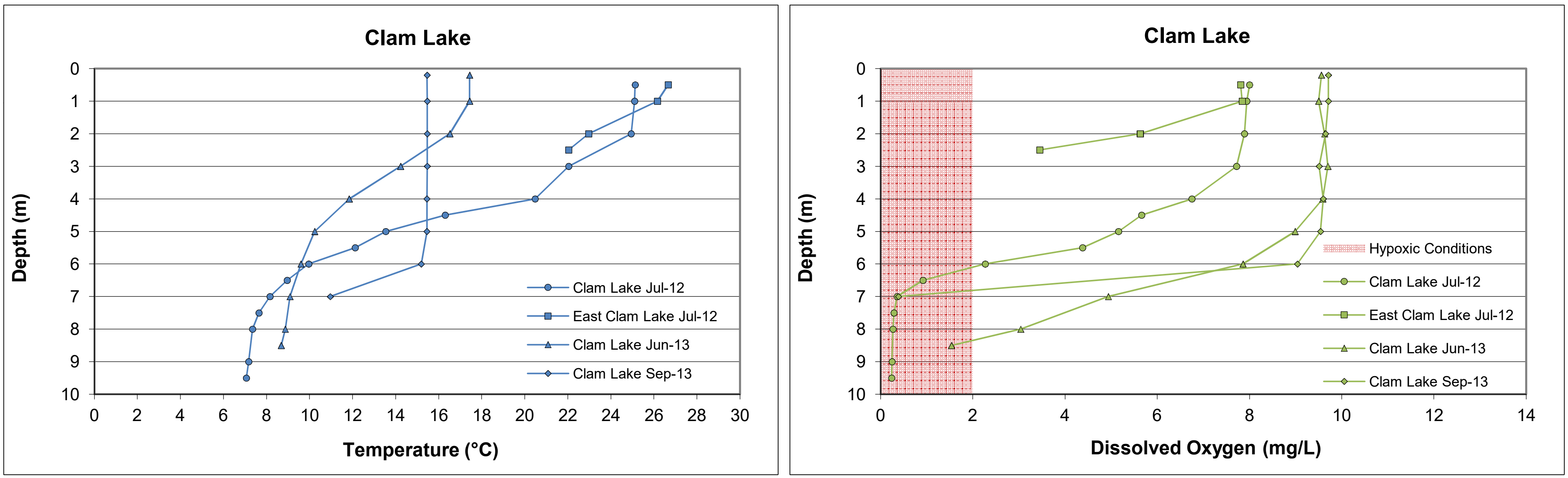

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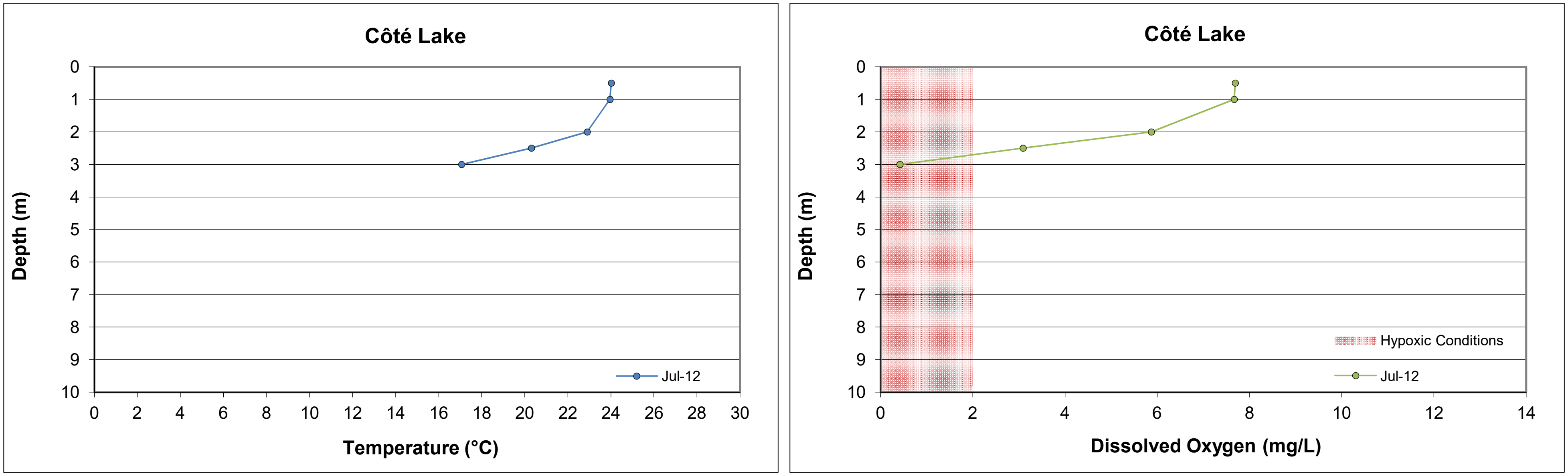
e)



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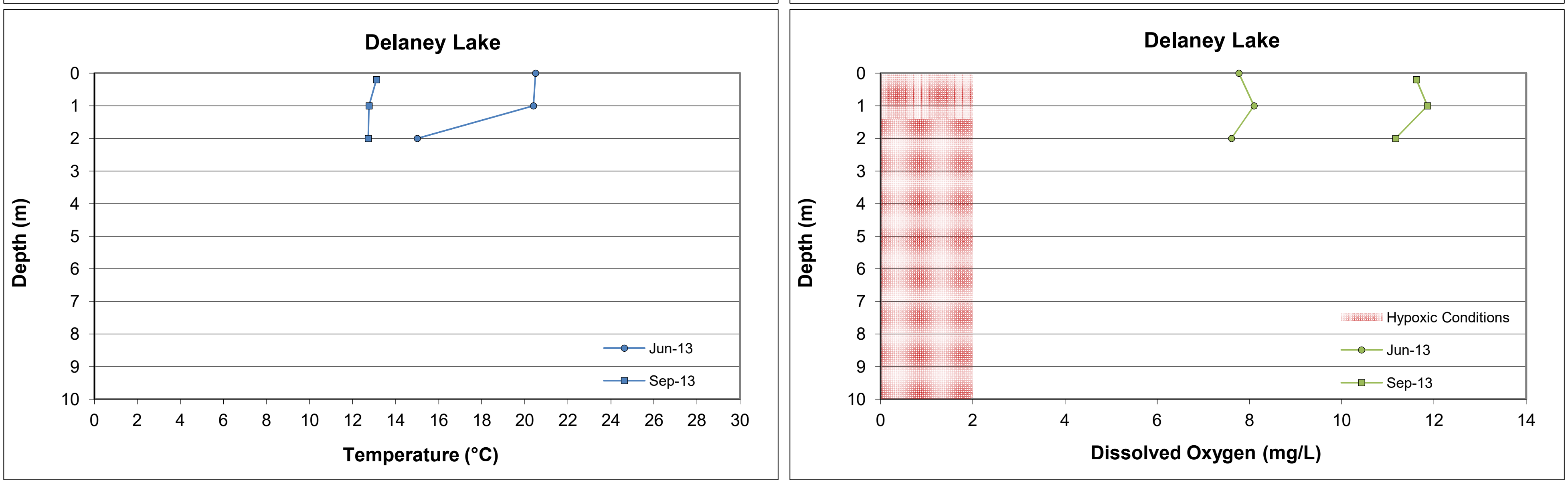

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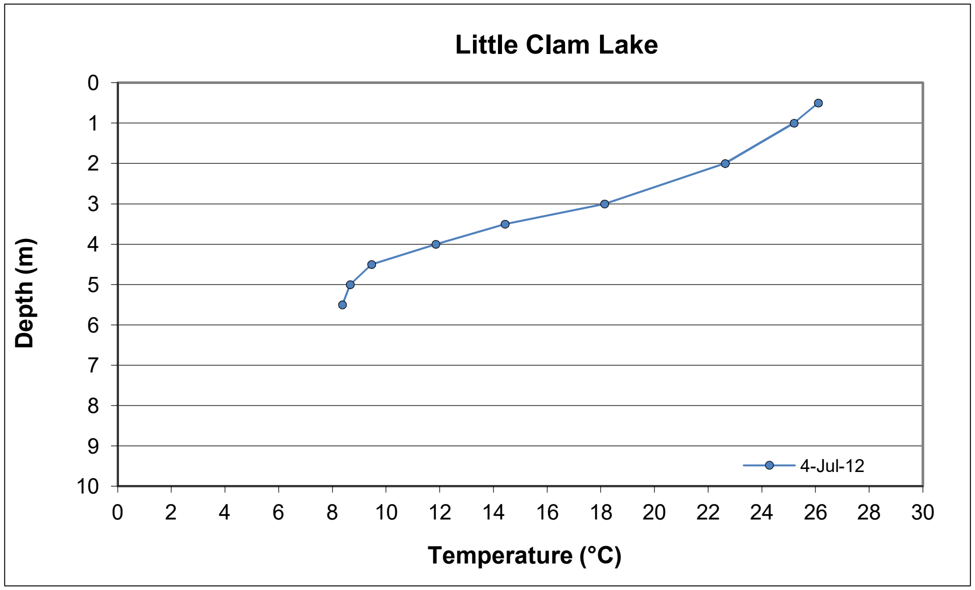
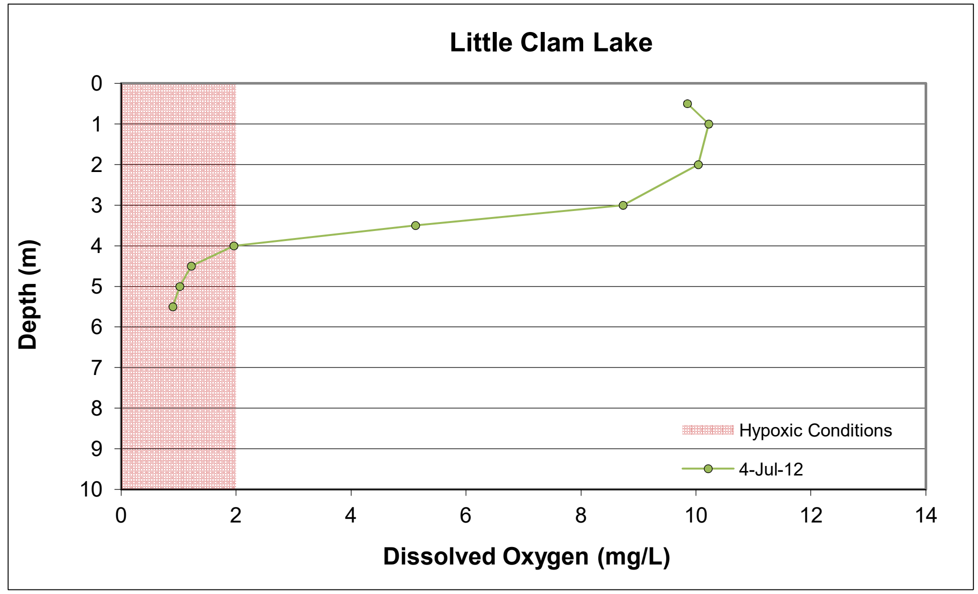
g)





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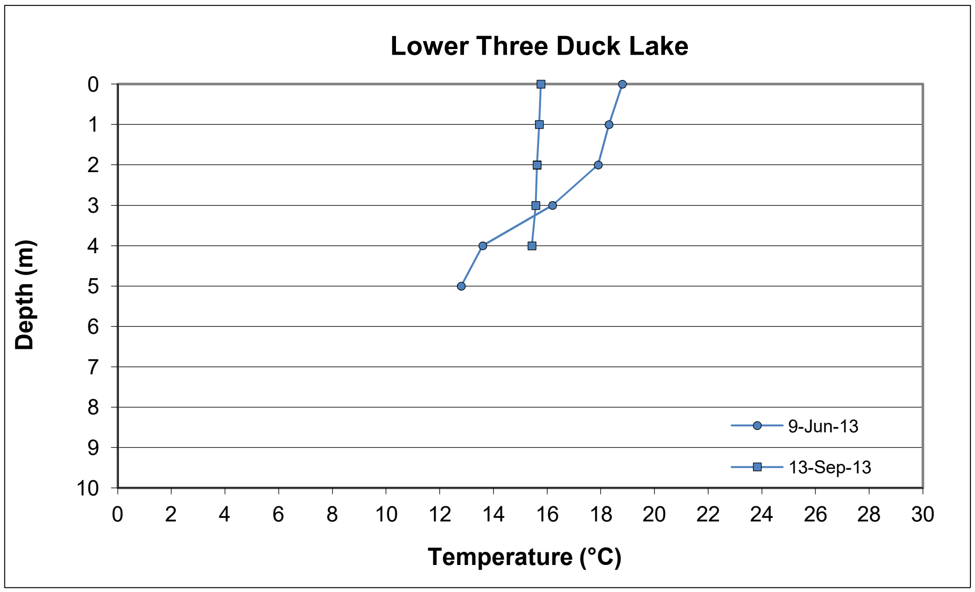


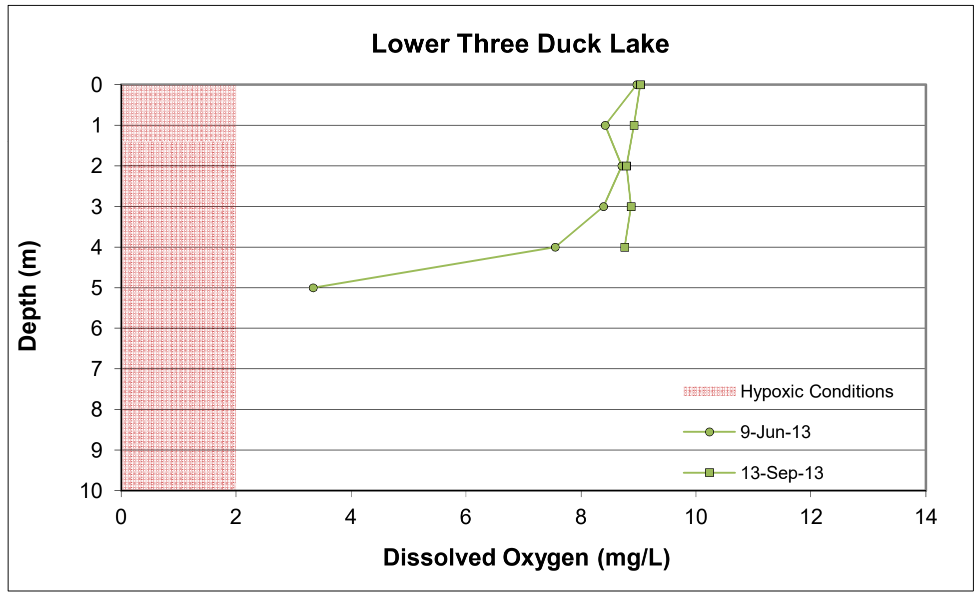
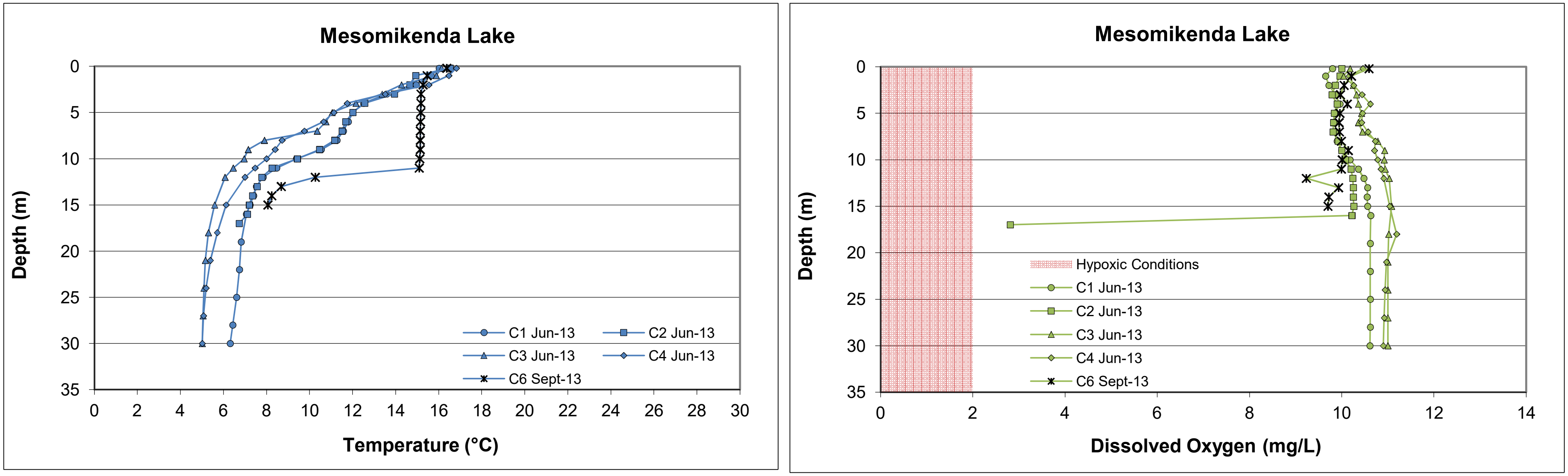
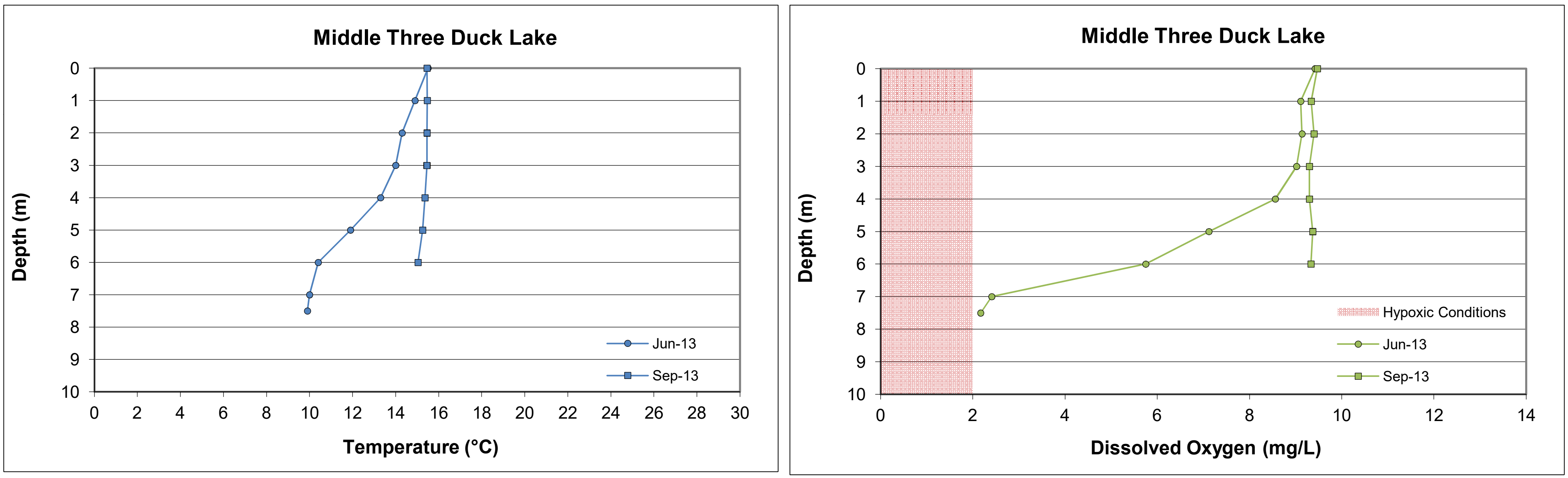


Figure C.1: ***In situ*** **water quality profiles taken for Côté Gold area waternbodies, 2012 - 2013: a) Bagsverd Lake, b) Bagsverd Lake (South Arm), c) Chester Lake, d) Clam Lake, e) Côté Lake, f) Delaney Lake, g) Little Clam Lake, h) Lower Three Duck Lake, i) Mesomikenda Lake, j) Middle Three Duck Lake, k) Neville Lake, l) Schist Lake, m) Unnamed Lake #1, n) Unnamed Lake #2, o) Unnamed Lake #3, p) Upper Three Duck Lake, and q) Weeduck Lake.**

i)



j)



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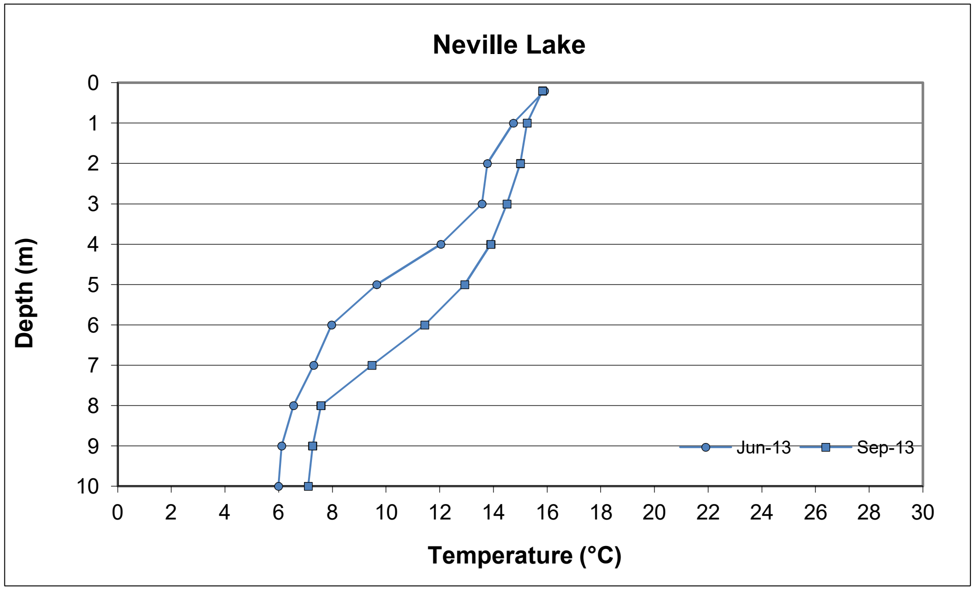
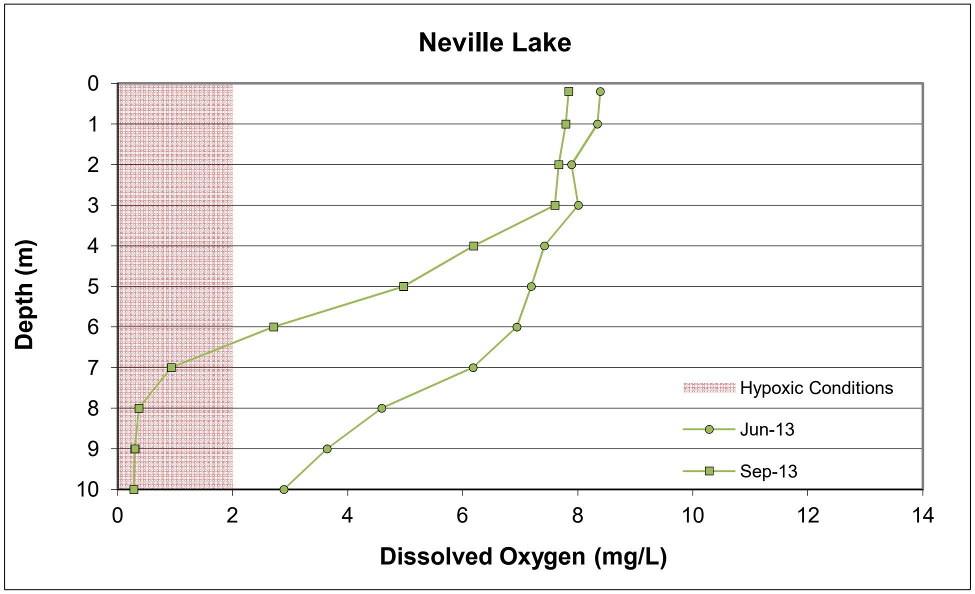
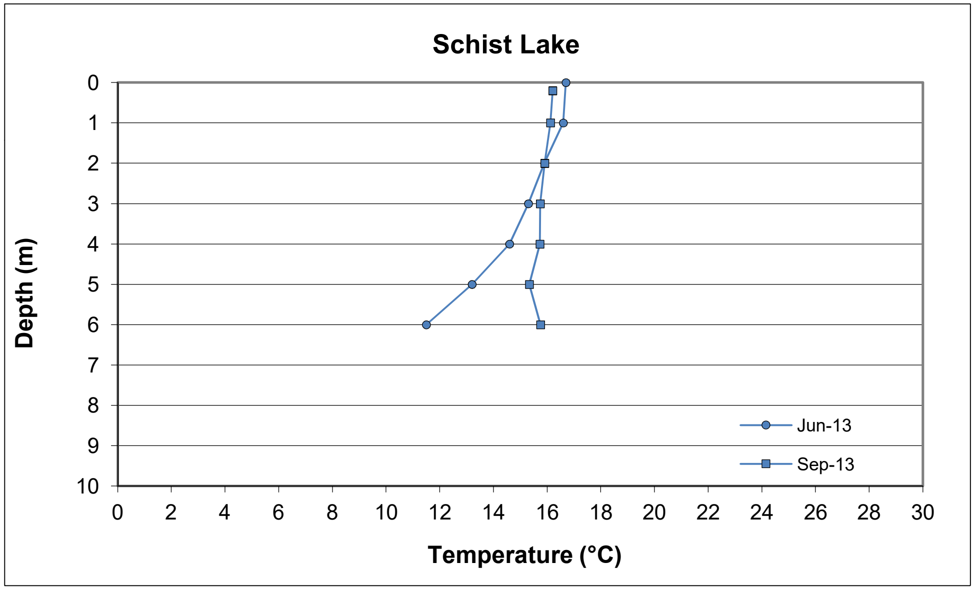
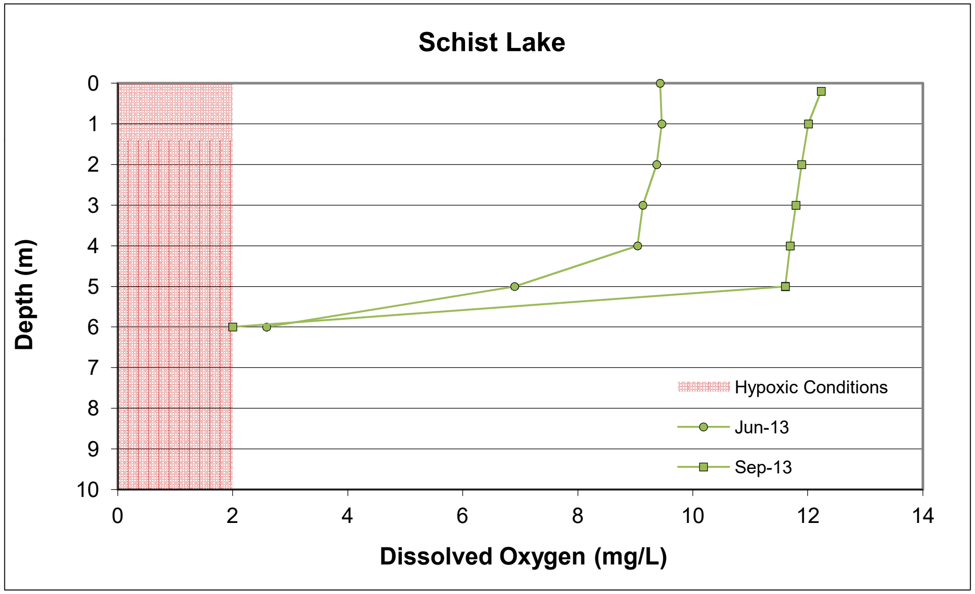
k)





l)





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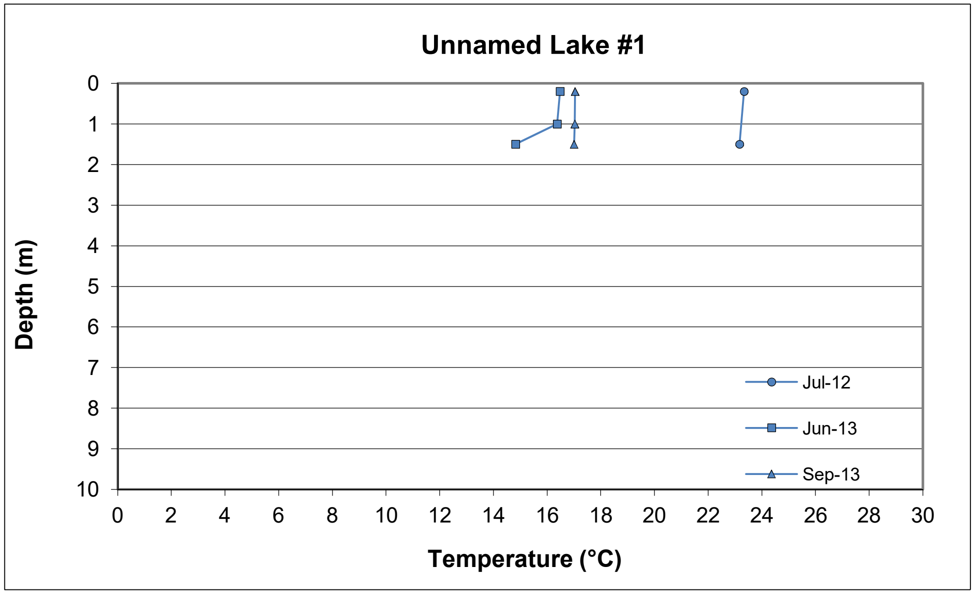
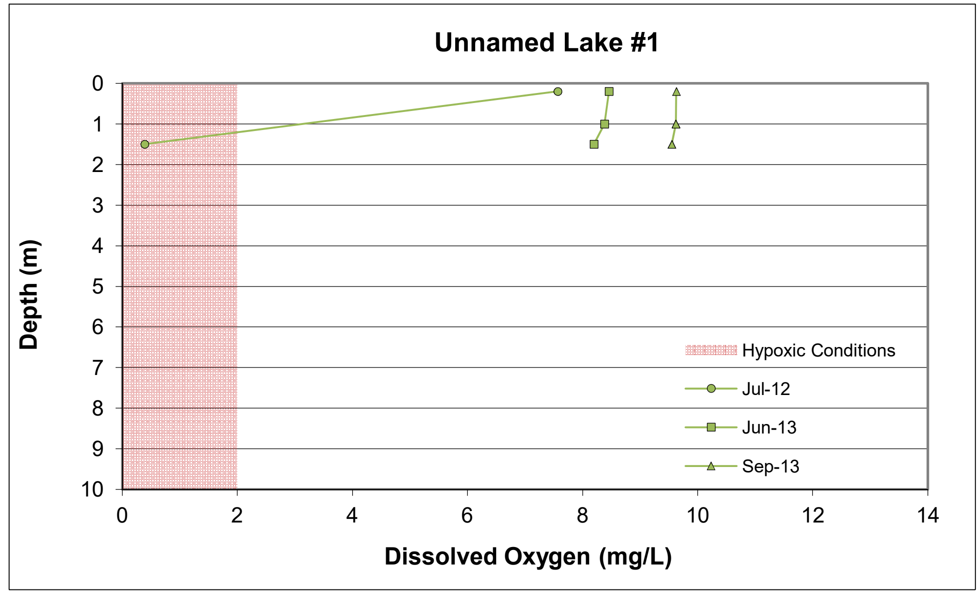
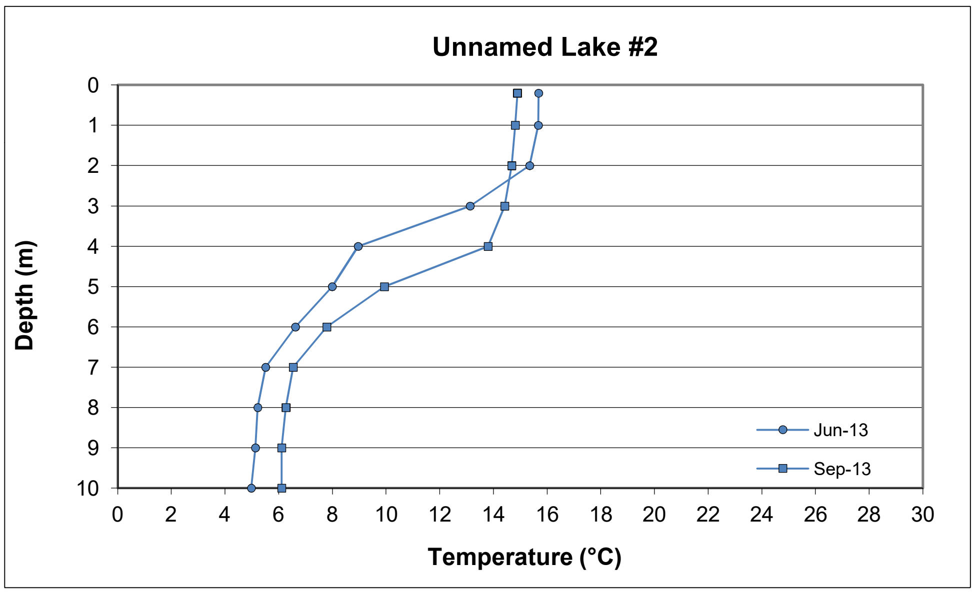
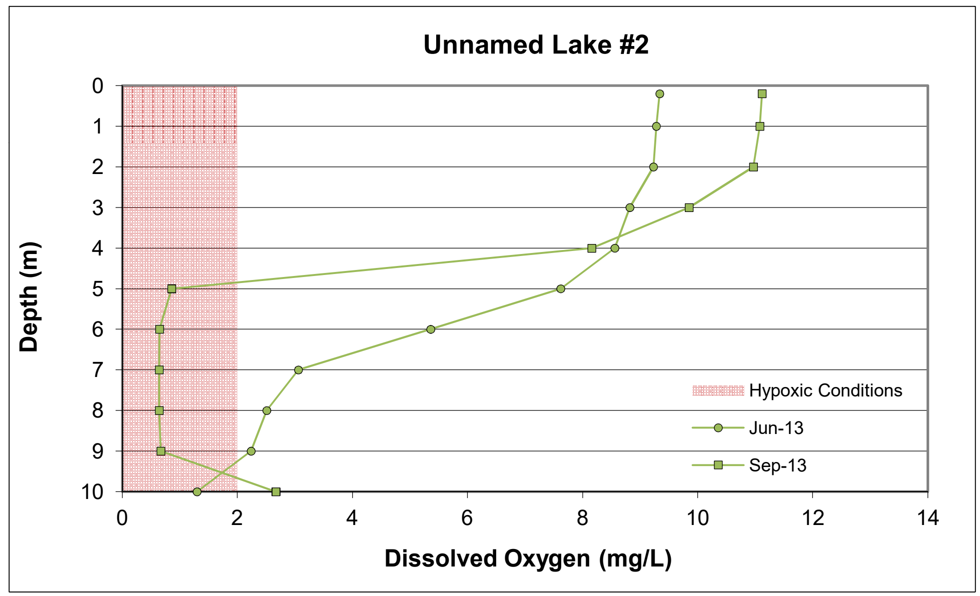
m)





n)





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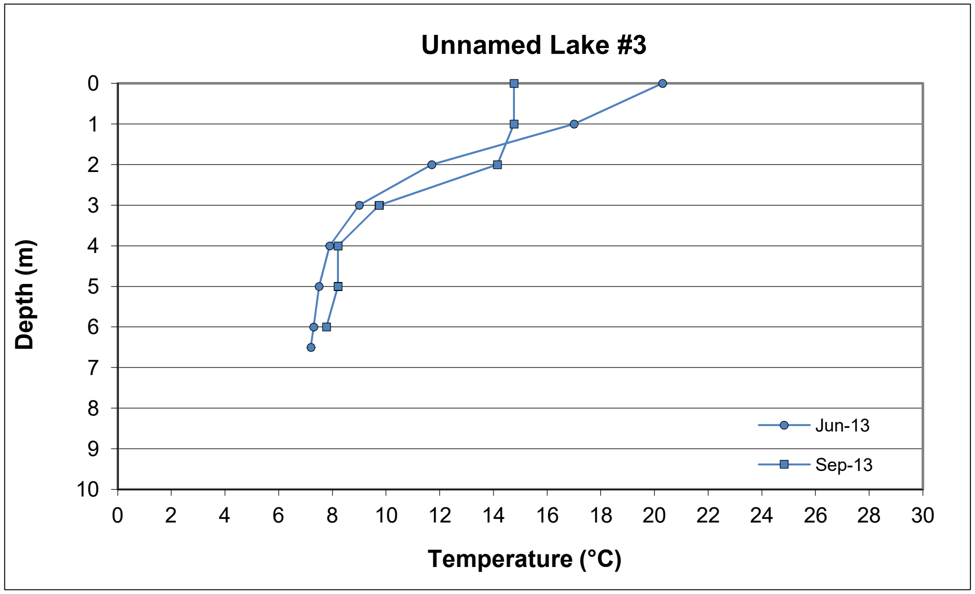
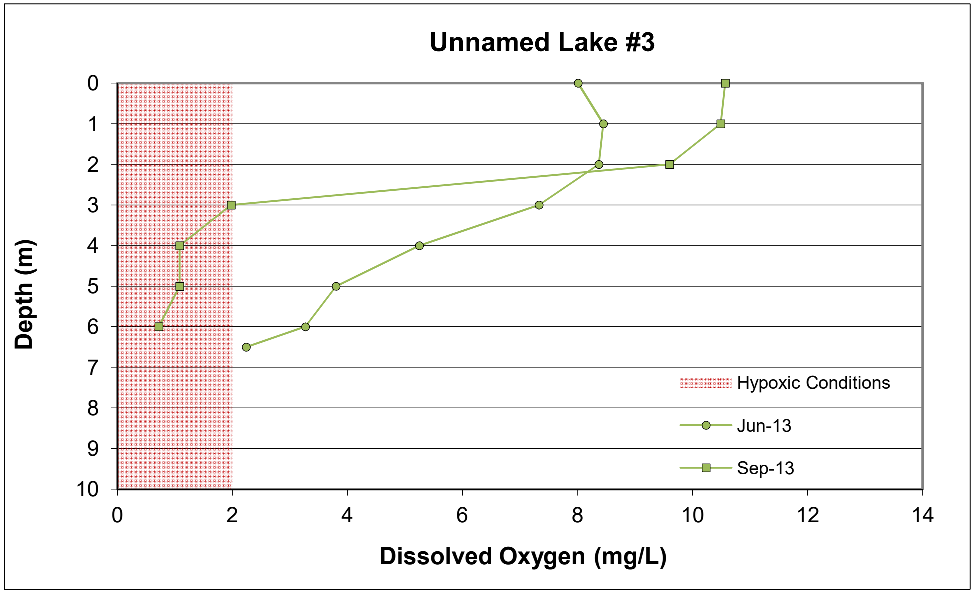
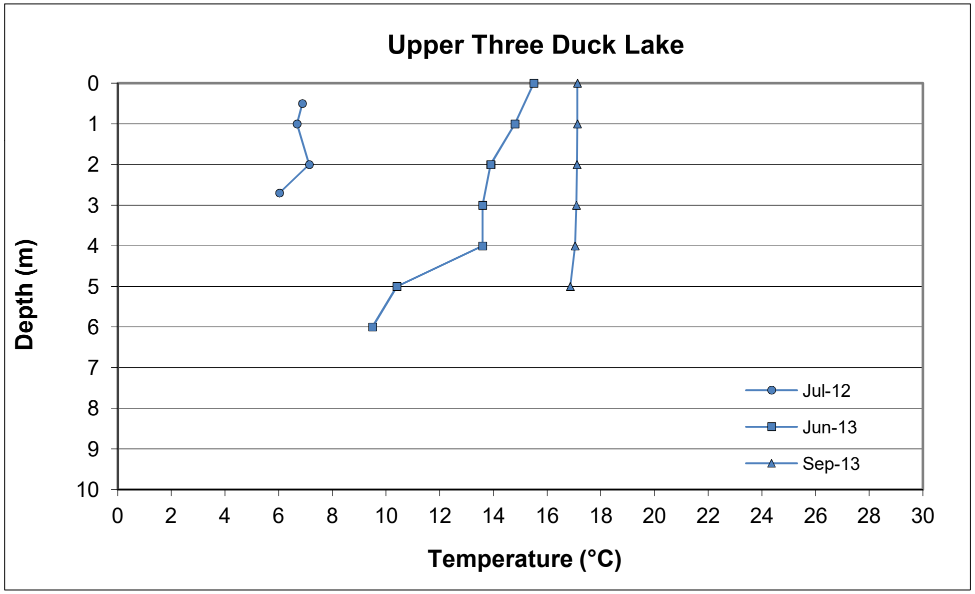
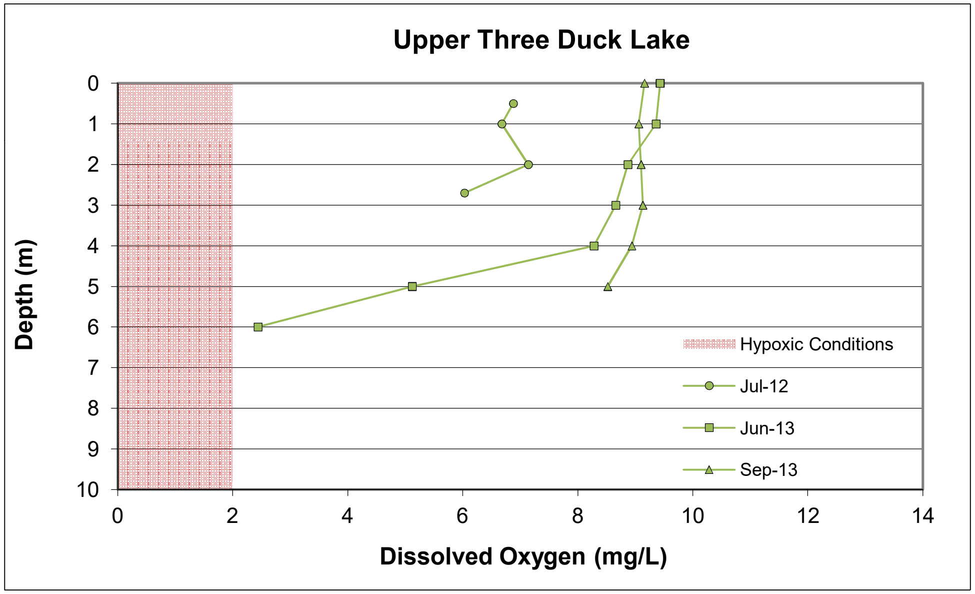
o)





p)





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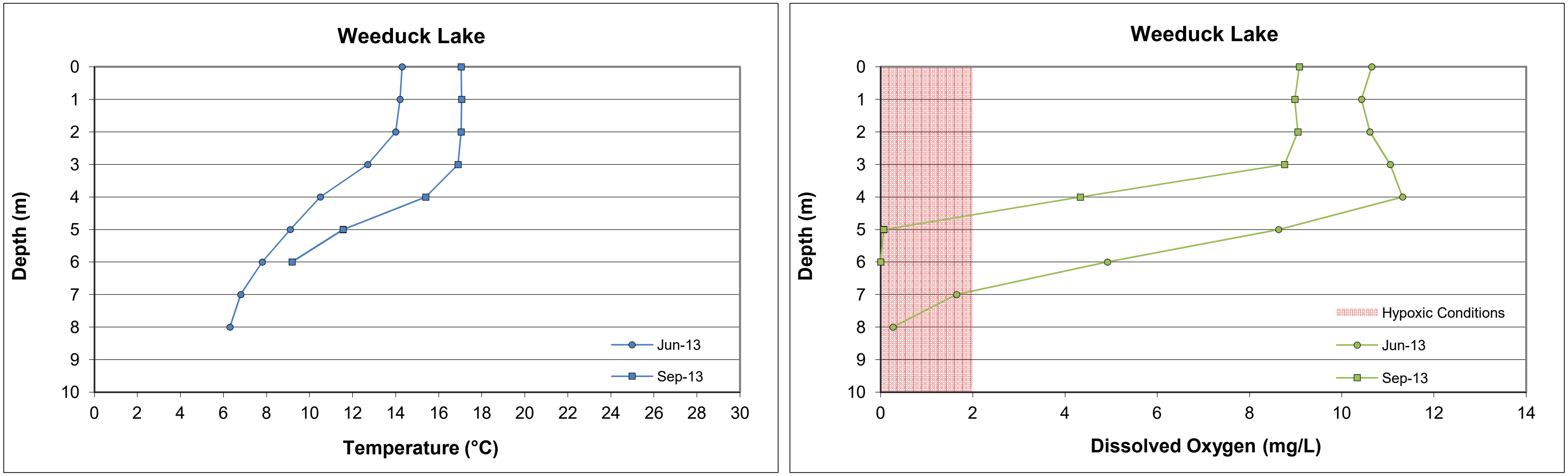
q)



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WATER LAB DATA

Maxxam

Your Project #: 2496
Site Location: COTE BASELINE
Your C.O.C. #: 43548302, 435483-02-01

Attention: Kim Connors
Minnow Environmental Inc
2 Lamb St
Georgetown, ON
L7G 3M9

Report Date: 2013/10/10

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3F6404
Received: 2013/09/17, 10:45

Sample Matrix: Water
Samples Received: 14

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Acidity as CaC03 in liquid (1,2)	14	2013/09/20	2013/10/01	SLA SOP-00100	APHA SM2310B (Mod)
Alkalinity	14	N/A	2013/09/20	CAM SOP-00448	SM 2320B
Chemical Oxygen Demand	14	N/A	2013/09/24	CAM SOP-00416	APHA 5220D
Conductivity	14	N/A	2013/09/20	CAM SOP-00414	SM 2510
Dissolved Organic Carbon (DOC)	13	N/A	2013/09/21	CAM SOP-00446	SM 5310 B
Dissolved Organic Carbon (DOC)	1	N/A	2013/09/25	CAM SOP-00446	SM 5310 B
Hardness (calculated as CaCO3)	14	N/A	2013/09/23	CAM SOP 00102	SM 2340 B
Ammonia-N (low level)	14	N/A	2013/09/24	CAM SOP-00441	US GS I-2522-90
pH	14	N/A	2013/09/20	CAM SOP-00413	SM 4500H+ B
Total Kjeldahl Nitrogen in Water	14	2013/09/24	2013/09/26	CAM SOP-00454	EPA 351.2 Rev 2
Total Organic Carbon (TOC)	12	N/A	2013/09/21	CAM SOP-00446	SM 5310B
Total Organic Carbon (TOC)	2	N/A	2013/09/25	CAM SOP-00446	SM 5310B
Total Phosphorus (Colourimetric)	14	2013/09/24	2013/09/25	CAM SOP-00407	APHA 4500 P,B,F
Low Level Total Suspended Solids	14	N/A	2013/09/20	CAM SOP-00428	SM 2540D
Turbidity	14	N/A	2013/09/21	CAM SOP-00417	APHA 2130B

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

(1) This test was performed by Maxxam Sladeview Petrochemical
(2) Sample(s) analyzed using methodologies that have not been subjected to Maxxam's standard validation process for the submitted matrix and is not an Accredited method. Analysis performed with client consent, however results should be viewed with discretion

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Jolanta Goralczyk, Project Manager
Email: JGoralczyk@maxxam.ca
Phone# (905) 817-5751

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

Maxxam Job #: B3F6404
Report Date: 2013/10/10

Minnow Environmental Inc
Client Project #: 2496
Site Location: COTE BASELINE

RESULTS OF ANALYSES OF WATER

Maxxam ID			TC1482	TC1483	TC1483		TC1484	TC1485		
Sampling Date			2013/09/15 09:15	2013/09/15	2013/09/15		2013/09/13	2013/09/14		
	Units	**Criteria A**	**UNL3**	**ERRC**	**ERRC Lab-Dup**	**QC Batch**	**MTDL**	**BAGC**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L		16	20		3355242	19	22	1.0	3355242
Inorganics										
Acidity as CaC03	mg/L		ND	ND		3357333	ND	ND	10	3357333
Total Ammonia-N	mg/L	**0.02**	0.01	ND		3358880	**0.02**	ND	0.01	3358880
Total Chemical Oxygen Demand (COD)	mg/L	**3**	**62**	**37**	**38**	3358841	**32**	**58**	4.0	3358841
Conductivity	umho/cm		31	41		3356483	40	43	1.0	3356483
Total Kjeldahl Nitrogen (TKN)	mg/L	**0.05**	**0.76**	**0.46**		3361167	**0.51**	**0.81**	0.10	3361167
Dissolved Organic Carbon	mg/L	**0.1**	**9.8**	**14**		3356885	**12**	**19**	0.2	3356885
Total Organic Carbon (TOC)	mg/L	**0.1**	**21**	**14**		3358235	**12**	**20**	0.20	3358235
pH	pH		6.64	6.80		3356484	7.09	6.92		3356484
Total Phosphorus	mg/L		0.019	0.006		3360818	0.014	0.010	0.002	3360818
Total Suspended Solids	mg/L	**10**	1	ND		3356416	2	1	1	3356080
Turbidity	NTU		1.2	0.7		3356364	2.0	1.0	0.2	3356364
Alkalinity (Total as CaCO3)	mg/L	**1**	**7.2**	**14**		3356482	**13**	**15**	1.0	3356482

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria A: Minnow Water Criteria

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B3F6404
Report Date: 2013/10/10

Minnow Environmental Inc
Client Project #: 2496
Site Location: COTE BASELINE

RESULTS OF ANALYSES OF WATER

Maxxam ID			TC1486		TC1487	TC1487	TC1488	TC1489		
Sampling Date			2013/09/13		2013/09/15	2013/09/15	2013/09/13	2013/09/13		
	Units	**Criteria A**	**CHEL**	**QC Batch**	**CLAL**	**CLAL Lab-Dup**	**SCHL**	**LTDL**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L		20	3355242	18		25	17	1.0	3355242
Inorganics										
Acidity as CaC03	mg/L		ND	3357333	ND		ND	ND	10	3357333
Total Ammonia-N	mg/L	**0.02**	ND	3358880	ND		ND	0.01	0.01	3358880
Total Chemical Oxygen Demand (COD)	mg/L	**3**	**39**	3358841	**26**		**32**	**40**	4.0	3358841
Conductivity	umho/cm		39	3356483	41		54	38	1.0	3356483
Total Kjeldahl Nitrogen (TKN)	mg/L	**0.05**	**0.65**	3361167	**0.39**	**0.40**	**0.98**	**0.47**	0.10	3361167
Dissolved Organic Carbon	mg/L	**0.1**	**13**	3356885	**8.6**		**9.0**	**13**	0.2	3356885
Total Organic Carbon (TOC)	mg/L	**0.1**	**13**	3361149	**7.7**		**9.7**	**13**	0.20	3358235
pH	pH		7.11	3356484	7.15		7.35	7.07		3356484
Total Phosphorus	mg/L		0.005	3360818	0.006		0.008	0.012	0.002	3360818
Total Suspended Solids	mg/L	**10**	3	3356080	1		1	1	1	3356416
Turbidity	NTU		1.8	3356364	1.0		1.2	1.4	0.2	3356364
Alkalinity (Total as CaCO3)	mg/L	**1**	**12**	3356482	**13**		**23**	**12**	1.0	3356482

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria A: Minnow Water Criteria

Maxxam Job #: B3F6404
Report Date: 2013/10/10

Minnow Environmental Inc
Client Project #: 2496
Site Location: COTE BASELINE

RESULTS OF ANALYSES OF WATER

Maxxam ID			TC1489	TC1490	TC1491	TC1491	TC1492	TC1492		
Sampling Date			2013/09/13	2013/09/12	2013/09/12	2013/09/12	2013/09/12	2013/09/12		
	Units	**Criteria A**	**LTDL Lab-Dup**	**UTDL**	**BAGLM**	**BAGLM Lab-Dup**	**WEEL**	**WEEL Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L			21	24		16		1.0	3355242
Inorganics										
Acidity as CaC03	mg/L			ND	ND	ND	ND		10	3357333
Total Ammonia-N	mg/L	**0.02**	ND	ND	ND		ND		0.01	3358880
Total Chemical Oxygen Demand (COD)	mg/L	**3**		**31**	**24**		**25**		4.0	3358841
Conductivity	umho/cm			41	53		36	36	1.0	3356483
Total Kjeldahl Nitrogen (TKN)	mg/L	**0.05**		**0.50**	**0.46**		**0.58**		0.10	3361167
Dissolved Organic Carbon	mg/L	**0.1**		**13**	**9.9**		**9.6**		0.2	3356885
Total Organic Carbon (TOC)	mg/L	**0.1**		**12**	**9.4**		**8.7**		0.20	3358235
pH	pH			7.13	7.35		7.16	7.14		3356484
Total Phosphorus	mg/L			0.013	0.005	0.005	0.006		0.002	3360818
Total Suspended Solids	mg/L	**10**		ND	2		2		1	3356416
Turbidity	NTU			1.5	1.6		2.2	2.1	0.2	3356364
Alkalinity (Total as CaCO3)	mg/L	**1**		**12**	**22**		**14**	**13**	1.0	3356482

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria A: Minnow Water Criteria

Maxxam Job #: B3F6404
Report Date: 2013/10/10

Minnow Environmental Inc
Client Project #: 2496
Site Location: COTE BASELINE

RESULTS OF ANALYSES OF WATER

Maxxam ID			TC1493	TC1494	TC1494		TC1495		
Sampling Date			2013/09/12	2013/09/12	2013/09/12		2013/09/12		
	Units	**Criteria A**	**WEELZ**	**UNL1**	**UNL1 Lab-Dup**	**QC Batch**	**BAGLS**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L		17	18		3355242	24	1.0	3355242
Inorganics									
Acidity as CaC03	mg/L		ND	ND		3357333	ND	10	3357333
Total Ammonia-N	mg/L	**0.02**	ND	ND		3358880	ND	0.01	3358880
Total Chemical Oxygen Demand (COD)	mg/L	**3**	**23**	**37**		3358841	**24**	4.0	3358841
Conductivity	umho/cm		36	39		3356483	52	1.0	3356483
Total Kjeldahl Nitrogen (TKN)	mg/L	**0.05**	**0.53**	**0.84**		3361167	**0.52**	0.10	3361167
Dissolved Organic Carbon	mg/L	**0.1**	**9.2**	**14**	**14**	3356885	**11**	0.2	3361498
Total Organic Carbon (TOC)	mg/L	**0.1**	**8.7**	**13**		3358235	**11**	0.20	3361149
pH	pH		7.14	7.06		3356484	7.37		3356484
Total Phosphorus	mg/L		0.008	0.009		3360818	0.013	0.002	3360818
Total Suspended Solids	mg/L	**10**	2	ND		3356416	2	1	3356416
Turbidity	NTU		1.4	1.2		3356364	1.4	0.2	3356364
Alkalinity (Total as CaCO3)	mg/L	**1**	**12**	**13**		3356482	**22**	1.0	3356482

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria A: Minnow Water Criteria

Package 1	6.3°C
Package 2	6.7°C
Package 3	6.7°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Sample TC1487-01: Total Organic Carbon < Dissolved Organic Carbon: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample TC1489-01: Total Organic Carbon < Dissolved Organic Carbon: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample TC1490-01: Total Organic Carbon < Dissolved Organic Carbon: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample TC1491-01: Total Organic Carbon < Dissolved Organic Carbon: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample TC1492-01: Total Organic Carbon < Dissolved Organic Carbon: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample TC1493-01: Total Organic Carbon < Dissolved Organic Carbon: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample TC1494-01: Total Organic Carbon < Dissolved Organic Carbon: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample TC1495-01: Total Organic Carbon < Dissolved Organic Carbon: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	**Parameter**	**Date**	**% Recovery**	**QC Limits**	**% Recovery**	**QC Limits**	**Value**	**Units**	**Value (%)**	**QC Limits**	**% Recovery**	**QC Limits**
3356080	Total Suspended Solids	2013/09/20					ND, RDL=1	mg/L	0.9	25	99	85 - 115
3356364	Turbidity	2013/09/21					0.2, RDL=0.2	NTU	6.4	20	101	85 - 115
3356416	Total Suspended Solids	2013/09/20					ND, RDL=1	mg/L	2.5	25	98	85 - 115
3356482	Alkalinity (Total as CaCO3)	2013/09/20					ND, RDL=1.0	mg/L	9.7	25	94	85 - 115
3356483	Conductivity	2013/09/20					ND, RDL=1.0	umho/cm	0	25	101	85 - 115
3356885	Dissolved Organic Carbon	2013/09/21	NC	80 - 120	96	80 - 120	ND, RDL=0.2	mg/L	0.3	20		
3357333	Acidity as CaC03	2013/10/01					ND, RDL=10	mg/L	NC	25		
3358235	Total Organic Carbon (TOC)	2013/09/21	NC (1)	80 - 120	99	80 - 120	ND, RDL=0.20	mg/L	0.5	20		
3358841	Total Chemical Oxygen Demand (COD)	2013/09/24	99	75 - 125	101	75 - 125	ND, RDL=4.0	mg/L	0.7	25		
3358880	Total Ammonia-N	2013/09/24	93	80 - 120	93	80 - 120	ND, RDL=0.01	mg/L	NC	20		
3360818	Total Phosphorus	2013/09/25	103	80 - 120	100	80 - 120	ND, RDL=0.002	mg/L	NC	20	102	80 - 120
3361149	Total Organic Carbon (TOC)	2013/09/25	NC (1)	80 - 120	100	80 - 120	ND, RDL=0.20	mg/L	0.3	20		
3361167	Total Kjeldahl Nitrogen (TKN)	2013/09/26	98	80 - 120	92	80 - 120	ND, RDL=0.10	mg/L	NC	20	106	80 - 120
3361498	Dissolved Organic Carbon	2013/09/25	103	80 - 120	103	80 - 120	ND, RDL=0.2	mg/L	1.1	20		

N/A = Not Applicable
RDL = Reportable Detection Limit
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) - The recovery in the matrix spike was not calculated (NC). Spiked concentration was less than 2x that native to the sample.

Validation Signature Page

Maxxam Job #: B3F6404

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere, Scientific Services

Grace Sison, B.Sc., C.Chem, Senior Project Manager - Petroleum Division

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam IMMEDIATE TEST

Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5779 www.maxxam.ca

CHAIN OF C[USTODY RECORD]

17-Sep-13 10:45
Jolanta Goralczyk
B3F6404
FW ENV-789

Page 1 of 2

INVOICE INFORMATION:

Company Name:	#767 Minnow Environmental Inc
Contact Name:	Deb McMillan
Address:	2 Lamb St Georgetown ON L7G 3M9
Phone:	28 Fax: (905)873-6370
Email:	dmcmillan@minnow-environmental.com

REPORT INFORMATION (if differs from invoice):

Company Name:	
Contact Name:	Kim Connors
Address:	
Phone:	28 Fax:
Email:	kconnors@minnow-environmental.com

PROJECT INFORMATION

Quotation #:	B32501
P.O. #:	
Project #:	2496 Cote Baseline
Project Name:	
Site #:	
Sampled By:	

[Laboratory] Use Only:

BOTTLE ORDER #: 435483

CHAIN OF CUSTODY #: C#435483-02-01

PROJECT MANAGER: Jolanta Goralczyk

Regulation 153 (2011)

☐ Table 1 ☐ Res/Park ☐ Medium/Fine
☐ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table ___ ☐ For RSC

Other Regulations

☐ CCME ☐ Sanitary Sewer Bylaw
☐ Reg. 558 ☐ Storm Sewer Bylaw
☐ MISA Municipality ________
☐ PWQO
☐ Other ________

SPECIAL INSTRUCTIONS

Include Criteria on Certificate of Analysis (Y/N)? ___

Note: For MOE regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y/N)	Metals Field Filtered ? (Y/N)	Alkalinity, acidity	Ammonia-N (low level)	Dissolved Organic Carbon (DOC)	Hardness (calculated as CaCO3)	Low Level Total Suspended Solids	Total Cyanide & Free Cyanide	Total Metals-low level-sub to BC	Total Phosphorus (Colourimetric)	Chemical Oxygen Demand	Chloride, Conductivity, Turbidity	# of Bottles	Comments
1		UNL3	Sept15	9:15	water			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	~~8~~7	
2		ERRC	" "		" "			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	7	8 bottles in total
3		MTDL	Sept13		" "			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	7	see Pg 2
4		BAGC	Sept14		water			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	7	- MDL's as per
5		CHEL	Sept13		" "			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	7	quote
6		CLAL	Sept15		" "			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	7	
7		SCHL	Sept13		" "			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	7	
8		LTDL	Sept13		" "			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	7	
9		UTDL	Sept12		" "			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	7	
10		BAGLM	Sept12		" "			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	7	

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ________ Time Required: ________ ☐
Rush Confirmation Number: ________ (call lab for #)

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
C Russel / C Russel	Sept 16/13		H.S Grewal HARMAN GREWAL	2013/09/17	10:45	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	5/7/7°C	Present	✓✓✓	
		Intact	✓✓✓	

White: Maxxam Yellow: Client

8/8/4°C 7/7/6°C

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

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CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:	
Company Name:	#767 Minnow Environmental Inc	Company Name:		Quotation #:	B32501
Contact Name:	Deb McMillan	Contact Name:	Kim Connors	P.O. #:	
Address:	2 Lamb St, Georgetown ON L7G 3M9	Address:		Project #:	2496 Cote Baseline
				Project Name:	
Phone:	28 Fax: (905)873-6370	Phone:	28 Fax:	Site #:	
Email:	dmcmillan@minnow-environmental.com	Email:	kconnors@minnow-environmental.com	Sampled By:	

Laboratory Use Only:

MAXXAM JOB #:	BOTTLE ORDER #:
	435483
CHAIN OF CUSTODY #:	**PROJECT MANAGER:**
C#435483-02-02	Jolanta Goralczyk

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ Table ___ ☐ For RSC

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg. 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___

SPECIAL INSTRUCTIONS

Include Criteria on Certificate of Analysis (Y/N)? ___

Note: For MOE regulated drinking water samples - please use the Drinking Water Chain of Custody Form

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Job Specific Rush TAT (if applies to entire submission) ☐
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (Please be specific):

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Nitrate, Nitrite, pH, Fluoride	Phosphate, TKN, TOC									# of Bottles	Comments
1		UNL3	Sept15		water			✓	✓									1	
2		ERRC	" "		" "			✓	✓									1	8 bottles/set see Pg
3		MTDL	Sept13		" "			✓	✓									1	
4		BAGC	Sept14		" "			✓	✓									1	
5		CHEL	Sept13		" "			✓	✓									1	
6		CLAL	Sept15		" "			✓	✓									1	
7		SCHL	Sept		" "			✓	✓									1	
8		LTDL	Sept13		" "			✓	✓									1	
9		UTDL	Sept12		" "			✓	✓									1	
10		BAGLM	Sept12		" "			✓										1	

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
C Russel	13/09/16		H.S Grewal HARMAN GREWAL	2013/09/17	10:45	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	5/7/7°C	Present	✓✓	
		Intact	✓✓✓	

White: Maxxam Yellow: Client

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8/8/4°C 7/7/6°C

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Company Name:	#767 Minnow Environmental Inc	Company Name:		Quotation #:	B32501
Contact Name:	Deb McMillan	Contact Name:	Kim Connors	P.O. #:	
Address:	2 Lamb St	Address:		Project #:	2496 Cote Baseline
	Georgetown ON L7G 3M9			Project Name:	
Phone:	28 Fax: (905)873-6370	Phone:	28 Fax:	Site #:	
Email:	dmcmillan@minnow-environmental.com	Email:	kconnors@minnow-environmental.com	Sampled By:	

Laboratory Use Only:

MAXXAM JOB #:	BOTTLE ORDER #:
	435483
CHAIN OF CUSTODY #:	PROJECT MANAGER:
C#435483-01-01	Jolanta Goralczyk

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ Table ___ ☐ For RSC

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Date Required: ____ Time Required: ____ ☐
Rush Confirmation Number: ____ (call lab for #)

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	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y/N)	Metals Field Filtered ? (Y/N)	Alkalinity, acidity	Ammonia-N (low level)	Dissolved Organic Carbon (DOC)	Hardness (calculated as CaCO3)	Low Level Total Suspended Solids	Total Cyanide & Free Cyanide	Total Metals-low level-sub to BC	Total Phosphorus (Colourimetric)	Chemical Oxygen Demand	Chloride, Conductivity, Turbidity	# of Bottles	Comments
1		WEEL	Sep12		water			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	7	8 bottles/set
2		WEEL2	Sep12		" "			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	7	See pg 4
3		UNL1	Sep12		" "			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	7	
4		BAGLS	Sep12		" "			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	7	
5																			
6																			
7																			
8																			
9																			
10																			

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
Russel / C Russel	13/09/16		H.S Grewal HARMAN GREWAL	2013/09/17	10:45	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	5/7/7°C	Present	✓✓✓	
		Intact	✓✓✓	

White: Maxxam Yellow: Client

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Maxxam Analytics International Corporation o/a Maxxam Analytics

8/8/4°C 7/7/6°C

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Contact Name:	Deb McMillan	Contact Name:	Kim Connors	P.O. #:	
Address:	2 Lamb St Georgetown ON L7G 3M9	Address:		Project #:	2496 Cote Baseline
				Project Name:	
Phone:	28 Fax: (905)873-6370	Phone:	28 Fax:	Site #:	
Email:	dmcmillan@minnow-environmental.com	Email:	kconnors@minnow-environmental.com	Sampled By:	

Laboratory Use Only:

MAXXAM JOB #:	BOTTLE ORDER #:
	435483
CHAIN OF CUSTODY #:	PROJECT MANAGER:
C#435483-01-02	Jolanta Goralczyk

Regulation 153 (2011): Table 1, Table 2, Table 3, Table ___; Res/Park, Ind/Comm, Agri/Other; Medium/Fine, Coarse; For RSC

Other Regulations: CCME, Reg. 558, MISA, PWQO, Other ______; Sanitary Sewer Bylaw, Storm Sewer Bylaw, Municipality ______

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Date Required: ______ Time Required: ______
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ANALYSIS REQUESTED (Please be specific):

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Nitrate, Nitrite, pH, Fluoride	Phosphate, TKN, TOC									# of Bottles	Comments
1		WEEL	Sept12		water			✓	✓									1	8 bottles in set
2		WEEL Z	Sept12		water			✓	✓									1	see pg 3
3		UNL1	Sept12		water			✓	✓									1	
4		BAGLS	Sept12		water			✓	✓									1	
5																			
6																			
7																			
8																			
9																			
10																			

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
C Russel / C Russel	13/09/16		H.S Grewal HARMAN GREWAL	2013/09/17	10:45	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	5/7/7°C	Present	✓✓✓	
		Intact	✓✓✓	

White: Maxxam Yellow: Client

8/8/4°C 7/7/6°C

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Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam

Success Through Science®

Your Project #: MB3F6404
Site Location: 2496 COTE BASELINE
Your C.O.C. #: 08378819

Attention: SUB CONTRACTOR
MAXXAM ANALYTICS
CAMPOBELLO
6740 CAMPOBELLO ROAD
MISSISSAUGA, ON
CANADA L5N 2L8

Report Date: 2013/10/10
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B386032
Received: 2013/09/21, 11:10

Sample Matrix: Water
Samples Received: 14

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Chloride by Automated Colourimetry	14	N/A	2013/09/24	BBY6SOP-00011	SM-4500-Cl-
Cyanide SAD (strong acid dissociable)	14	N/A	2013/09/24	BBY6SOP-00004	SM-4500CN I
Cyanide WAD (weak acid dissociable)	14	N/A	2013/09/24	BBY6SOP-00005	SM-4500CN I
Fluoride	14	N/A	2013/10/10	BBY6SOP-00012	SM - 4500 F C
Hardness Total (calculated as CaCO3)	13	N/A	2013/09/23	BBY7SOP-00002	EPA 6020A
Hardness Total (calculated as CaCO3)	1	N/A	2013/09/24	BBY7SOP-00002	EPA 6020A
Na, K, Ca, Mg, S by CRC ICPMS (total)	13	N/A	2013/09/23	BBY7SOP-00002	EPA 6020A
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	N/A	2013/09/24	BBY7SOP-00002	EPA 6020A
Elements by ICPMS Low Level (total)	14	N/A	2013/09/23	BBY7SOP-00002	EPA 6020A
Nitrate + Nitrite (N)	14	N/A	2013/09/21	BBY6SOP-00010	SM 4500NO3-I
Nitrite (N) by CFA	14	N/A	2013/09/21	BBY6SOP-00010	EPA 353.2
Nitrogen - Nitrate (as N)	14	N/A	2013/09/24	BBY6SOP-00010	SM 4500NO3-I
Orthophosphate by Konelab	14	N/A	2013/09/23	BBY6SOP-00013	SM 4500 P E
Sulphate by Automated Colourimetry	13	N/A	2013/09/24	BBY6SOP-00017	SM4500-SO42- E
Sulphate by Automated Colourimetry	1	N/A	2013/09/25	BBY6SOP-00017	SM4500-SO42- E

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Samantha Fregien, Project Manager
Email: SFregien@maxxam.ca
Phone# (604) 734 7276

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		HO9785			HO9786	HO9786		
Sampling Date		2013/09/15 09:15			2013/09/15	2013/09/15		
COC Number		08378819			08378819	08378819		
	UNITS	**UNL3 (TC1482)**	**RDL**	**QC Batch**	**ERRC (TC1483)**	**ERRC (TC1483) Lab-Dup**	**RDL**	**QC Batch**
ANIONS								
Nitrite (N)	mg/L	<0.050 (1)	0.050	7184457	<0.0050 (2)	N/A	0.0050	7184457
Calculated Parameters								
Nitrate (N)	mg/L	<0.20	0.20	7184034	<0.020	N/A	0.020	7184034
Misc. Inorganics								
Strong Acid Dissoc. Cyanide (CN)	mg/L	0.00070	0.00050	7188522	0.00055	N/A	0.00050	7188522
Weak Acid Dissoc. Cyanide (CN)	mg/L	<0.00050	0.00050	7188529	<0.00050	N/A	0.00050	7188529
Fluoride (F)	mg/L	0.029	0.010	7219627	0.029	N/A	0.010	7219627
Anions								
Dissolved Sulphate (SO4)	mg/L	<0.50	0.50	7189256	<0.50	<0.50	0.50	7191412
Dissolved Chloride (Cl)	mg/L	1.5	0.50	7189230	1.1	1.1	0.50	7189550
Nutrients								
Orthophosphate (P)	mg/L	<0.0050 (2)	0.0050	7187252	<0.0050 (2)	N/A	0.0050	7187252
Nitrate plus Nitrite (N)	mg/L	<0.20 (1)	0.20	7184456	<0.020 (2)	N/A	0.020	7184456

N/A = Not Applicable
RDL = Reportable Detection Limit
(1) RDL raised due to sample matrix interference. Sample arrived to laboratory past recommended hold time.
(2) Sample arrived to laboratory past recommended hold time.

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		HO9787		HO9788		HO9789	HO9790		
Sampling Date		2013/09/13		2013/09/14		2013/09/13	2013/09/15		
COC Number		08378819		08378819		08378819	08378819		
	UNITS	**MTDL (TC1484)**	**RDL**	**BAGC (TC1485)**	**RDL**	**CHEL (TC1486)**	**CLAL (TC1487)**	**RDL**	**QC Batch**
ANIONS									
Nitrite (N)	mg/L	<0.0050 (1)	0.0050	<0.050 (2)	0.050	<0.0050 (1)	<0.0050 (1)	0.0050	7184457
Calculated Parameters									
Nitrate (N)	mg/L	<0.020	0.020	<0.20	0.20	<0.020	0.056	0.020	7184034
Misc. Inorganics									
Strong Acid Dissoc. Cyanide (CN)	mg/L	<0.00050	0.00050	0.00073	0.00050	<0.00050	<0.00050	0.00050	7188522
Weak Acid Dissoc. Cyanide (CN)	mg/L	<0.00050	0.00050	0.00073	0.00050	0.00076	0.00060	0.00050	7188529
Fluoride (F)	mg/L	0.030	0.010	0.033	0.010	0.032	0.026	0.010	7219627
Anions									
Dissolved Sulphate (SO4)	mg/L	<0.50	0.50	<0.50	0.50	<0.50	2.18	0.50	7189554
Dissolved Chloride (Cl)	mg/L	1.1	0.50	1.5	0.50	0.72	0.84	0.50	7189550
Nutrients									
Orthophosphate (P)	mg/L	0.0055 (1)	0.0050	<0.0050 (1)	0.0050	<0.0050 (1)	<0.0050 (1)	0.0050	7187252
Nitrate plus Nitrite (N)	mg/L	<0.020 (1)	0.020	<0.20 (2)	0.20	<0.020 (1)	0.056 (1)	0.020	7184456

RDL = Reportable Detection Limit
(1) Sample arrived to laboratory past recommended hold time.
(2) RDL raised due to sample matrix interference. Sample arrived to laboratory past recommended hold time.

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		HO9790	HO9791	HO9792	HO9793	HO9794		
Sampling Date		2013/09/15	2013/09/13	2013/09/13	2013/09/12	2013/09/12		
COC Number		08378819	08378819	08378819	08378819	08378819		
	UNITS	**CLAL (TC1487) Lab-Dup**	**SCHL (TC1488)**	**LTDL (TC1489)**	**UTDL (TC1490)**	**BAGLM (TC1491)**	**RDL**	**QC Batch**
ANIONS								
Nitrite (N)	mg/L	<0.0050	<0.0050 (1)	<0.0050 (1)	<0.0050 (1)	<0.0050 (1)	0.0050	7184457
Calculated Parameters								
Nitrate (N)	mg/L	N/A	<0.020	<0.020	<0.020	<0.020	0.020	7184034
Misc. Inorganics								
Strong Acid Dissoc. Cyanide (CN)	mg/L	N/A	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7188522
Weak Acid Dissoc. Cyanide (CN)	mg/L	N/A	<0.00050	0.00053	<0.00050	0.00050	0.00050	7188529
Fluoride (F)	mg/L	N/A	0.022	0.030	0.031	0.023	0.010	7219627
Anions								
Dissolved Sulphate (SO4)	mg/L	N/A	1.58	0.55	<0.50	1.79	0.50	7189554
Dissolved Chloride (Cl)	mg/L	N/A	<0.50	1.2	1.0	0.93	0.50	7189550
Nutrients								
Orthophosphate (P)	mg/L	N/A	<0.0050 (1)	<0.0050 (1)	<0.0050 (1)	<0.0050 (1)	0.0050	7187252
Nitrate plus Nitrite (N)	mg/L	0.056	<0.020 (1)	<0.020 (1)	<0.020 (1)	<0.020 (1)	0.020	7184456

N/A = Not Applicable
RDL = Reportable Detection Limit
(1) Sample arrived to laboratory past recommended hold time.

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		HO9795	HO9796	HO9797	HO9798	HO9798		
Sampling Date		2013/09/12	2013/09/12	2013/09/12	2013/09/12	2013/09/12		
COC Number		08378819	08378819	08378819	08378819	08378819		
	UNITS	**WEEL (TC1492)**	**WEELZ (TC1493)**	**UNL1 (TC1494)**	**BAGLS (TC1495)**	**BAGLS (TC1495) Lab-Dup**	**RDL**	**QC Batch**
ANIONS								
Nitrite (N)	mg/L	<0.0050 (1)	<0.0050 (1)	<0.0050 (1)	<0.0050 (1)	<0.0050	0.0050	7184457
Calculated Parameters								
Nitrate (N)	mg/L	<0.020	<0.020	<0.020	<0.020	N/A	0.020	7184034
Misc. Inorganics								
Strong Acid Dissoc. Cyanide (CN)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7188522
Weak Acid Dissoc. Cyanide (CN)	mg/L	<0.00050	0.00053	0.00051	0.00078	0.00113	0.00050	7188529
Fluoride (F)	mg/L	0.029	0.028	0.043	0.023	N/A	0.010	7219627
Anions								
Dissolved Sulphate (SO4)	mg/L	0.57	0.57	<0.50	1.11	N/A	0.50	7189554
Dissolved Chloride (Cl)	mg/L	0.62	0.77	1.1	0.95	N/A	0.50	7189550
Nutrients								
Orthophosphate (P)	mg/L	<0.0050 (1)	<0.0050 (1)	<0.0050 (1)	<0.0050 (1)	N/A	0.0050	7187252
Nitrate plus Nitrite (N)	mg/L	<0.020 (1)	<0.020 (1)	<0.020 (1)	<0.020 (1)	<0.020	0.020	7184456

N/A = Not Applicable
RDL = Reportable Detection Limit
(1) Sample arrived to laboratory past recommended hold time.

LOW LEVEL TOTAL METALS IN WATER (WATER)

Maxxam ID		HO9785	HO9786	HO9787	HO9788	HO9789		
Sampling Date		2013/09/15 09:15	2013/09/15	2013/09/13	2013/09/14	2013/09/13		
COC Number		08378819	08378819	08378819	08378819	08378819		
	UNITS	**UNL3 (TC1482)**	**ERRC (TC1483)**	**MTDL (TC1484)**	**BAGC (TC1485)**	**CHEL (TC1486)**	**RDL**	**QC Batch**
Calculated Parameters								
Total Hardness (CaCO3)	mg/L	15.7	20.3	18.7	22.8	18.8	0.50	7184032
Total Metals by ICPMS								
Total Aluminum (Al)	ug/L	132	67.7	38.7	104	73.3	0.50	7185974
Total Antimony (Sb)	ug/L	0.029	0.027	0.027	0.035	0.027	0.020	7185974
Total Arsenic (As)	ug/L	0.562	0.471	0.450	0.650	0.422	0.020	7185974
Total Barium (Ba)	ug/L	5.06	3.24	4.21	4.91	5.00	0.020	7185974
Total Beryllium (Be)	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7185974
Total Bismuth (Bi)	ug/L	<0.0050	<0.0050	<0.0050	0.0080	<0.0050	0.0050	7185974
Total Boron (B)	ug/L	<50	<50	<50	<50	<50	50	7185974
Total Cadmium (Cd)	ug/L	0.0140	0.0080	0.0060	0.0120	0.0100	0.0050	7185974
Total Chromium (Cr)	ug/L	0.39	0.30	0.26	0.35	0.30	0.10	7185974
Total Cobalt (Co)	ug/L	0.151	0.0560	0.0420	0.0640	0.0480	0.0050	7185974
Total Copper (Cu)	ug/L	0.446	0.446	0.879	0.518	0.648	0.050	7185974
Total Iron (Fe)	ug/L	364	160	313	276	208	1.0	7185974
Total Lead (Pb)	ug/L	0.253	0.0890	0.0960	0.197	0.203	0.0050	7185974
Total Lithium (Li)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7185974
Total Manganese (Mn)	ug/L	33.9	10.1	41.2	17.6	19.5	0.050	7185974
Total Molybdenum (Mo)	ug/L	<0.050	0.097	0.110	<0.050	0.071	0.050	7185974
Total Nickel (Ni)	ug/L	0.450	0.255	0.296	0.483	0.401	0.020	7185974
Total Selenium (Se)	ug/L	0.109	0.061	0.072	0.124	0.116	0.040	7185974
Total Silicon (Si)	ug/L	2040	1680	1370	2150	1870	100	7185974
Total Silver (Ag)	ug/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7185974
Total Strontium (Sr)	ug/L	11.2	11.3	13.2	18.4	13.3	0.050	7185974
Total Thallium (Tl)	ug/L	0.0040	0.0030	0.0030	0.0030	0.0030	0.0020	7185974
Total Tin (Sn)	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7185974
Total Titanium (Ti)	ug/L	1.43	<0.50	<0.50	1.34	1.18	0.50	7185974
Total Uranium (U)	ug/L	0.0160	0.0150	0.0160	0.0180	0.0140	0.0020	7185974
Total Vanadium (V)	ug/L	0.33	<0.20	0.25	0.23	0.38	0.20	7185974
Total Zinc (Zn)	ug/L	2.46	1.39	0.83	2.42	1.52	0.10	7185974
Total Zirconium (Zr)	ug/L	0.11	<0.10	<0.10	<0.10	0.11	0.10	7185974
Total Calcium (Ca)	mg/L	4.65	6.38	5.69	7.01	5.87	0.050	7184372
Total Magnesium (Mg)	mg/L	0.990	1.05	1.08	1.29	1.01	0.050	7184372

RDL = Reportable Detection Limit

LOW LEVEL TOTAL METALS IN WATER (WATER)

Maxxam ID		HO9785	HO9786	HO9787	HO9788	HO9789		
Sampling Date		2013/09/15 09:15	2013/09/15	2013/09/13	2013/09/14	2013/09/13		
COC Number		08378819	08378819	08378819	08378819	08378819		
	UNITS	**UNL3 (TC1482)**	**ERRC (TC1483)**	**MTDL (TC1484)**	**BAGC (TC1485)**	**CHEL (TC1486)**	**RDL**	**QC Batch**
Total Potassium (K)	mg/L	0.200	0.133	0.340	0.165	0.256	0.050	7184372
Total Sodium (Na)	mg/L	0.740	0.775	0.814	0.748	0.784	0.050	7184372
Total Sulphur (S)	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	3.0	7184372

RDL = Reportable Detection Limit

LOW LEVEL TOTAL METALS IN WATER (WATER)

Maxxam ID		HO9790	HO9791	HO9792	HO9793	HO9794	HO9795		
Sampling Date		2013/09/15	2013/09/13	2013/09/13	2013/09/12	2013/09/12	2013/09/12		
COC Number		08378819	08378819	08378819	08378819	08378819	08378819		
	UNITS	**CLAL (TC1487)**	**SCHL (TC1488)**	**LTDL (TC1489)**	**UTDL (TC1490)**	**BAGLM (TC1491)**	**WEEL (TC1492)**	**RDL**	**QC Batch**
Calculated Parameters									
Total Hardness (CaCO3)	mg/L	18.6	25.4	18.3	19.3	25.0	16.9	0.50	7184032
Total Metals by ICPMS									
Total Aluminum (Al)	ug/L	15.5	16.3	45.1	47.5	10.9	9.51	0.50	7185974
Total Antimony (Sb)	ug/L	0.023	0.031	0.029	0.029	0.031	0.023	0.020	7185974
Total Arsenic (As)	ug/L	0.337	0.756	0.454	0.462	0.731	0.314	0.020	7185974
Total Barium (Ba)	ug/L	4.21	5.92	4.25	4.56	4.76	5.07	0.020	7185974
Total Beryllium (Be)	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7185974
Total Bismuth (Bi)	ug/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7185974
Total Boron (B)	ug/L	<50	<50	<50	<50	<50	<50	50	7185974
Total Cadmium (Cd)	ug/L	0.0090	0.0050	0.0060	0.0190	<0.0050	<0.0050	0.0050	7185974
Total Chromium (Cr)	ug/L	0.11	0.12	0.29	0.27	0.11	0.12	0.10	7185974
Total Cobalt (Co)	ug/L	0.0310	0.0190	0.0270	0.0400	0.0200	0.0190	0.0050	7185974
Total Copper (Cu)	ug/L	1.05	0.393	0.864	1.12	0.421	0.634	0.050	7185974
Total Iron (Fe)	ug/L	60.2	40.5	210	183	70.8	55.9	1.0	7185974
Total Lead (Pb)	ug/L	0.0590	0.0770	0.110	0.162	0.0510	0.0160	0.0050	7185974
Total Lithium (Li)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7185974
Total Manganese (Mn)	ug/L	28.1	30.7	17.2	22.9	69.8	47.2	0.050	7185974
Total Molybdenum (Mo)	ug/L	0.073	<0.050	0.103	0.129	0.068	<0.050	0.050	7185974
Total Nickel (Ni)	ug/L	0.189	0.223	0.369	0.414	0.235	0.180	0.020	7185974
Total Selenium (Se)	ug/L	0.069	0.061	0.084	0.093	0.079	0.074	0.040	7185974
Total Silicon (Si)	ug/L	663	1080	1420	1240	1280	310	100	7185974
Total Silver (Ag)	ug/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7185974
Total Strontium (Sr)	ug/L	13.2	22.5	12.6	13.8	20.3	12.7	0.050	7185974
Total Thallium (Tl)	ug/L	0.0020	0.0020	0.0030	0.0030	0.0020	0.0020	0.0020	7185974
Total Tin (Sn)	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7185974
Total Titanium (Ti)	ug/L	<0.50	<0.50	<0.50	0.64	<0.50	<0.50	0.50	7185974
Total Uranium (U)	ug/L	0.0050	0.0030	0.0150	0.0150	0.0060	0.0030	0.0020	7185974
Total Vanadium (V)	ug/L	<0.20	<0.20	0.23	0.26	<0.20	<0.20	0.20	7185974
Total Zinc (Zn)	ug/L	1.46	1.14	1.28	3.73	0.29	0.46	0.10	7185974
Total Zirconium (Zr)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7185974
Total Calcium (Ca)	mg/L	5.89	8.13	5.61	5.91	7.92	5.00	0.050	7184372
Total Magnesium (Mg)	mg/L	0.931	1.24	1.05	1.11	1.27	1.07	0.050	7184372

RDL = Reportable Detection Limit

LOW LEVEL TOTAL METALS IN WATER (WATER)

Maxxam ID		HO9790	HO9791	HO9792	HO9793	HO9794	HO9795		
Sampling Date		2013/09/15	2013/09/13	2013/09/13	2013/09/12	2013/09/12	2013/09/12		
COC Number		08378819	08378819	08378819	08378819	08378819	08378819		
	UNITS	**CLAL (TC1487)**	**SCHL (TC1488)**	**LTDL (TC1489)**	**UTDL (TC1490)**	**BAGLM (TC1491)**	**WEEL (TC1492)**	**RDL**	**QC Batch**
Total Potassium (K)	mg/L	0.385	0.289	0.325	0.318	0.270	0.387	0.050	7184372
Total Sodium (Na)	mg/L	0.698	0.698	0.761	0.867	0.692	0.646	0.050	7184372
Total Sulphur (S)	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	3.0	7184372

RDL = Reportable Detection Limit

LOW LEVEL TOTAL METALS IN WATER (WATER)

Maxxam ID		HO9796	HO9797		HO9798		
Sampling Date		2013/09/12	2013/09/12		2013/09/12		
COC Number		08378819	08378819		08378819		
	UNITS	**WEELZ (TC1493)**	**UNL1 (TC1494)**	**QC Batch**	**BAGLS (TC1495)**	**RDL**	**QC Batch**
Calculated Parameters							
Total Hardness (CaCO3)	mg/L	16.5	19.0	7184032	23.7	0.50	7184032
Total Metals by ICPMS							
Total Aluminum (Al)	ug/L	9.66	77.6	7185974	14.6	0.50	7186063
Total Antimony (Sb)	ug/L	0.025	0.025	7185974	0.032	0.020	7186063
Total Arsenic (As)	ug/L	0.310	0.417	7185974	0.716	0.020	7186063
Total Barium (Ba)	ug/L	5.05	4.14	7185974	4.60	0.020	7186063
Total Beryllium (Be)	ug/L	<0.010	<0.010	7185974	<0.010	0.010	7186063
Total Bismuth (Bi)	ug/L	<0.0050	<0.0050	7185974	<0.0050	0.0050	7186063
Total Boron (B)	ug/L	<50	<50	7185974	<50	50	7186063
Total Cadmium (Cd)	ug/L	<0.0050	0.0070	7185974	<0.0050	0.0050	7186063
Total Chromium (Cr)	ug/L	<0.10	0.30	7185974	0.28	0.10	7186063
Total Cobalt (Co)	ug/L	0.0160	0.0460	7185974	0.0230	0.0050	7186063
Total Copper (Cu)	ug/L	0.438	0.496	7185974	0.451	0.050	7186063
Total Iron (Fe)	ug/L	53.9	236	7185974	60.9	1.0	7186063
Total Lead (Pb)	ug/L	0.0290	0.0810	7185974	0.0590	0.0050	7186063
Total Lithium (Li)	ug/L	<0.50	<0.50	7185974	<0.50	0.50	7186063
Total Manganese (Mn)	ug/L	46.8	16.2	7185974	53.1	0.050	7186063
Total Molybdenum (Mo)	ug/L	<0.050	<0.050	7185974	0.064	0.050	7186063
Total Nickel (Ni)	ug/L	0.178	0.349	7185974	0.265	0.020	7186063
Total Selenium (Se)	ug/L	0.073	0.088	7185974	0.075	0.040	7186063
Total Silicon (Si)	ug/L	312	1190	7185974	1140	100	7186063
Total Silver (Ag)	ug/L	<0.0050	<0.0050	7185974	<0.0050	0.0050	7186063
Total Strontium (Sr)	ug/L	12.4	16.7	7185974	20.0	0.050	7186063
Total Thallium (Tl)	ug/L	0.0020	0.0030	7185974	<0.0020	0.0020	7186063
Total Tin (Sn)	ug/L	<0.20	<0.20	7185974	<0.20	0.20	7186063
Total Titanium (Ti)	ug/L	<0.50	0.78	7185974	<0.50	0.50	7186063
Total Uranium (U)	ug/L	0.0040	0.0290	7185974	0.0100	0.0020	7186063
Total Vanadium (V)	ug/L	<0.20	0.24	7185974	0.23	0.20	7186063
Total Zinc (Zn)	ug/L	0.92	1.30	7185974	1.07	0.10	7186063
Total Zirconium (Zr)	ug/L	<0.10	0.11	7185974	<0.10	0.10	7186063
Total Calcium (Ca)	mg/L	4.79	5.36	7184372	7.44	0.050	7184372
Total Magnesium (Mg)	mg/L	1.11	1.37	7184372	1.23	0.050	7184372

RDL = Reportable Detection Limit

LOW LEVEL TOTAL METALS IN WATER (WATER)

Maxxam ID		HO9796	HO9797		HO9798		
Sampling Date		2013/09/12	2013/09/12		2013/09/12		
COC Number		08378819	08378819		08378819		
	UNITS	**WEELZ (TC1493)**	**UNL1 (TC1494)**	**QC Batch**	**BAGLS (TC1495)**	**RDL**	**QC Batch**
Total Potassium (K)	mg/L	0.387	0.225	7184372	0.268	0.050	7184372
Total Sodium (Na)	mg/L	0.667	0.769	7184372	0.693	0.050	7184372
Total Sulphur (S)	mg/L	<3.0	<3.0	7184372	<3.0	3.0	7184372

RDL = Reportable Detection Limit

Package 1	3.7°C

Each temperature is the average of up to three cooler temperatures taken at receipt

General Comments

Results relate only to the items tested.

Maxxam

MAXXAM ANALYTICS
Attention: SUB CONTRACTOR
Client Project #: MB3F6404
P.O. #:
Site Location: 2496 COTE BASELINE

Quality Assurance Report

Maxxam Job Number: VB386032

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7184456 SC2	Matrix Spike	Nitrate plus Nitrite (N)	2013/09/21		NC	%	80 - 120
	Spiked Blank	Nitrate plus Nitrite (N)	2013/09/21		104	%	80 - 120
	Method Blank	Nitrate plus Nitrite (N)	2013/09/21	<0.020		mg/L	
	RPD [HO9790-01]	Nitrate plus Nitrite (N)	2013/09/21	NC		%	25
	RPD [HO9798-01]	Nitrate plus Nitrite (N)	2013/09/21	NC		%	25
7184457 SC2	Matrix Spike	Nitrite (N)	2013/09/21		103	%	80 - 120
	Spiked Blank	Nitrite (N)	2013/09/21		101	%	80 - 120
	Method Blank	Nitrite (N)	2013/09/21	<0.0050		mg/L	
	RPD [HO9790-01]	Nitrite (N)	2013/09/21	NC		%	20
	RPD [HO9798-01]	Nitrite (N)	2013/09/21	NC		%	20
7185974 AA1	Matrix Spike	Total Aluminum (Al)	2013/09/23		100	%	80 - 120
		Total Antimony (Sb)	2013/09/23		95	%	80 - 120
		Total Arsenic (As)	2013/09/23		101	%	80 - 120
		Total Barium (Ba)	2013/09/23		97	%	80 - 120
		Total Beryllium (Be)	2013/09/23		98	%	80 - 120
		Total Bismuth (Bi)	2013/09/23		100	%	80 - 120
		Total Cadmium (Cd)	2013/09/23		99	%	80 - 120
		Total Chromium (Cr)	2013/09/23		97	%	80 - 120
		Total Cobalt (Co)	2013/09/23		96	%	80 - 120
		Total Copper (Cu)	2013/09/23		95	%	80 - 120
		Total Iron (Fe)	2013/09/23		102	%	80 - 120
		Total Lead (Pb)	2013/09/23		97	%	80 - 120
		Total Lithium (Li)	2013/09/23		98	%	80 - 120
		Total Manganese (Mn)	2013/09/23		102	%	80 - 120
		Total Molybdenum (Mo)	2013/09/23		99	%	80 - 120
		Total Nickel (Ni)	2013/09/23		99	%	80 - 120
		Total Selenium (Se)	2013/09/23		104	%	80 - 120
		Total Silver (Ag)	2013/09/23		105	%	80 - 120
		Total Strontium (Sr)	2013/09/23		100	%	80 - 120
		Total Thallium (Tl)	2013/09/23		100	%	80 - 120
		Total Tin (Sn)	2013/09/23		97	%	80 - 120
		Total Titanium (Ti)	2013/09/23		105	%	80 - 120
		Total Uranium (U)	2013/09/23		90	%	80 - 120
		Total Vanadium (V)	2013/09/23		98	%	80 - 120
		Total Zinc (Zn)	2013/09/23		107	%	80 - 120
	Spiked Blank	Total Aluminum (Al)	2013/09/23		98	%	80 - 120
		Total Antimony (Sb)	2013/09/23		100	%	80 - 120
		Total Arsenic (As)	2013/09/23		94	%	80 - 120
		Total Barium (Ba)	2013/09/23		95	%	80 - 120
		Total Beryllium (Be)	2013/09/23		95	%	80 - 120
		Total Bismuth (Bi)	2013/09/23		95	%	80 - 120
		Total Cadmium (Cd)	2013/09/23		96	%	80 - 120
		Total Chromium (Cr)	2013/09/23		93	%	80 - 120
		Total Cobalt (Co)	2013/09/23		93	%	80 - 120
		Total Copper (Cu)	2013/09/23		90	%	80 - 120
		Total Iron (Fe)	2013/09/23		98	%	80 - 120
		Total Lead (Pb)	2013/09/23		96	%	80 - 120
		Total Lithium (Li)	2013/09/23		100	%	80 - 120
		Total Manganese (Mn)	2013/09/23		95	%	80 - 120
		Total Molybdenum (Mo)	2013/09/23		97	%	80 - 120
		Total Nickel (Ni)	2013/09/23		93	%	80 - 120
		Total Selenium (Se)	2013/09/23		100	%	80 - 120
		Total Silver (Ag)	2013/09/23		98	%	80 - 120
		Total Strontium (Sr)	2013/09/23		98	%	80 - 120
		Total Thallium (Tl)	2013/09/23		99	%	80 - 120

MAXXAM ANALYTICS
Attention: SUB CONTRACTOR
Client Project #: MB3F6404
P.O. #:
Site Location: 2496 COTE BASELINE

Quality Assurance Report (Continued)

Maxxam Job Number: VB386032

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7185974 AA1	Spiked Blank	Total Tin (Sn)	2013/09/23		94	%	80 - 120
		Total Titanium (Ti)	2013/09/23		102	%	80 - 120
		Total Uranium (U)	2013/09/23		90	%	80 - 120
		Total Vanadium (V)	2013/09/23		91	%	80 - 120
		Total Zinc (Zn)	2013/09/23		96	%	80 - 120
	Method Blank	Total Aluminum (Al)	2013/09/23	<0.50		ug/L	
		Total Antimony (Sb)	2013/09/23	<0.020		ug/L	
		Total Arsenic (As)	2013/09/23	<0.020		ug/L	
		Total Barium (Ba)	2013/09/23	<0.020		ug/L	
		Total Beryllium (Be)	2013/09/23	<0.010		ug/L	
		Total Bismuth (Bi)	2013/09/23	<0.0050		ug/L	
		Total Boron (B)	2013/09/23	<50		ug/L	
		Total Cadmium (Cd)	2013/09/23	<0.0050		ug/L	
		Total Chromium (Cr)	2013/09/23	<0.10		ug/L	
		Total Cobalt (Co)	2013/09/23	<0.0050		ug/L	
		Total Copper (Cu)	2013/09/23	<0.050		ug/L	
		Total Iron (Fe)	2013/09/23	<1.0		ug/L	
		Total Lead (Pb)	2013/09/23	<0.0050		ug/L	
		Total Lithium (Li)	2013/09/23	<0.50		ug/L	
		Total Manganese (Mn)	2013/09/23	<0.050		ug/L	
		Total Molybdenum (Mo)	2013/09/23	<0.050		ug/L	
		Total Nickel (Ni)	2013/09/23	<0.020		ug/L	
		Total Selenium (Se)	2013/09/23	<0.040		ug/L	
		Total Silicon (Si)	2013/09/23	<100		ug/L	
		Total Silver (Ag)	2013/09/23	<0.0050		ug/L	
		Total Strontium (Sr)	2013/09/23	<0.050		ug/L	
		Total Thallium (Tl)	2013/09/23	<0.0020		ug/L	
		Total Tin (Sn)	2013/09/23	<0.20		ug/L	
		Total Titanium (Ti)	2013/09/23	<0.50		ug/L	
		Total Uranium (U)	2013/09/23	<0.0020		ug/L	
		Total Vanadium (V)	2013/09/23	<0.20		ug/L	
		Total Zinc (Zn)	2013/09/23	<0.10		ug/L	
		Total Zirconium (Zr)	2013/09/23	<0.10		ug/L	
	RPD	Total Aluminum (Al)	2013/09/23	NC		%	20
		Total Antimony (Sb)	2013/09/23	NC		%	20
		Total Arsenic (As)	2013/09/23	NC		%	20
		Total Barium (Ba)	2013/09/23	NC		%	20
		Total Beryllium (Be)	2013/09/23	NC		%	20
		Total Bismuth (Bi)	2013/09/23	NC		%	20
		Total Boron (B)	2013/09/23	NC		%	20
		Total Cadmium (Cd)	2013/09/23	NC		%	20
		Total Chromium (Cr)	2013/09/23	NC		%	20
		Total Cobalt (Co)	2013/09/23	NC		%	20
		Total Copper (Cu)	2013/09/23	NC		%	20
		Total Iron (Fe)	2013/09/23	NC		%	20
		Total Lead (Pb)	2013/09/23	NC		%	20
		Total Lithium (Li)	2013/09/23	NC		%	20
		Total Manganese (Mn)	2013/09/23	NC		%	20
		Total Molybdenum (Mo)	2013/09/23	NC		%	20
		Total Nickel (Ni)	2013/09/23	NC		%	20
		Total Selenium (Se)	2013/09/23	NC		%	20
		Total Silicon (Si)	2013/09/23	NC		%	20
		Total Silver (Ag)	2013/09/23	NC		%	20
		Total Strontium (Sr)	2013/09/23	NC		%	20
		Total Thallium (Tl)	2013/09/23	NC		%	20

MAXXAM ANALYTICS
Attention: SUB CONTRACTOR
Client Project #: MB3F6404
P.O. #:
Site Location: 2496 COTE BASELINE

Quality Assurance Report (Continued)

Maxxam Job Number: VB386032

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7185974 AA1	RPD	Total Tin (Sn)	2013/09/23	NC		%	20
		Total Titanium (Ti)	2013/09/23	NC		%	20
		Total Uranium (U)	2013/09/23	NC		%	20
		Total Vanadium (V)	2013/09/23	NC		%	20
		Total Zirconium (Zr)	2013/09/23	NC		%	20
7186063 AA1	Matrix Spike	Total Aluminum (Al)	2013/09/23		94	%	80 - 120
		Total Antimony (Sb)	2013/09/23		97	%	80 - 120
		Total Arsenic (As)	2013/09/23		107	%	80 - 120
		Total Barium (Ba)	2013/09/23		NC	%	80 - 120
		Total Beryllium (Be)	2013/09/23		98	%	80 - 120
		Total Bismuth (Bi)	2013/09/23		82	%	80 - 120
		Total Cadmium (Cd)	2013/09/23		98	%	80 - 120
		Total Chromium (Cr)	2013/09/23		100	%	80 - 120
		Total Cobalt (Co)	2013/09/23		100	%	80 - 120
		Total Copper (Cu)	2013/09/23		95	%	80 - 120
		Total Iron (Fe)	2013/09/23		NC	%	80 - 120
		Total Lead (Pb)	2013/09/23		94	%	80 - 120
		Total Lithium (Li)	2013/09/23		96	%	80 - 120
		Total Manganese (Mn)	2013/09/23		NC	%	80 - 120
		Total Molybdenum (Mo)	2013/09/23		100	%	80 - 120
		Total Nickel (Ni)	2013/09/23		101	%	80 - 120
		Total Selenium (Se)	2013/09/23		105	%	80 - 120
		Total Silver (Ag)	2013/09/23		96	%	80 - 120
		Total Strontium (Sr)	2013/09/23		NC	%	80 - 120
		Total Thallium (Tl)	2013/09/23		98	%	80 - 120
		Total Tin (Sn)	2013/09/23		97	%	80 - 120
		Total Titanium (Ti)	2013/09/23		97	%	80 - 120
		Total Uranium (U)	2013/09/23		96	%	80 - 120
		Total Vanadium (V)	2013/09/23		102	%	80 - 120
		Total Zinc (Zn)	2013/09/23		103	%	80 - 120
	Spiked Blank	Total Aluminum (Al)	2013/09/23		100	%	80 - 120
		Total Antimony (Sb)	2013/09/23		98	%	80 - 120
		Total Arsenic (As)	2013/09/23		105	%	80 - 120
		Total Barium (Ba)	2013/09/23		99	%	80 - 120
		Total Beryllium (Be)	2013/09/23		95	%	80 - 120
		Total Bismuth (Bi)	2013/09/23		91	%	80 - 120
		Total Cadmium (Cd)	2013/09/23		99	%	80 - 120
		Total Chromium (Cr)	2013/09/23		103	%	80 - 120
		Total Cobalt (Co)	2013/09/23		104	%	80 - 120
		Total Copper (Cu)	2013/09/23		105	%	80 - 120
		Total Iron (Fe)	2013/09/23		108	%	80 - 120
		Total Lead (Pb)	2013/09/23		100	%	80 - 120
		Total Lithium (Li)	2013/09/23		100	%	80 - 120
		Total Manganese (Mn)	2013/09/23		104	%	80 - 120
		Total Molybdenum (Mo)	2013/09/23		99	%	80 - 120
		Total Nickel (Ni)	2013/09/23		106	%	80 - 120
		Total Selenium (Se)	2013/09/23		102	%	80 - 120
		Total Silver (Ag)	2013/09/23		99	%	80 - 120
		Total Strontium (Sr)	2013/09/23		104	%	80 - 120
		Total Thallium (Tl)	2013/09/23		105	%	80 - 120
		Total Tin (Sn)	2013/09/23		95	%	80 - 120
		Total Titanium (Ti)	2013/09/23		101	%	80 - 120
		Total Uranium (U)	2013/09/23		97	%	80 - 120
		Total Vanadium (V)	2013/09/23		103	%	80 - 120
		Total Zinc (Zn)	2013/09/23		110	%	80 - 120

MAXXAM ANALYTICS
Attention: SUB CONTRACTOR
Client Project #: MB3F6404
P.O. #:
Site Location: 2496 COTE BASELINE

Quality Assurance Report (Continued)

Maxxam Job Number: VB386032

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7186063 AA1	Method Blank	Total Aluminum (Al)	2013/09/23	<0.50		ug/L	
		Total Antimony (Sb)	2013/09/23	<0.020		ug/L	
		Total Arsenic (As)	2013/09/23	<0.020		ug/L	
		Total Barium (Ba)	2013/09/23	<0.020		ug/L	
		Total Beryllium (Be)	2013/09/23	<0.010		ug/L	
		Total Bismuth (Bi)	2013/09/23	<0.0050		ug/L	
		Total Boron (B)	2013/09/23	<50		ug/L	
		Total Cadmium (Cd)	2013/09/23	<0.0050		ug/L	
		Total Chromium (Cr)	2013/09/23	<0.10		ug/L	
		Total Cobalt (Co)	2013/09/23	<0.0050		ug/L	
		Total Copper (Cu)	2013/09/23	<0.050		ug/L	
		Total Iron (Fe)	2013/09/23	<1.0		ug/L	
		Total Lead (Pb)	2013/09/23	<0.0050		ug/L	
		Total Lithium (Li)	2013/09/23	<0.50		ug/L	
		Total Manganese (Mn)	2013/09/23	<0.050		ug/L	
		Total Molybdenum (Mo)	2013/09/23	<0.050		ug/L	
		Total Nickel (Ni)	2013/09/23	<0.020		ug/L	
		Total Selenium (Se)	2013/09/23	<0.040		ug/L	
		Total Silicon (Si)	2013/09/23	<100		ug/L	
		Total Silver (Ag)	2013/09/23	<0.0050		ug/L	
		Total Strontium (Sr)	2013/09/23	<0.050		ug/L	
		Total Thallium (Tl)	2013/09/23	<0.0020		ug/L	
		Total Tin (Sn)	2013/09/23	<0.20		ug/L	
		Total Titanium (Ti)	2013/09/23	<0.50		ug/L	
		Total Uranium (U)	2013/09/23	<0.0020		ug/L	
		Total Vanadium (V)	2013/09/23	<0.20		ug/L	
		Total Zinc (Zn)	2013/09/23	<0.10		ug/L	
		Total Zirconium (Zr)	2013/09/23	<0.10		ug/L	
	RPD	Total Aluminum (Al)	2013/09/23	6.0		%	20
		Total Antimony (Sb)	2013/09/23	NC		%	20
		Total Arsenic (As)	2013/09/23	4.4		%	20
		Total Barium (Ba)	2013/09/23	1.3		%	20
		Total Beryllium (Be)	2013/09/23	NC		%	20
		Total Bismuth (Bi)	2013/09/23	NC		%	20
		Total Boron (B)	2013/09/23	NC		%	20
		Total Cadmium (Cd)	2013/09/23	NC		%	20
		Total Chromium (Cr)	2013/09/23	NC		%	20
		Total Cobalt (Co)	2013/09/23	5.2		%	20
		Total Copper (Cu)	2013/09/23	2.1		%	20
		Total Iron (Fe)	2013/09/23	0.7		%	20
		Total Lead (Pb)	2013/09/23	3.1		%	20
		Total Lithium (Li)	2013/09/23	NC		%	20
		Total Manganese (Mn)	2013/09/23	2.8		%	20
		Total Molybdenum (Mo)	2013/09/23	6.6		%	20
		Total Nickel (Ni)	2013/09/23	11.3		%	20
		Total Selenium (Se)	2013/09/23	NC		%	20
		Total Silicon (Si)	2013/09/23	3.3		%	20
		Total Silver (Ag)	2013/09/23	NC		%	20
		Total Strontium (Sr)	2013/09/23	2.3		%	20
		Total Thallium (Tl)	2013/09/23	NC		%	20
		Total Tin (Sn)	2013/09/23	NC		%	20
		Total Titanium (Ti)	2013/09/23	NC		%	20
		Total Uranium (U)	2013/09/23	1.4		%	20
		Total Vanadium (V)	2013/09/23	NC		%	20
		Total Zinc (Zn)	2013/09/23	4.9		%	20

MAXXAM ANALYTICS
Attention: SUB CONTRACTOR
Client Project #: MB3F6404
P.O. #:
Site Location: 2496 COTE BASELINE

Quality Assurance Report (Continued)

Maxxam Job Number: VB386032

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7186063 AA1	RPD	Total Zirconium (Zr)	2013/09/23	NC		%	20
7187252 DC6	Matrix Spike						
	[HO9792-01]	Orthophosphate (P)	2013/09/23		94	%	80 - 120
	Spiked Blank	Orthophosphate (P)	2013/09/23		107	%	80 - 120
	Method Blank	Orthophosphate (P)	2013/09/23	<0.0050		mg/L	
7188522 TS1	Matrix Spike	Strong Acid Dissoc. Cyanide (CN)	2013/09/24		101	%	N/A
	Spiked Blank	Strong Acid Dissoc. Cyanide (CN)	2013/09/24		100	%	N/A
	Method Blank	Strong Acid Dissoc. Cyanide (CN)	2013/09/24	<0.00050		mg/L	
	RPD [HO9798-03]	Strong Acid Dissoc. Cyanide (CN)	2013/09/24	NC		%	20
7188529 TS1	Matrix Spike	Weak Acid Dissoc. Cyanide (CN)	2013/09/23		93	%	N/A
	Spiked Blank	Weak Acid Dissoc. Cyanide (CN)	2013/09/23		97	%	N/A
	Method Blank	Weak Acid Dissoc. Cyanide (CN)	2013/09/23	0.00064, RDL=0.00050		mg/L	
	RPD [HO9798-03]	Weak Acid Dissoc. Cyanide (CN)	2013/09/24	NC		%	20
7189230 BB3	Matrix Spike	Dissolved Chloride (Cl)	2013/09/24		NC	%	80 - 120
	Spiked Blank	Dissolved Chloride (Cl)	2013/09/24		101	%	80 - 120
	Method Blank	Dissolved Chloride (Cl)	2013/09/24	0.78, RDL=0.50		mg/L	
	RPD	Dissolved Chloride (Cl)	2013/09/24	NC		%	20
7189256 BB3	Matrix Spike	Dissolved Sulphate (SO4)	2013/09/24		NC	%	80 - 120
	Spiked Blank	Dissolved Sulphate (SO4)	2013/09/24		100	%	80 - 120
	Method Blank	Dissolved Sulphate (SO4)	2013/09/24	<0.50		mg/L	
	RPD	Dissolved Sulphate (SO4)	2013/09/24	NC		%	20
7189550 BB3	Matrix Spike	Dissolved Chloride (Cl)	2013/09/24		111	%	80 - 120
	Spiked Blank	Dissolved Chloride (Cl)	2013/09/24		103	%	80 - 120
	Method Blank	Dissolved Chloride (Cl)	2013/09/24	<0.50		mg/L	
	RPD [HO9786-01]	Dissolved Chloride (Cl)	2013/09/24	NC		%	20
7189554 BB3	Matrix Spike	Dissolved Sulphate (SO4)	2013/09/24		NC	%	80 - 120
	Spiked Blank	Dissolved Sulphate (SO4)	2013/09/24		101	%	80 - 120
	Method Blank	Dissolved Sulphate (SO4)	2013/09/24	<0.50		mg/L	
	RPD	Dissolved Sulphate (SO4)	2013/09/24	0.9		%	20
7191412 VT1	Spiked Blank	Dissolved Sulphate (SO4)	2013/09/25		101	%	80 - 120
	Method Blank	Dissolved Sulphate (SO4)	2013/09/25	0.55, RDL=0.50		mg/L	
	RPD [HO9786-01]	Dissolved Sulphate (SO4)	2013/09/25	NC		%	20
7219627 SC2	Matrix Spike	Fluoride (F)	2013/10/10		99	%	80 - 120
	Spiked Blank	Fluoride (F)	2013/10/10		100	%	80 - 120
	Method Blank	Fluoride (F)	2013/10/10	<0.010		mg/L	
	RPD	Fluoride (F)	2013/10/10	NC		%	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Maxxam

Success Through Science®

Validation Signature Page

Maxxam Job #: B386032

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Andy Lu, Data Validation Coordinator

Rob Reinert, Data Validation Coordinator

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Your Project #: 2496 C
Site Location: COTE BASELINE
Your C.O.C. #: 43581801, 435818-01-01

Attention: Kim Connors
Minnow Environmental Inc
2 Lamb St
Georgetown, ON
L7G 3M9

Report Date: 2013/10/10

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3F6454
Received: 2013/09/17, 12:59

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Acidity as CaC03 in liquid (1,2)	5	2013/09/20	2013/09/30	SLA SOP-00100	APHA SM2310B (Mod)
Alkalinity	5	N/A	2013/09/20	CAM SOP-00448	SM 2320B
Chloride by Automated Colourimetry	5	N/A	2013/09/20	CAM SOP-00463	EPA 325.2
Chemical Oxygen Demand	5	N/A	2013/09/25	CAM SOP-00416	APHA 5220D
Conductivity	5	N/A	2013/09/20	CAM SOP-00414	SM 2510
Dissolved Organic Carbon (DOC)	6	N/A	2013/09/21	CAM SOP-00446	SM 5310 B
Hardness (calculated as CaCO3)	5	N/A	2013/09/26	CAM SOP 00102	SM 2340 B
Ammonia-N (low level)	5	N/A	2013/09/24	CAM SOP-00441	US GS I-2522-90
pH	5	N/A	2013/09/20	CAM SOP-00413	SM 4500H+ B
Total Kjeldahl Nitrogen in Water	5	2013/09/25	2013/09/26	CAM SOP-00454	EPA 351.2 Rev 2
Total Organic Carbon (TOC)	5	N/A	2013/09/25	CAM SOP-00446	SM 5310B
Total Phosphorus (Colourimetric)	5	2013/09/25	2013/09/26	CAM SOP-00407	APHA 4500 P,B,F
Low Level Total Suspended Solids	5	N/A	2013/09/20	CAM SOP-00428	SM 2540D
Turbidity	5	N/A	2013/09/21	CAM SOP-00417	APHA 2130B

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

(1) This test was performed by Maxxam Sladeview Petrochemical
(2) Sample(s) analyzed using methodologies that have not been subjected to Maxxam's standard validation process for the submitted matrix and is not an Accredited method. Analysis performed with client consent, however results should be viewed with discretion

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Jolanta Goralczyk, Project Manager
Email: JGoralczyk@maxxam.ca
Phone# (905) 817-5751

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

Maxxam Job #: B3F6454
Report Date: 2013/10/10

Minnow Environmental Inc
Client Project #: 2496 C
Site Location: COTE BASELINE

RESULTS OF ANALYSES OF WATER

Maxxam ID			TC1658	TC1659	TC1660	TC1661		
Sampling Date			2013/09/14	2013/09/16	2013/09/14	2013/09/14		
	Units	**Criteria A**	**NEVL**	**DEIL**	**UNL2**	**UNL2X**	**RDL**	**QC Batch**
Calculated Parameters								
Hardness (CaCO3)	mg/L		25	20	20	20	1.0	3355242
Inorganics								
Acidity as CaC03	mg/L		ND	ND	ND	ND	10	3357330
Total Ammonia-N	mg/L	**0.02**	**0.02**	**0.03**	ND	ND	0.01	3359507
Total Chemical Oxygen Demand (COD)	mg/L	**3**	**46**	**48**	**41**	**39**	4.0	3360711
Conductivity	umho/cm		42	34	35	35	1.0	3356483
Total Kjeldahl Nitrogen (TKN)	mg/L	**0.05**	**0.60**	**0.57**	**0.52**	**0.79**	0.10	3362880
Dissolved Organic Carbon	mg/L	**0.1**	**19**	**18**	**15**	**15**	0.2	3357163
Total Organic Carbon (TOC)	mg/L	**0.1**	**19**	**19**	**16**	**15**	0.20	3361149
pH	pH		7.07	6.95	7.01	7.01		3356484
Total Phosphorus	mg/L		0.008	0.018	0.009	0.008	0.002	3362416
Total Suspended Solids	mg/L	**10**	2	3	1	2	1	3356416
Turbidity	NTU		1.1	1.7	1.8	1.4	0.2	3356364
Alkalinity (Total as CaCO3)	mg/L	**1**	**13**	**9.6**	**11**	**11**	1.0	3356482
Dissolved Chloride (Cl)	mg/L	**1**	**1**	**1**	ND	ND	1	3356469

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria A: Minnow Water Criteria

Maxxam Job #: B3F6454
Report Date: 2013/10/10

Minnow Environmental Inc
Client Project #: 2496 C
Site Location: COTE BASELINE

RESULTS OF ANALYSES OF WATER

Maxxam ID			TC1662	TC1662		TC1663		
Sampling Date			2013/09/16	2013/09/16				
	Units	**Criteria A**	**MESL**	**MESL Lab-Dup**	**QC Batch**	**DEIL-FIELD BLANK**	**RDL**	**QC Batch**
Calculated Parameters								
Hardness (CaCO3)	mg/L		28		3355242		1.0	
Inorganics								
Acidity as CaC03	mg/L		ND	ND	3357330		10	
Total Ammonia-N	mg/L	**0.02**	ND		3359507		0.01	
Total Chemical Oxygen Demand (COD)	mg/L	**3**	**20**		3360711		4.0	
Conductivity	umho/cm		55		3356483		1.0	
Total Kjeldahl Nitrogen (TKN)	mg/L	**0.05**	**0.68**		3362880		0.10	
Dissolved Organic Carbon	mg/L	**0.1**	**8.6**		3357345	**0.7**	0.2	3357163
Total Organic Carbon (TOC)	mg/L	**0.1**	**8.7**		3361149		0.20	
pH	pH		7.38		3356484			
Total Phosphorus	mg/L		0.003		3362416		0.002	
Total Suspended Solids	mg/L	**10**	ND		3356416		1	
Turbidity	NTU		0.6		3356364		0.2	
Alkalinity (Total as CaCO3)	mg/L	**1**	**21**		3356482		1.0	
Dissolved Chloride (Cl)	mg/L	**1**	**2**		3356469		1	

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria A: Minnow Water Criteria

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Package 1	3.3°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B3F6454
Report Date: 2013/10/10

Minnow Environmental Inc
Client Project #: 2496 C
Site Location: COTE BASELINE

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
3356364	Turbidity	2013/09/21					0.2, RDL=0.2	NTU	6.4	20	101	85 - 115
3356416	Total Suspended Solids	2013/09/20					ND, RDL=1	mg/L	2.5	25	98	85 - 115
3356469	Dissolved Chloride (Cl)	2013/09/20	108	80 - 120	102	80 - 120	ND, RDL=1	mg/L	NC	20		
3356482	Alkalinity (Total as CaCO3)	2013/09/20					ND, RDL=1.0	mg/L	9.7	25	94	85 - 115
3356483	Conductivity	2013/09/20					ND, RDL=1.0	umho/cm	0	25	101	85 - 115
3357163	Dissolved Organic Carbon	2013/09/21	NC	80 - 120	93	80 - 120	ND, RDL=0.2	mg/L	1.1	20		
3357330	Acidity as CaC03	2013/09/30					ND, RDL=10	mg/L	NC	25		
3357345	Dissolved Organic Carbon	2013/09/21	92	80 - 120	93	80 - 120	ND, RDL=0.2	mg/L	0.8	20		
3359507	Total Ammonia-N	2013/09/24	90	80 - 120	96	80 - 120	ND, RDL=0.01	mg/L	NC	20		
3360711	Total Chemical Oxygen Demand (COD)	2013/09/25	NC	75 - 125	99	75 - 125	ND, RDL=4.0	mg/L	1.5	25		
3361149	Total Organic Carbon (TOC)	2013/09/25	NC (1)	80 - 120	100	80 - 120	ND, RDL=0.20	mg/L	0.3	20		
3362416	Total Phosphorus	2013/09/26	94	80 - 120	100	80 - 120	0.003, RDL=0.002	mg/L	NC	20	99	80 - 120
3362880	Total Kjeldahl Nitrogen (TKN)	2013/09/26	80	80 - 120	81	80 - 120	ND, RDL=0.10	mg/L	1.8	20	90	80 - 120

N/A = Not Applicable
RDL = Reportable Detection Limit
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) - The recovery in the matrix spike was not calculated (NC). Spiked concentration was less than 2x that native to the sample.

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Validation Signature Page

Maxxam Job #: B3F6454

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
Grace M. Sison
CHEMIST

Grace Sison, B.Sc., C.Chem, Senior Project Manager - Petroleum Division

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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IMMEDIATE TEST

Maxxam

Maxxam Analytics International Corporation o/a Maxxam Analytics

6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5779 www.maxxam.ca

CHAIN OF CU

17-Sep-13 12:59
Jolanta Goralczyk

B3F6454

FW ENV-933

Page of

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:	
Company Name:	#767 Minnow Environmental Inc	Company Name:		Quotation #:	B32501
Contact Name:	Deb McMillan	Contact Name:	Kim Connors	P.O. #:	
Address:	2 Lamb St	Address:		Project #:	2496 Cote Baseline
	Georgetown ON L7G 3M9			Project Name:	
Phone:	28 Fax: (905)873-6370	Phone:	28 Fax:	Site #:	
Email:	dmcmillan@minnow-environmental.com	Email:	kconnors@minnow-environmental.com	Sampled By:	

Laboratory Use Only:

BOTTLE ORDER #: 435818

CHAIN OF CUSTODY #: C#435818-01-01

PROJECT MANAGER: Jolanta Goralczyk

Regulation 153 (2011)

Table 1 / Table 2 / Table 3 / Table ___ ; Res/Park / Ind/Comm / Agri/Other ; Medium/Fine / Coarse ; For RSC

Other Regulations

CCME / Reg. 558 / MISA / PWQO / Other ___ ; Sanitary Sewer Bylaw / Storm Sewer Bylaw ; Municipality ___

SPECIAL INSTRUCTIONS

Include Criteria on Certificate of Analysis (Y/N)? ___

Note: For MOE regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10ºC) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y/N)	Metals Field Filtered ? (Y/N)	Dissolved Organic Carbon (DOC)	Gen chem: acidity Alk, hard, pH	Ammonia	TSS, COD	Total & Free Cyanide	Total low-level metals to BC	Total Phos	Phosphate TKN TOC	Nitrite Nitrate Fluoride	Chloride Conduct Turbidity	# of Bottles	Comments
1		NEVL	Sept 14		Water	N	N	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	8	Check analyte list with quote
2		DEIL	Sept 16					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
3		UNL2	Sept 14					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
4		UNL2X	Sept 14					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
5		MESL	Sept 16					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
6																			
7																			
8																			
9																			
10																			

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT:

(will be applied if Rush TAT is not specified):

Standard TAT = 5-7 Working days for most tests.

Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)

Date Required: ___ Time Required: ___

Rush Confirmation Number: ___ (call lab for #)

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only
Kim Connors	2013/09/17	13:06	Ashwthi Sechreman / USLI TNA4 SUKU M AR	2013/09/17	12:59		Time Sensitive; Temperature (°C) on Receipt: 7/4/3 °C; Custody Seal Present: Yes / No ✓; Intact

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Your Project #: MB3F6454
Site Location: 2496 COTE BASELINE
Your C.O.C. #: 08378820

Attention: SUB CONTRACTOR
MAXXAM ANALYTICS
CAMPOBELLO
6740 CAMPOBELLO ROAD
MISSISSAUGA, ON
CANADA L5N 2L8

Report Date: 2013/10/10
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B386036
Received: 2013/09/21, 11:10

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Chloride by Automated Colourimetry	5	N/A	2013/09/24	BBY6SOP-00011	SM-4500-Cl-
Cyanide SAD (strong acid dissociable)	5	N/A	2013/09/25	BBY6SOP-00004	SM-4500CN I
Cyanide WAD (weak acid dissociable)	5	N/A	2013/09/25	BBY6SOP-00005	SM-4500CN I
Fluoride	5	N/A	2013/10/10	BBY6SOP-00012	SM - 4500 F C
Hardness Total (calculated as CaCO3)	5	N/A	2013/09/24	BBY7SOP-00002	EPA 6020A
Na, K, Ca, Mg, S by CRC ICPMS (total)	5	N/A	2013/09/24	BBY7SOP-00002	EPA 6020A
Elements by ICPMS Low Level (total)	5	N/A	2013/09/23	BBY7SOP-00002	EPA 6020A
Nitrate + Nitrite (N)	5	N/A	2013/09/21	BBY6SOP-00010	SM 4500NO3-I
Nitrite (N) by CFA	5	N/A	2013/09/21	BBY6SOP-00010	EPA 353.2
Nitrogen - Nitrate (as N)	5	N/A	2013/09/24	BBY6SOP-00010	SM 4500NO3-I
Orthophosphate by Konelab	5	N/A	2013/09/23	BBY6SOP-00013	SM 4500 P E
Sulphate by Automated Colourimetry	5	N/A	2013/09/24	BBY6SOP-00017	SM4500-SO42- E

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Samantha Fregien, Project Manager
Email: SFregien@maxxam.ca
Phone# (604) 734 7276

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Total cover pages: 1

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		HO9811	HO9812	HO9813	HO9814		
Sampling Date		2013/09/14	2013/09/16	2013/09/14	2013/09/14		
COC Number		08378820	08378820	08378820	08378820		
	UNITS	**NEVL (TC1658)**	**DEIL (TC1659)**	**UNL2 (TC1660)**	**UNL2X (TC1661)**	**RDL**	**QC Batch**
ANIONS							
Nitrite (N)	mg/L	<0.050 (1)	<0.050 (1)	<0.050 (1)	<0.050 (1)	0.050	7184457
Calculated Parameters							
Nitrate (N)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	7184034
Misc. Inorganics							
Strong Acid Dissoc. Cyanide (CN)	mg/L	0.00077	0.00078	0.00064	0.00068	0.00050	7191297
Weak Acid Dissoc. Cyanide (CN)	mg/L	0.00077	0.00057	0.00062	0.00062	0.00050	7191386
Fluoride (F)	mg/L	0.041	0.028	0.048	0.049	0.010	7219627
Anions							
Dissolved Sulphate (SO4)	mg/L	<0.50	<0.50	<0.50	<0.50	0.50	7189554
Dissolved Chloride (Cl)	mg/L	1.3	1.4	0.83	1.1	0.50	7189550
Nutrients							
Orthophosphate (P)	mg/L	<0.0050 (2)	<0.0050 (2)	<0.0050 (2)	<0.0050 (2)	0.0050	7187252
Nitrate plus Nitrite (N)	mg/L	<0.20 (1)	<0.20 (1)	<0.20 (1)	<0.20 (1)	0.20	7184456

RDL = Reportable Detection Limit
(1) RDL raised due to sample matrix interference. Sample arrived to laboratory past recommended hold time.
(2) Sample arrived to laboratory past recommended hold time.

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		HO9815	HO9815		
Sampling Date		2013/09/16	2013/09/16		
COC Number		08378820	08378820		
	UNITS	**MESL (TC1662)**	**MESL (TC1662) Lab-Dup**	**RDL**	**QC Batch**
ANIONS					
Nitrite (N)	mg/L	<0.0050 (1)	N/A	0.0050	7184457
Calculated Parameters					
Nitrate (N)	mg/L	0.036	N/A	0.020	7184034
Misc. Inorganics					
Strong Acid Dissoc. Cyanide (CN)	mg/L	<0.00050	N/A	0.00050	7191297
Weak Acid Dissoc. Cyanide (CN)	mg/L	0.00070	N/A	0.00050	7191386
Fluoride (F)	mg/L	0.046	0.030	0.010	7219627
Anions					
Dissolved Sulphate (SO4)	mg/L	0.86	N/A	0.50	7189554
Dissolved Chloride (Cl)	mg/L	1.7	N/A	0.50	7189550
Nutrients					
Orthophosphate (P)	mg/L	<0.0050 (1)	N/A	0.0050	7187252
Nitrate plus Nitrite (N)	mg/L	0.036 (1)	N/A	0.020	7184456

N/A = Not Applicable
RDL = Reportable Detection Limit
(1) Sample arrived to laboratory past recommended hold time.

LOW LEVEL TOTAL METALS IN WATER (WATER)

Maxxam ID		HO9811	HO9812	HO9813	HO9814	HO9815		
Sampling Date		2013/09/14	2013/09/16	2013/09/14	2013/09/14	2013/09/16		
COC Number		08378820	08378820	08378820	08378820	08378820		
	UNITS	**NEVL (TC1658)**	**DEIL (TC1659)**	**UNL2 (TC1660)**	**UNL2X (TC1661)**	**MESL (TC1662)**	**RDL**	**QC Batch**
Calculated Parameters								
Total Hardness (CaCO3)	mg/L	20.9	17.0	17.3	16.7	23.1	0.50	7184032
Total Metals by ICPMS								
Total Aluminum (Al)	ug/L	108	116	114	118	43.2	0.50	7186063
Total Antimony (Sb)	ug/L	0.028	0.031	0.028	0.032	0.024	0.020	7186063
Total Arsenic (As)	ug/L	0.665	0.659	0.459	0.427	0.297	0.020	7186063
Total Barium (Ba)	ug/L	5.02	3.79	4.33	4.33	3.96	0.020	7186063
Total Beryllium (Be)	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7186063
Total Bismuth (Bi)	ug/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7186063
Total Boron (B)	ug/L	<50	<50	<50	<50	<50	50	7186063
Total Cadmium (Cd)	ug/L	0.0060	0.0070	0.0070	0.0070	0.0050	0.0050	7186063
Total Chromium (Cr)	ug/L	0.27	0.37	0.45	0.49	0.19	0.10	7186063
Total Cobalt (Co)	ug/L	0.0810	0.0710	0.0820	0.0930	0.0190	0.0050	7186063
Total Copper (Cu)	ug/L	0.616	0.629	0.731	0.703	0.503	0.050	7186063
Total Iron (Fe)	ug/L	330	370	382	363	62.7	1.0	7186063
Total Lead (Pb)	ug/L	0.123	0.324	0.130	0.124	0.0300	0.0050	7186063
Total Lithium (Li)	ug/L	0.54	<0.50	<0.50	0.60	0.65	0.50	7186063
Total Manganese (Mn)	ug/L	30.4	14.7	27.4	28.1	4.05	0.050	7186063
Total Molybdenum (Mo)	ug/L	<0.050	<0.050	<0.050	<0.050	0.057	0.050	7186063
Total Nickel (Ni)	ug/L	0.454	0.421	0.474	0.483	0.323	0.020	7186063
Total Selenium (Se)	ug/L	0.100	0.149	0.084	0.103	0.067	0.040	7186063
Total Silicon (Si)	ug/L	1590	1320	1280	1240	1400	100	7186063
Total Silver (Ag)	ug/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	7186063
Total Strontium (Sr)	ug/L	18.5	11.6	14.8	15.0	16.4	0.050	7186063
Total Thallium (Tl)	ug/L	0.0030	0.0020	0.0040	0.0030	0.0030	0.0020	7186063
Total Tin (Sn)	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7186063
Total Titanium (Ti)	ug/L	0.98	1.51	0.83	1.00	<0.50	0.50	7186063
Total Uranium (U)	ug/L	0.0530	0.0240	0.0500	0.0500	0.0780	0.0020	7186063
Total Vanadium (V)	ug/L	0.35	0.61	0.46	0.57	<0.20	0.20	7186063
Total Zinc (Zn)	ug/L	1.43	1.57	1.72	1.33	1.20	0.10	7186063
Total Zirconium (Zr)	ug/L	<0.10	<0.10	0.14	0.16	<0.10	0.10	7186063
Total Calcium (Ca)	mg/L	6.13	5.00	4.72	4.50	6.70	0.050	7184372
Total Magnesium (Mg)	mg/L	1.35	1.09	1.33	1.33	1.54	0.050	7184372

RDL = Reportable Detection Limit

LOW LEVEL TOTAL METALS IN WATER (WATER)

Maxxam ID		HO9811	HO9812	HO9813	HO9814	HO9815		
Sampling Date		2013/09/14	2013/09/16	2013/09/14	2013/09/14	2013/09/16		
COC Number		08378820	08378820	08378820	08378820	08378820		
	UNITS	**NEVL (TC1658)**	**DEIL (TC1659)**	**UNL2 (TC1660)**	**UNL2X (TC1661)**	**MESL (TC1662)**	**RDL**	**QC Batch**
Total Potassium (K)	mg/L	0.181	0.232	0.218	0.210	0.301	0.050	7184372
Total Sodium (Na)	mg/L	0.963	0.752	0.837	0.857	1.40	0.050	7184372
Total Sulphur (S)	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	3.0	7184372

RDL = Reportable Detection Limit

Package 1	3.7°C

Each temperature is the average of up to three cooler temperatures taken at receipt

General Comments

Results relate only to the items tested.

Maxxam

MAXXAM ANALYTICS
Attention: SUB CONTRACTOR
Client Project #: MB3F6454
P.O. #:
Site Location: 2496 COTE BASELINE

Quality Assurance Report

Maxxam Job Number: VB386036

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7184456	SC2	Matrix Spike	Nitrate plus Nitrite (N)	2013/09/21		NC	%	80 - 120
		Spiked Blank	Nitrate plus Nitrite (N)	2013/09/21		104	%	80 - 120
		Method Blank	Nitrate plus Nitrite (N)	2013/09/21	<0.020		mg/L	
		RPD	Nitrate plus Nitrite (N)	2013/09/21	NC		%	25
7184457	SC2	Matrix Spike	Nitrite (N)	2013/09/21		103	%	80 - 120
		Spiked Blank	Nitrite (N)	2013/09/21		101	%	80 - 120
		Method Blank	Nitrite (N)	2013/09/21	<0.0050		mg/L	
		RPD	Nitrite (N)	2013/09/21	NC		%	20
7186063	AA1	Matrix Spike	Total Aluminum (Al)	2013/09/23		94	%	80 - 120
			Total Antimony (Sb)	2013/09/23		97	%	80 - 120
			Total Arsenic (As)	2013/09/23		107	%	80 - 120
			Total Barium (Ba)	2013/09/23		NC	%	80 - 120
			Total Beryllium (Be)	2013/09/23		98	%	80 - 120
			Total Bismuth (Bi)	2013/09/23		82	%	80 - 120
			Total Cadmium (Cd)	2013/09/23		98	%	80 - 120
			Total Chromium (Cr)	2013/09/23		100	%	80 - 120
			Total Cobalt (Co)	2013/09/23		100	%	80 - 120
			Total Copper (Cu)	2013/09/23		95	%	80 - 120
			Total Iron (Fe)	2013/09/23		NC	%	80 - 120
			Total Lead (Pb)	2013/09/23		94	%	80 - 120
			Total Lithium (Li)	2013/09/23		96	%	80 - 120
			Total Manganese (Mn)	2013/09/23		NC	%	80 - 120
			Total Molybdenum (Mo)	2013/09/23		100	%	80 - 120
			Total Nickel (Ni)	2013/09/23		101	%	80 - 120
			Total Selenium (Se)	2013/09/23		105	%	80 - 120
			Total Silver (Ag)	2013/09/23		96	%	80 - 120
			Total Strontium (Sr)	2013/09/23		NC	%	80 - 120
			Total Thallium (Tl)	2013/09/23		98	%	80 - 120
			Total Tin (Sn)	2013/09/23		97	%	80 - 120
			Total Titanium (Ti)	2013/09/23		97	%	80 - 120
			Total Uranium (U)	2013/09/23		96	%	80 - 120
			Total Vanadium (V)	2013/09/23		102	%	80 - 120
			Total Zinc (Zn)	2013/09/23		103	%	80 - 120
		Spiked Blank	Total Aluminum (Al)	2013/09/23		100	%	80 - 120
			Total Antimony (Sb)	2013/09/23		98	%	80 - 120
			Total Arsenic (As)	2013/09/23		105	%	80 - 120
			Total Barium (Ba)	2013/09/23		99	%	80 - 120
			Total Beryllium (Be)	2013/09/23		95	%	80 - 120
			Total Bismuth (Bi)	2013/09/23		91	%	80 - 120
			Total Cadmium (Cd)	2013/09/23		99	%	80 - 120
			Total Chromium (Cr)	2013/09/23		103	%	80 - 120
			Total Cobalt (Co)	2013/09/23		104	%	80 - 120
			Total Copper (Cu)	2013/09/23		105	%	80 - 120
			Total Iron (Fe)	2013/09/23		108	%	80 - 120
			Total Lead (Pb)	2013/09/23		100	%	80 - 120
			Total Lithium (Li)	2013/09/23		100	%	80 - 120
			Total Manganese (Mn)	2013/09/23		104	%	80 - 120
			Total Molybdenum (Mo)	2013/09/23		99	%	80 - 120
			Total Nickel (Ni)	2013/09/23		106	%	80 - 120
			Total Selenium (Se)	2013/09/23		102	%	80 - 120
			Total Silver (Ag)	2013/09/23		99	%	80 - 120
			Total Strontium (Sr)	2013/09/23		104	%	80 - 120
			Total Thallium (Tl)	2013/09/23		105	%	80 - 120
			Total Tin (Sn)	2013/09/23		95	%	80 - 120
			Total Titanium (Ti)	2013/09/23		101	%	80 - 120

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MAXXAM ANALYTICS
Attention: SUB CONTRACTOR
Client Project #: MB3F6454
P.O. #:
Site Location: 2496 COTE BASELINE

Quality Assurance Report (Continued)

Maxxam Job Number: VB386036

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7186063 AA1	Spiked Blank	Total Uranium (U)	2013/09/23		97	%	80 - 120
		Total Vanadium (V)	2013/09/23		103	%	80 - 120
		Total Zinc (Zn)	2013/09/23		110	%	80 - 120
	Method Blank	Total Aluminum (Al)	2013/09/23	<0.50		ug/L	
		Total Antimony (Sb)	2013/09/23	<0.020		ug/L	
		Total Arsenic (As)	2013/09/23	<0.020		ug/L	
		Total Barium (Ba)	2013/09/23	<0.020		ug/L	
		Total Beryllium (Be)	2013/09/23	<0.010		ug/L	
		Total Bismuth (Bi)	2013/09/23	<0.0050		ug/L	
		Total Boron (B)	2013/09/23	<50		ug/L	
		Total Cadmium (Cd)	2013/09/23	<0.0050		ug/L	
		Total Chromium (Cr)	2013/09/23	<0.10		ug/L	
		Total Cobalt (Co)	2013/09/23	<0.0050		ug/L	
		Total Copper (Cu)	2013/09/23	<0.050		ug/L	
		Total Iron (Fe)	2013/09/23	<1.0		ug/L	
		Total Lead (Pb)	2013/09/23	<0.0050		ug/L	
		Total Lithium (Li)	2013/09/23	<0.50		ug/L	
		Total Manganese (Mn)	2013/09/23	<0.050		ug/L	
		Total Molybdenum (Mo)	2013/09/23	<0.050		ug/L	
		Total Nickel (Ni)	2013/09/23	<0.020		ug/L	
		Total Selenium (Se)	2013/09/23	<0.040		ug/L	
		Total Silicon (Si)	2013/09/23	<100		ug/L	
		Total Silver (Ag)	2013/09/23	<0.0050		ug/L	
		Total Strontium (Sr)	2013/09/23	<0.050		ug/L	
		Total Thallium (Tl)	2013/09/23	<0.0020		ug/L	
		Total Tin (Sn)	2013/09/23	<0.20		ug/L	
		Total Titanium (Ti)	2013/09/23	<0.50		ug/L	
		Total Uranium (U)	2013/09/23	<0.0020		ug/L	
		Total Vanadium (V)	2013/09/23	<0.20		ug/L	
		Total Zinc (Zn)	2013/09/23	<0.10		ug/L	
		Total Zirconium (Zr)	2013/09/23	<0.10		ug/L	
	RPD	Total Aluminum (Al)	2013/09/23	6.0		%	20
		Total Antimony (Sb)	2013/09/23	NC		%	20
		Total Arsenic (As)	2013/09/23	4.4		%	20
		Total Barium (Ba)	2013/09/23	1.3		%	20
		Total Beryllium (Be)	2013/09/23	NC		%	20
		Total Bismuth (Bi)	2013/09/23	NC		%	20
		Total Boron (B)	2013/09/23	NC		%	20
		Total Cadmium (Cd)	2013/09/23	NC		%	20
		Total Chromium (Cr)	2013/09/23	NC		%	20
		Total Cobalt (Co)	2013/09/23	5.2		%	20
		Total Copper (Cu)	2013/09/23	2.1		%	20
		Total Iron (Fe)	2013/09/23	0.7		%	20
		Total Lead (Pb)	2013/09/23	3.1		%	20
		Total Lithium (Li)	2013/09/23	NC		%	20
		Total Manganese (Mn)	2013/09/23	2.8		%	20
		Total Molybdenum (Mo)	2013/09/23	6.6		%	20
		Total Nickel (Ni)	2013/09/23	11.3		%	20
		Total Selenium (Se)	2013/09/23	NC		%	20
		Total Silicon (Si)	2013/09/23	3.3		%	20
		Total Silver (Ag)	2013/09/23	NC		%	20
		Total Strontium (Sr)	2013/09/23	2.3		%	20
		Total Thallium (Tl)	2013/09/23	NC		%	20
		Total Tin (Sn)	2013/09/23	NC		%	20
		Total Titanium (Ti)	2013/09/23	NC		%	20

MAXXAM ANALYTICS
Attention: SUB CONTRACTOR
Client Project #: MB3F6454
P.O. #:
Site Location: 2496 COTE BASELINE

Quality Assurance Report (Continued)

Maxxam Job Number: VB386036

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7186063 AA1	RPD	Total Uranium (U)	2013/09/23	1.4		%	20
		Total Vanadium (V)	2013/09/23	NC		%	20
		Total Zinc (Zn)	2013/09/23	4.9		%	20
		Total Zirconium (Zr)	2013/09/23	NC		%	20
7187252 DC6	Matrix Spike	Orthophosphate (P)	2013/09/23		94	%	80 - 120
	Spiked Blank	Orthophosphate (P)	2013/09/23		107	%	80 - 120
	Method Blank	Orthophosphate (P)	2013/09/23	<0.0050		mg/L	
7189550 BB3	Matrix Spike	Dissolved Chloride (Cl)	2013/09/24		111	%	80 - 120
	Spiked Blank	Dissolved Chloride (Cl)	2013/09/24		103	%	80 - 120
	Method Blank	Dissolved Chloride (Cl)	2013/09/24	<0.50		mg/L	
	RPD	Dissolved Chloride (Cl)	2013/09/24	11.3		%	20
7189554 BB3	Matrix Spike	Dissolved Sulphate (SO4)	2013/09/24		NC	%	80 - 120
	Spiked Blank	Dissolved Sulphate (SO4)	2013/09/24		101	%	80 - 120
	Method Blank	Dissolved Sulphate (SO4)	2013/09/24	<0.50		mg/L	
	RPD	Dissolved Sulphate (SO4)	2013/09/24	0.9		%	20
7191297 TS1	Matrix Spike	Strong Acid Dissoc. Cyanide (CN)	2013/09/25		98	%	N/A
	Spiked Blank	Strong Acid Dissoc. Cyanide (CN)	2013/09/25		98	%	N/A
	Method Blank	Strong Acid Dissoc. Cyanide (CN)	2013/09/25	<0.00050		mg/L	
	RPD	Strong Acid Dissoc. Cyanide (CN)	2013/09/25	NC (1)		%	20
7191386 TS1	Matrix Spike	Weak Acid Dissoc. Cyanide (CN)	2013/09/25		101	%	N/A
	Spiked Blank	Weak Acid Dissoc. Cyanide (CN)	2013/09/25		104	%	N/A
	Method Blank	Weak Acid Dissoc. Cyanide (CN)	2013/09/25	<0.00050		mg/L	
	RPD	Weak Acid Dissoc. Cyanide (CN)	2013/09/25	NC (1)		%	20
7219627 SC2	Matrix Spike	Fluoride (F)	2013/10/10		99	%	80 - 120
	Spiked Blank	Fluoride (F)	2013/10/10		100	%	80 - 120
	Method Blank	Fluoride (F)	2013/10/10	<0.010		mg/L	
	RPD [HO9815-01]	Fluoride (F)	2013/10/10	NC		%	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) Sample was analyzed after holding time expired.

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Validation Signature Page

Maxxam Job #: B386036

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Andy Lu, Data Validation Coordinator

Rob Reinert, Data Validation Coordinator

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

APPENDIX D

SEDIMENT QUALITY DATA

Table D.1: Water quality at coring sampling stations in lakes, Côté Gold Baseline Study, 2013.

Waterbody Area	Coring Station	Station Depth	UTM	
			Northing	Easting
Bagsverd Lake	1	5.6	5268774	430117
	2	7.6	5270200	429849
Chester Lake	1	2.8	5263898	429637
Clam Lake	1	9.2	5266251	428328
Delaney Lake	1	2.0	5262875	430975
Lower Three Duck Lake	1	5.1	5264018	432768
Mesomekenda Lake	1	48.0	5279119	433961
	2	17.8	5276393	434009
	3	60.0	5274070	433432
	4	36.0	5271110	433682
	5	30.0	5274483	433552
	6	45.0	5281558	433389
Middle Three Duck Lake	1	7.9	5265890	431889
Neville Lake	1	11.0	5277446	431441
Unnamed Lake #1	1	1.8	5273687	429462
Unnamed Lake #2	1	11.0	5272920	427027
Unnamed Lake #3	1	6.5	5263540	431697
Upper Three Duck Lake	1	6.0	5267903	431509
Weeduck Lake	1	8.3	5268382	431072

Table D.2 Sediment chemistry results from the top 5 cm of sediment in the lakes in the Côté Gold area, June and September (MesL-C6), 2013.

			Watershed	Mollie Lake Watershed																			
Analyte	Units	PSQG[a] LEL[b]	PSQG[a] SEL[c]	Chester Lake					Clam Lake					Weeduck Lake					Upper Three Duck Lake				
				0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm	0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm	0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm	0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm
Dry weight	g	-	-	6.35	6.35	7.14	8.02	7.99	4.45	7.07	3.27	3.90	4.11	1.96	1.81	4.65	3.76	8.77	1.58	5.08	4.95	4.96	5.24
Moisture	%	-	-	91.42	89.66	89.37	89.53	89.13	96.40	94.96	93.67	94.08	93.27	98.54	97.16	98.16	97.64	96.75	98.43	95.46	95.40	94.79	94.35
TOC	%	-	-	19.4	20.3	20.0	23.3	22.3	22.3	22.3	21.7	19.9	21.8	25.7	25.0	24.8	23.5	23.7	19.2	18.8	18.8	18.9	18.8
TOC	mg/kg	10,000	100,000	194,000	203,000	200,000	233,000	223,000	223,000	223,000	217,000	199,000	218,000	257,000	250,000	248,000	235,000	237,000	192,000	188,000	188,000	189,000	188,000
Sulfur	%	-	-	0.30	0.34	0.41	0.52	0.51	0.76	0.81	0.55	0.54	0.51	1.61	1.80	1.46	2.10	1.94	0.30	0.33	0.30	0.32	0.33
Mercury	mg/kg	0.2	2	0.39	0.46	0.40	0.52	0.43	0.32	0.21	0.20	0.25	0.53	0.55	0.25	0.53	0.43	0.39	0.49	0.44	0.61	0.47	0.66
Aluminum	mg/kg	-	-	14,600	13,900	15,100	14,900	13,400	17,000	16,200	20,100	17,200	16,900	12,200	11,600	12,100	13,100	12,900	15,600	16,700	16,600	16,500	16,100
Antimony	mg/kg	-	-	0.3	0.3	0.3	0.4	0.3	0.4	0.5	0.4	0.2	<0.2	0.6	0.7	0.8	0.9	1.1	0.3	0.3	0.3	0.3	0.3
Arsenic	mg/kg	6	33	5.2	5.2	6.9	7.3	6.5	7.9	7.9	7.2	5.1	4.1	7.9	8.6	9.6	13	14	5.3	5.5	5.3	5.3	5.1
Barium	mg/kg	-	-	60	55	60	58	52	63	59	73	61	58	66	62	61	63	64	78	80	78	78	71
Beryllium	mg/kg	-	-	0.3	0.3	0.3	0.3	0.2	0.4	0.3	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3
Boron	mg/kg	-	-	3	3	3	14	9	4	3	4	3	3	6	5	5	5	5	8	12	13	7	7
Cadmium	mg/kg	0.6	10	1.1	1.0	1.2	1.2	1.0	1.4	1.6	1.2	0.9	0.8	2.0	2.0	2.0	2.0	1.9	1.3	1.3	1.2	1.2	1.2
Chromium	mg/kg	26	110	31	28	32	30	28	27	25	30	26	25	22	21	23	23	23	29	31	31	33	30
Cobalt	mg/kg	-	-	6.2	5.8	6.8	6.8	6.4	5.3	4.9	5.0	4.0	3.9	8.1	8.1	7.8	8.4	8.0	5.7	6.0	5.7	6.0	5.6
Copper	mg/kg	16	110	28	27	30	28	26	82	77	86	72	71	49	48	48	51	50	54	58	57	59	58
Iron	mg/kg	20,000	40,000	15,400	13,200	13,700	13,800	13,300	14,600	13,900	15,000	12,500	11,400	20,400	21,400	22,600	25,600	24,400	17,100	17,200	17,100	16,800	15,500
Lead	mg/kg	31	250	39	37	41	37	31	48	58	25	17	12	84	89	96	110	110	47	49	48	50	49
Manganese	mg/kg	460	1,100	520	410	400	360	350	320	300	380	320	290	530	450	430	440	440	530	490	450	440	390
Molybdenum	mg/kg	-	-	0.6	0.6	0.7	0.7	0.6	1.6	1.5	1.8	1.6	1.6	1.5	1.6	1.6	2.0	1.9	0.8	0.8	0.7	0.8	0.8
Nickel	mg/kg	16	75	21	20	22	21	19	17	16	16	13	13	21	22	23	24	24	20	20	20	21	20
Selenium	mg/kg	-	-	1.7	1.6	1.8	1.8	1.5	2.0	2.0	1.9	1.5	1.4	2.7	2.6	2.5	2.8	2.6	1.5	1.6	1.6	1.6	1.6
Silver	mg/kg	-	-	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Strontium	mg/kg	-	-	32	29	33	33	30	22	20	25	22	20	24	22	23	24	24	30	31	31	31	30
Thallium	mg/kg	-	-	<0.2	<0.2	0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thorium	mg/kg	-	-	4.0	3.8	4.3	4.2	3.8	3.8	3.5	4.5	3.8	3.6	3.2	3.0	3.1	3.6	3.5	3.8	4.0	4.0	4.0	4.1
Tin	mg/kg	-	-	1.4	1.4	1.4	1.4	1.1	1.3	1.4	0.6	0.4	0.4	2.3	3.7	2.4	2.7	2.7	1.6	1.6	1.6	1.6	1.6
Titanium	mg/kg	-	-	720	590	730	700	640	460	450	460	410	390	440	410	430	450	450	640	660	730	720	710
Uranium	mg/kg	104.4[d]	-	1.0	0.9	1.1	1.0	1.0	1.2	1.1	1.4	1.2	1.2	1.0	1.0	1.0	1.1	1.0	1.0	1.0	1.0	1.1	1.0
Vanadium	mg/kg	-	-	30	28	32	31	28	30	28	35	30	28	26	27	29	34	33	31	33	32	33	31
Zinc	mg/kg	120	820	74	76	82	78	67	110	100	110	88	84	140	140	140	150	140	86	87	84	89	84

Concentration exceeds LEL

Concentration exceeds SEL

[a] Provincial Sediment Quality Guideline. OMOE (Ontario Ministry of Environment) 1993. Guidelines For The Protection and Management of Aquatic Sediment Quality In Ontario. August 1993, Reprinted October, 1996. MOE (1993).

[b] Lowest effect level

[c] Severe effect level

[d] Thompson et al. 2005. Thompson, P.A., J. Jurias, and S Mihok. 2005. Derivation and sue of sediment quality guidelines for ecological risk assessment of metals and radionuclides released to the environment from uranium Mining and millin activities in Canada. Environmental Monitoring and Assessment 110:71-85

[e] Insufficient sample volume for mercury analysis.

TOC - Total Organic Carbon

Table D.2 Sediment chemistry results from the top 5 cm of sediment in the lakes in the Côté Gold area, June and September (MesL-C6), 2013.

Watershed				Mollie Lake Watershed																			
Analyte	Units	PSQG[a] LEL[b]	PSQG[a] SEL[c]	Middle Three Duck Lake					Lower Three Duck Lake					Unnamed Lake #3					Delaney Lake				
				0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm	0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm	0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm	0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm
Dry weight	g	-	-	5.09	3.13	3.81	4.33	4.33	5.48	3.83	7.08	10.76	12.69	2.83	1.76	2.91	4.61	4.26	6.22	5.09	6.69	7.09	10.69
Moisture	%	-	-	96.72	96.22	95.47	95.17	93.90	93.80	93.34	90.75	90.76	90.08	96.98	95.69	94.86	94.75	94.67	93.10	91.89	91.10	91.52	90.63
TOC	%	-	-	19.7	20.0	19.7	19.8	19.8	15.4	15.0	14.6	13.3	14.3	27.9	28.2	27.6	26.9	27.0	20.0	19.5	20.8	20.9	20.0
TOC	mg/kg	10,000	100,000	197,000	200,000	197,000	198,000	198,000	154,000	150,000	146,000	133,000	143,000	279,000	282,000	276,000	269,000	270,000	200,000	195,000	208,000	209,000	200,000
Sulfur	%	-	-	0.36	0.35	0.35	0.34	0.34	0.29	0.27	0.31	0.31	0.32	1.26	1.25	1.00	0.86	0.67	0.34	0.29	0.33	0.38	0.34
Mercury	mg/kg	0.2	2	0.62	0.56	0.37	0.52	0.38	0.22	0.19	0.19	0.39	0.44	0.77	0.13	0.87	0.43	0.17	0.37	0.40	0.29	0.43	0.37
Aluminum	mg/kg	-	-	16,100	15,400	15,800	17,100	16,300	15,800	15,500	15,300	15,000	15,600	9,400	11,800	9,600	9,300	9,300	11,300	11,200	11,900	11,000	11,500
Antimony	mg/kg	-	-	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.7	1.1	0.8	0.8	0.7	0.3	0.3	0.2	0.2	0.2
Arsenic	mg/kg	6	33	6.9	6.6	6.6	6.3	6.2	4.6	4.8	4.9	4.8	5.2	8	11	8.1	7.1	6.2	3.8	3.6	3.8	3.6	4.4
Barium	mg/kg	-	-	78	75	77	79	76	65	60	57	53	52	53	70	58	55	54	52	51	54	47	50
Beryllium	mg/kg	-	-	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Boron	mg/kg	-	-	12	10	9	9	9	3	3	3	3	3	4	4	3	6	5	1	2	9	7	4
Cadmium	mg/kg	0.6	10	1.4	1.3	1.4	1.5	1.5	1.3	1.3	1.3	1.2	1.2	1.7	1.9	1.5	1.2	1.1	1.4	1.4	1.2	1.2	1.3
Chromium	mg/kg	26	110	27	26	28	30	28	27	27	33	27	27	15	19	15	14	14	25	25	26	24	25
Cobalt	mg/kg	-	-	5.5	5.2	5.4	5.5	5.5	6.8	6.8	6.8	6.5	6.8	6.4	7.7	5.4	4.6	3.9	4.7	4.5	4.6	4.1	4.3
Copper	mg/kg	16	110	42	41	43	45	46	30	31	29	27	26	29	32	25	24	22	19	19	19	17	18
Iron	mg/kg	20,000	40,000	22,000	20,000	20,600	21,100	20,100	18,100	18,000	17,200	16,500	17,000	11,400	14,100	10,600	9,300	7,900	13,700	12,000	12,000	11,000	11,200
Lead	mg/kg	31	250	63	60	64	67	69	46	45	43	40	38	97	93	66	56	41	31	31	32	28	30
Manganese	mg/kg	460	1,100	380	350	350	350	340	490	480	430	380	380	140	180	150	140	150	270	260	260	220	220
Molybdenum	mg/kg	-	-	1.0	1.0	1.0	1.0	1.0	0.7	0.7	0.7	0.6	0.6	1.1	1.4	1.1	1.1	0.9	0.4	0.4	0.4	0.4	0.5
Nickel	mg/kg	16	75	19	18	19	20	20	18	18	19	17	18	20	23	17	16	14	19	19	19	18	18
Selenium	mg/kg	-	-	1.8	1.7	1.8	1.9	1.8	1.4	1.3	1.3	1.2	1.2	2.0	2.2	1.6	1.5	1.4	1.4	1.4	1.5	1.4	1.4
Silver	mg/kg	-	-	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	<0.1	<0.1	<0.1
Strontium	mg/kg	-	-	28	26	27	28	28	34	34	34	32	34	21	29	24	22	24	33	33	34	30	32
Thallium	mg/kg	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	0.3	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thorium	mg/kg	-	-	4.6	4.1	4.4	4.4	4.6	3.9	4.1	4.0	3.8	4.1	2.5	3.4	2.7	2.6	2.7	3.3	3.1	3.4	3.1	3.3
Tin	mg/kg	-	-	2.0	1.8	1.9	2.0	2.0	1.6	1.5	1.4	1.4	1.3	2.2	2.6	1.9	1.6	1.2	1.2	1.1	1.2	1.1	1.2
Titanium	mg/kg	-	-	590	520	560	600	570	820	780	820	800	820	330	420	360	340	330	630	630	650	610	660
Uranium	mg/kg	104.4[d]	-	1.0	0.9	1.0	1.0	1.0	0.9	0.9	0.9	0.9	1.0	0.8	1.2	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9
Vanadium	mg/kg	-	-	43	41	41	44	43	35	34	34	33	34	25	30	24	22	20	22	22	23	21	22
Zinc	mg/kg	120	820	95	93	94	98	100	95	92	90	83	84	100	130	92	82	72	77	78	79	72	77

Concentration exceeds LEL

Concentration exceeds SEL

[a] Provincial Sediment Quality Guideline. OMOE (Ontario Ministry of Environment) 1993. Guidelines For The Protection and Management of Aquatic Sediment Quality In Ontario. August 1993, Reprinted October, 1996. MOE (1993).

[b] Lowest effect level

[c] Severe effect level

[d] Thompson et al. 2005. Thompson, P.A., J. Jurias, and S Mihok. 2005. Derivation and sue of sediment quality guidelines for ecological risk assessment of metals and radionuclides released to the environment from uranium Mining and millin activities in Canada. Environmental Monitoring and Assessment 110:71-85

[e] Insufficient sample volume for mercury analysis.

TOC - Total Organic Carbon

Table D.2 Sediment chemistry results from the top 5 cm of sediment in the lakes in the Côté Gold area, June and September (MesL-C6), 2013.

			Watershed	Neville Lake Watershed																			
Analyte	Units	PSQG[a] LEL[b]	PSQG[a] SEL[c]	Bagsverd Lake (South Arm)					Bagsverd Lake (Main Basin)					Unnamed Lake #2					Unnamed Lake #1				
				0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm	0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm	0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm	0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm
Dry weight	g	-	-	3.72	3.57	1.70	2.09	2.63	4.33	4.44	2.40	2.72	3.33	4.92	4.68	4.43	5.72	7.76	5.37	6.12	6.71	8.38	9.84
Moisture	%	-	-	97.38	97.06	97.05	96.41	96.86	97.20	96.07	93.62	95.06	94.55	94.74	93.28	92.62	91.31	91.20	93.67	91.18	90.25	89.36	88.88
TOC	%	-	-	28.2	27.7	27.7	27.8	28.1	21.6	21.4	21.1	21.8	21.2	23.9	23.8	23.6	23.0	23.3	23.2	22.8	23.2	22.8	22.4
TOC	mg/kg	10,000	100,000	282,000	277,000	277,000	278,000	281,000	216,000	214,000	211,000	218,000	212,000	239,000	238,000	236,000	230,000	233,000	232,000	228,000	232,000	228,000	224,000
Sulfur	%	-	-	1.37	1.47	1.45	1.45	1.57	0.66	0.67	0.66	0.74	0.91	0.74	0.85	0.89	0.93	0.90	0.31	0.38	0.43	0.48	0.56
Mercury	mg/kg	0.2	2	0.39	0.34	0.32	0.25	0.49	0.32	0.26	0.23	0.29	0.25	0.34	0.18	0.56	0.53	0.65	0.28	0.29	0.37	0.17	0.36
Aluminum	mg/kg	-	-	8,700	8,500	8,200	8,200	8,900	14,800	15,400	15,100	14,800	15,800	16,300	17,700	16,800	16,600	17,800	13,500	13,500	13,300	14,200	13,900
Antimony	mg/kg	-	-	0.4	0.4	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.6	0.7	0.7	0.8	0.9	0.3	0.3	0.3	0.3	0.3
Arsenic	mg/kg	6	33	7.2	7.5	7.1	7.2	8.3	12	12	12	12	15	9.2	10	10	11	12	5	4.8	4.9	5.9	6.5
Barium	mg/kg	-	-	46	41	40	40	38	72	62	62	55	59	77	82	75	74	80	54	51	50	52	53
Beryllium	mg/kg	-	-	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.6	0.6	0.6	0.6	0.6	0.4	0.4	0.5	0.4	0.4
Boron	mg/kg	-	-	17	14	10	9	9	12	26	20	12	28	4	10	6	6	4	12	5	3	3	3
Cadmium	mg/kg	0.6	10	1.0	1.0	1.0	1.1	1.1	1.2	1.3	1.4	1.3	1.5	1.1	1.3	1.2	1.3	1.4	1.0	1.0	0.9	1.0	1.0
Chromium	mg/kg	26	110	18	17	16	18	18	30	29	32	28	33	29	29	28	28	30	28	26	26	27	29
Cobalt	mg/kg	-	-	5.2	5.1	5.0	5.0	5.2	6.0	6.0	6.3	6.0	6.5	10.0	11.0	10.0	10.0	11.0	4.9	4.8	5.0	5.7	7.2
Copper	mg/kg	16	110	31	30	29	30	32	30	32	35	32	35	27	29	28	29	31	27	26	26	28	27
Iron	mg/kg	20,000	40,000	12,500	12,400	11,800	11,700	13,000	17,200	15,300	15,200	15,000	16,800	25,400	25,200	24,300	23,900	25,500	13,000	11,400	11,400	11,300	11,800
Lead	mg/kg	31	250	48	49	48	49	52	64	69	71	69	77	68	77	79	88	101	20	20	20	20	19
Manganese	mg/kg	460	1,100	320	310	300	300	290	550	430	440	380	360	480	470	420	410	430	420	370	340	330	310
Molybdenum	mg/kg	-	-	1.0	1.1	1.1	1.1	1.1	0.7	0.8	0.9	0.9	1.0	0.9	1.0	0.9	1.0	1.0	0.4	0.4	0.4	0.5	0.5
Nickel	mg/kg	16	75	20	20	18	19	20	21	22	23	22	23	19	20	20	20	21	20	19	18	19	19
Selenium	mg/kg	-	-	1.9	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.1	2.2	2.3	2.2	2.1	2.4	1.8	1.8	1.8	1.8	1.7
Silver	mg/kg	-	-	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	<0.1	0.1
Strontium	mg/kg	-	-	24	22	21	21	22	32	34	34	31	34	27	31	28	27	28	36	34	35	35	35
Thallium	mg/kg	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	0.2	0.2	0.2	0.2	<0.2	<0.2	<0.2	0.2	0.2
Thorium	mg/kg	-	-	2.3	2.3	2.2	2.3	2.3	3.9	3.8	4.0	3.8	4.2	4.9	5.1	4.9	5.0	5.2	5.3	5.5	5.3	5.5	4.6
Tin	mg/kg	-	-	1.5	1.4	1.3	1.4	1.4	2.0	2.2	2.1	1.9	2.2	2.0	2.4	2.2	2.4	2.7	0.8	0.8	0.8	0.8	0.7
Titanium	mg/kg	-	-	260	270	260	270	290	580	610	650	580	630	420	450	450	440	470	680	630	640	680	700
Uranium	mg/kg	104.4[d]	-	0.7	0.7	0.7	0.7	0.7	0.8	0.9	1.0	0.9	1.0	1.8	1.9	1.9	1.9	2.0	2.4	2.4	2.3	2.5	2.2
Vanadium	mg/kg	-	-	14	14	14	14	15	30	31	33	30	33	80	82	79	81	87	24	22	22	24	25
Zinc	mg/kg	120	820	94	89	88	88	93	93	99	100	99	110	110	120	120	110	120	74	71	72	77	78

Concentration exceeds LEL

Concentration exceeds SEL

[a] Provincial Sediment Quality Guideline. OMOE (Ontario Ministry of Environment) 1993. Guidelines For The Protection and Management of Aquatic Sediment Quality In Ontario. August 1993, Reprinted October, 1996. MOE (1993).

[b] Lowest effect level

[c] Severe effect level

[d] Thompson et al. 2005. Thompson, P.A., J. Jurias, and S Mihok. 2005. Derivation and sue of sediment quality guidelines for ecological risk assessment of metals and radionuclides released to the environment from uranium Mining and millin activities in Canada. Environmental Monitoring and Assessment 110:71-85

[e] Insufficient sample volume for mercury analysis.

TOC - Total Organic Carbon

Table D.2 Sediment chemistry results from the top 5 cm of sediment in the lakes in the Côté Gold area, June and September (MesL-C6), 2013.

			Watershed	Neville Lake Watershed					Mettagami River Watershed														
Analyte	Units	PSQG[a] LEL[b]	PSQG[a] SEL[c]	Neville Lake					Mesomikenda Lake (Core 1)					Mesomikenda Lake (Core 2)					Mesomikenda Lake (Core 3)				
				0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm	0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm	0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm	0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm
Dry weight	g	-	-	5.65	6.34	6.72	5.59	7.40	11.22	5.36	5.99	9.17	12.31	12.93	8.43	14.56	11.54	10.22	9.40	5.31	4.93	6.00	5.49
Moisture	%	-	-	91.86	91.38	90.66	89.56	88.66	93.96	94.47	92.08	90.70	87.15	90.86	87.09	85.51	86.45	89.61	93.94	93.15	92.13	92.12	91.05
TOC	%	-	-	18.9	18.3	18.3	18.7	18.5	13.6	14.5	12.5	11.6	9.6	8.6	8.2	7.2	8.1	11.2	14.0	13.0	11.3	11.0	13.8
TOC	mg/kg	10,000	100,000	189,000	183,000	183,000	187,000	185,000	136,000	145,000	125,000	116,000	96,300	86,200	82,000	71,900	81,200	112,000	140,000	130,000	113,000	110,000	138,000
Sulfur	%	-	-	0.47	0.47	0.46	0.47	0.46	0.65	0.69	0.91	1.08	0.81	0.21	0.30	0.35	0.39	0.40	0.30	0.44	0.50	0.34	0.42
Mercury	mg/kg	0.2	2	0.17	0.13	0.22	0.10	0.22	0.40	0.60	0.49	0.38	0.24	0.26	0.17	0.21	0.20	0.26	0.21	0.51	0.25	0.51	0.20
Aluminum	mg/kg	-	-	12,300	12,900	12,300	13,200	11,900	19,900	19,300	20,800	21,200	20,100	17,300	18,000	20,600	17,000	17,000	16,000	20,800	22,600	20,300	17,100
Antimony	mg/kg	-	-	0.3	0.3	0.3	0.3	0.3	0.7	0.6	0.8	0.9	0.8	0.5	0.5	0.6	0.5	0.5	0.6	0.9	1.0	1.0	1.1
Arsenic	mg/kg	6	33	6.7	7.4	7	7.7	7.2	16	15	21	23	18	7	7.4	8.7	8.9	8.2	81	24	22	18	21
Barium	mg/kg	-	-	74	74	70	76	69	120	120	120	110	100	77	76	87	72	68	350	260	220	190	210
Beryllium	mg/kg	-	-	0.3	0.3	0.3	0.4	0.3	0.7	0.7	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.5	0.6	0.7	0.7	0.6	0.6
Boron	mg/kg	-	-	14	9	3	2	1	4	4	5	4	4	4	4	8	6	5	4	5	6	5	6
Cadmium	mg/kg	0.6	10	1.0	1.1	0.9	1.0	0.9	1.5	1.6	2.0	1.8	1.4	1.2	1.2	1.3	0.9	1.0	1.4	2.4	2.6	2.2	2.2
Chromium	mg/kg	26	110	25	27	24	27	24	35	32	36	37	36	33	34	40	32	30	28	37	40	34	31
Cobalt	mg/kg	-	-	6.4	7.1	6.8	7.2	6.4	11.0	10.0	12.0	13.0	13.0	6.9	7.8	9.7	12.0	9.4	14.0	16.0	23.0	18.0	20.0
Copper	mg/kg	16	110	17	19	18	19	18	30	29	34	31	24	23	22	21	17	19	28	37	37	28	26
Iron	mg/kg	20,000	40,000	15,300	16,600	15,600	17,000	15,900	35,900	34,600	35,200	33,000	27,900	24,100	22,300	23,800	20,500	20,200	96,100	45,700	83,200	82,600	100,000
Lead	mg/kg	31	250	43	47	44	48	43	97	82	173	150	80	65	71	56	36	33	76	182	179	88	72
Manganese	mg/kg	460	1,100	300	330	310	320	300	1,830	1,640	1,440	1,170	850	620	530	530	430	460	16,300	12,200	13,000	9,800	10,000
Molybdenum	mg/kg	-	-	0.6	0.7	0.7	0.6	0.6	1.6	1.9	1.9	1.9	1.5	1.0	0.9	0.9	0.9	1.4	11.0	5.2	4.8	2.8	3.1
Nickel	mg/kg	16	75	14	15	13	14	14	22	21	25	26	21	20	22	22	17	15	18	31	34	21	17
Selenium	mg/kg	-	-	1.3	1.5	1.4	1.4	1.4	2.2	2.3	2.5	2.2	1.6	1.5	1.4	1.2	1.0	1.1	2.6	2.7	2.8	2.0	2.0
Silver	mg/kg	-	-	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.3	0.4	0.2	0.2
Strontium	mg/kg	-	-	32	34	32	35	31	31	28	31	32	33	34	37	43	35	32	30	32	33	29	25
Thallium	mg/kg	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.3	0.2	0.2	<0.2	0.3	0.4	0.4	0.4
Thorium	mg/kg	-	-	3.8	4.2	4.1	4.3	3.8	6.0	5.6	6.2	6.6	7.0	6.2	6.5	7.3	6.1	6.1	4.9	5.8	6.2	5.7	5.4
Tin	mg/kg	-	-	1.2	1.3	1.2	1.3	1.2	2.8	2.4	3.6	3.6	3.0	2.0	2.2	2.2	1.6	1.2	2.1	3.5	4.6	3.4	2.7
Titanium	mg/kg	-	-	630	660	640	710	620	850	800	840	980	1,200	1,100	1,100	1,400	1,200	900	630	890	1,100	1,000	800
Uranium	mg/kg	104.4[d]	-	1.7	1.8	1.7	1.9	1.7	4.1	4.2	4.4	3.7	3.0	2.8	2.7	2.6	2.4	3.6	3.2	3.2	3.1	2.5	2.9
Vanadium	mg/kg	-	-	37	41	39	41	38	76	74	76	73	67	55	54	57	50	53	72	73	82	70	69
Zinc	mg/kg	120	820	80	85	81	86	79	150	150	180	170	130	110	120	110	82	87	140	190	220	150	140

Concentration exceeds LEL

Concentration exceeds SEL

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[b] Lowest effect level

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[e] Insufficient sample volume for mercury analysis.

TOC - Total Organic Carbon

Table D.2 Sediment chemistry results from the top 5 cm of sediment in the lakes in the Côté Gold area, June and September (MesL-C6), 2013.

			Watershed	Mettagami River Watershed														
Analyte	Units	PSQG[a] LEL[b]	PSQG[a] SEL[c]	Mesomikenda Lake (Core 4)					Mesomikenda Lake (Core 5)					Mesomikenda Lake (Core 6)				
				0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm	0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm	0-1 cm	1-2 cm	2-3 cm	3-4 cm	4-5 cm
Dry weight	g	-	-	11.50	4.57	5.10	4.57	9.37	7.79	4.95	6.70	6.92	9.09	6.36	2.99	2.32	2.90	5.39
Moisture	%	-	-	92.66	92.37	92.46	92.16	91.57	94.03	92.83	91.92	91.48	90.74	97.92	97.58	67.58	97.30	94.87
TOC	%	-	-	10.7	11.3	13.9	15.1	15.6	11.0	12.2	12.0	11.1	11.5	11.6	13.6	13.7	14.7	13.1
TOC	mg/kg	10,000	100,000	107,000	113,000	139,000	151,000	156,000	110,000	122,000	120,000	111,000	115,000	116,000	136,000	137,000	147,000	131,000
Sulfur	%	-	-	0.29	0.65	0.60	0.35	0.25	0.36	0.18	0.30	0.41	0.14	0.16	0.22	0.27	0.30	0.36
Mercury	mg/kg	0.2	2	0.34	0.33	0.33	0.24	0.24	0.26	0.23	0.33	0.27	0.24	[e]	[e]	[e]	[e]	[e]
Aluminum	mg/kg	-	-	15,500	18,900	18,900	17,300	19,200	17,800	12,500	16,100	19,300	11,800	17,300	18,200	19,700	20,400	24,400
Antimony	mg/kg	-	-	0.7	0.9	0.8	0.4	<0.2	0.8	0.4	0.6	0.8	0.5	0.6	0.6	0.7	0.8	1.1
Arsenic	mg/kg	6	33	76	35	21	16	14	15	92	37	18	55	66	66	63	50	27
Barium	mg/kg	-	-	230	150	150	140	160	220	560	420	300	630	880	660	580	590	460
Beryllium	mg/kg	-	-	0.6	0.6	0.6	0.5	0.6	0.5	0.5	0.6	0.6	0.4	0.6	0.7	0.8	0.8	0.8
Boron	mg/kg	-	-	3	6	12	15	5	5	4	5	7	3	5	5	6	6	6
Cadmium	mg/kg	0.6	10	1.5	1.9	1.5	0.9	0.7	2.2	1.3	2.0	2.2	1.0	1.4	1.5	1.7	2.2	2.9
Chromium	mg/kg	26	110	30	35	34	32	35	31	23	29	35	21	45	27	28	29	34
Cobalt	mg/kg	-	-	12.0	16.0	18.0	12.0	8.1	17.0	18.0	13.0	15.0	17.0	20.0	18.0	17.0	20.0	15.0
Copper	mg/kg	16	110	28	31	30	30	34	26	22	28	31	20	23	25	28	30	37
Iron	mg/kg	20,000	40,000	122,000	84,200	66,900	47,200	46,200	68,600	127,000	62,000	55,800	111,000	147,000	139,000	122,000	108,000	76,600
Lead	mg/kg	31	250	120	100	66	33	17	80	46	99	130	37	58	63	83	111	189
Manganese	mg/kg	460	1,100	8,300	2,720	2,240	2,020	2,200	10,000	35,900	24,600	15,200	64,300	71,300	41,900	26,500	27,300	15,600
Molybdenum	mg/kg	-	-	8.8	4.6	4.5	3.4	3.0	3.2	17.0	8.7	4.6	22.0	36.0	9.8	6.8	6.2	3.3
Nickel	mg/kg	16	75	21	22	17	14	15	22	19	23	29	18	107	21	20	23	29
Selenium	mg/kg	-	-	2.3	2.4	2.1	1.6	1.6	2.0	2.1	2.2	2.3	2.0	2.3	2.4	2.4	2.6	2.8
Silver	mg/kg	-	-	0.2	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.1	0.2	0.2	0.2	0.3	0.3
Strontium	mg/kg	-	-	34	33	31	28	29	28	30	31	33	36	41	37	33	34	34
Thallium	mg/kg	-	-	<0.2	0.3	0.3	<0.2	<0.2	0.4	0.3	0.3	0.4	0.2	0.3	0.3	0.3	0.4	0.4
Thorium	mg/kg	-	-	4.3	5.2	5.4	5.3	6.2	5.1	4.0	4.8	5.4	3.7	3.9	4.1	4.5	4.7	5.6
Tin	mg/kg	-	-	2.7	3.2	2.2	1.0	0.6	2.9	1.5	2.4	3.2	1.3	2.0	2.2	2.6	3.1	4.2
Titanium	mg/kg	-	-	730	940	810	640	680	890	580	780	1,000	600	540	580	620	660	810
Uranium	mg/kg	104.4[d]	-	2.4	2.7	3.1	3.4	4.0	2.5	2.7	2.9	2.9	2.5	3.6	3.8	4.1	4.3	4.6
Vanadium	mg/kg	-	-	63	69	70	61	68	58	52	56	60	44	72	77	86	87	87
Zinc	mg/kg	120	820	130	160	120	87	92	140	120	150	180	95	160	170	200	220	260

Concentration exceeds LEL (blue)
Concentration exceeds SEL (green)

[a] Provincial Sediment Quality Guideline. OMOE (Ontario Ministry of Environment) 1993. Guidelines For The Protection and Management of Aquatic Sediment Quality In Ontario. August 1993, Reprinted October, 1996. MOE (1993).

[b] Lowest effect level

[c] Severe effect level

[d] Thompson et al. 2005. Thompson, P.A., J. Jurias, and S Mihok. 2005. Derivation and sue of sediment quality guidelines for ecological risk assessment of metals and radionuclides released to the environment from uranium Mining and millin activities in Canada. Environmental Monitoring and Assessment 110:71-85

[e] Insufficient sample volume for mercury analysis.

TOC - Total Organic Carbon

Table D.3: Sediment chemistry and grain size results from ponar sampling in the lakes in the Côté Gold area, September 2013.

Watershed				Mollie Lake Watershed																				
Analyte	Units	PSQG[a] LEL[b]	PSQG[a] SEL[c]	Chester Lake							Clam Lake							Weeduck Lake						
				1	2	3	4	5	Mean	SD	1	2	3	4	5	Mean	SD	1	2	3	4	5	Mean	SD
Dry weight	g	-	-	119.89	121.43	101.32	61.65	161.87	113.23	36.33	62.96	72.16	89.02	83.93	53.22	72.26	14.71	29.43	20.05	36.74	190.02	219.00	99.05	97.00
Moisture	%	-	-	82.66	84.77	87.46	92.64	79.70	85.45	4.93	88.18	86.23	81.23	82.23	88.00	85.17	3.25	92.43	95.65	91.85	61.03	57.54	79.70	18.73
TOC	%	-	-	16.2	12.2	20.4	32.0	13.7	18.9	8.0	12.7	13.5	8.2	9.1	13.0	11.3	2.5	22.5	23.7	17.8	3.2	1.9	13.8	10.5
TOC	mg/kg	10,000	100,000	162,000	122,000	204,000	320,000	137,000	189,000	79,542	127,000	135,000	82,200	90,500	130,000	112,940	24,616	225,000	237,000	178,000	32,000	19,300	138,260	105,232
Gravel	wt %	-	-	0.19	<0.10	<0.10	<0.10	<0.10	0.12	0.04	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	0.00	<0.10	<0.10	<0.10	0.65	<0.10	0.21	0.25
Sand	wt %	-	-	73	67	33	16	83	54	29	58	70	52	45	34	52	14	36	13	77	90	90	61	35
Silt	wt %	-	-	23	29	58	72	15	39	24	35	21	39	48	53	39	12	48	58	12	8	9	27	24
Clay	wt %	-	-	4	5	10	12	2.4	6.5	4	7	10	9	7	13	9	2	16	28	10	1	1	11.136	11
TKN	mg/kg	550	48,000	6,930	7,120	9,180	13,600	5,600	8,486	3,133	7,840	8,340	5,090	5,900	8,900	7,214	1,639	11,000	15,900	9,880	1,880	1,570	8,046	6,199
Mercury	mg/kg	0.2	2	0.22	0.10	0.24	0.75	0.07	0.28	0.28	0.37	0.38	0.17	0.14	0.27	0.27	0.11	0.39	0.45	0.16	0.05	< 0.05	0.22	0.19
Aluminum	mg/kg	-	-	13,000	11,900	12,800	10,500	7,800	11,200	2,141	15,700	16,300	12,300	11,300	19,300	14,980	3,227	16,400	12,100	11,100	7,700	8,100	11,080	3,523
Antimony	mg/kg	-	-	<0.2	<0.2	0.2	0.2	<0.2	0.2	0.0	0.4	0.5	0.2	0.2	0.4	0.3	0.1	0.7	1.1	0.5	<0.2	<0.2	0.5	0.4
Arsenic	mg/kg	6	33	4.2	4.9	5.0	6.1	3.1	4.7	1.1	8.0	7.5	4.5	3.6	8.1	6.3	2.1	16.0	10.0	6.3	3.2	2.1	7.5	5.6
Barium	mg/kg	-	-	51	38	49	52	36	45	8	50	50	38	35	57	46	9	75	49	46	29	27	45	19
Beryllium	mg/kg	-	-	0.2	0.2	0.3	0.3	0.2	0.2	0.1	0.4	0.4	0.3	0.2	0.4	0.3	0.1	0.6	0.4	0.4	0.2	0.2	0.4	0.2
Boron	mg/kg	-	-	2	2	3	3	2	2	1	4	4	3	3	5	4	1	7	8	6	2	2	5	3
Cadmium	mg/kg	0.6	10	0.8	0.5	1.0	1.3	0.9	0.9	0.3	1.0	1.2	0.8	0.7	1.2	1.0	0.2	1.7	1.9	1.1	0.3	0.2	1.0	0.8
Chromium	mg/kg	26	110	20	22	23	23	16	21	3	23	25	18	18	27	22	4	27	22	18	10	11	18	7
Cobalt	mg/kg	-	-	5.1	5.9	5.6	5.9	4.2	5.3	0.7	6.4	6.6	4.4	3.8	8.0	5.8	1.7	9.0	7.4	6.3	2.9	2.9	5.7	2.7
Copper	mg/kg	16	110	19	21	25	32	15	22	6	57	57	35	37	66	50	14	47	56	35	8	5	30	23
Iron	mg/kg	20,000	40,000	13,400	13,500	12,800	11,500	7,700	11,780	2,416	15,700	15,200	11,200	8,600	17,500	13,640	3,638	35,000	26,800	21,300	10,700	10,300	20,820	10,608
Lead	mg/kg	31	250	20	16	24	22	14	19	4	32	33	25	24	39	31	6	52	51	36	11	8	32	21
Manganese	mg/kg	460	1,100	360	300	380	410	290	348	52	470	400	500	310	470	430	76	770	470	540	340	340	492	178
Molybdenum	mg/kg	-	-	0.5	0.7	0.6	0.8	0.4	0.6	0.2	1.4	1.3	0.8	0.8	1.5	1.2	0.3	1.9	2.6	1.3	0.4	0.3	1.3	1.0
Nickel	mg/kg	16	75	14	15	17	16	11	15	2	15	16	11	11	18	14	3	21	24	17	6	5	15	9
Phosphorus	mg/kg	600	2,000	620	660	740	680	530	646	78	960	1,000	830	790	1,100	936	127	1,000	1,200	780	360	420	752	363
Selenium	mg/kg	-	-	1.2	1.2	1.6	2.0	1.0	1.4	0.4	1.5	1.6	1.1	1.2	1.8	1.4	0.3	2.3	2.8	1.6	0.4	0.3	1.5	1.1
Silver	mg/kg	-	-	<0.1	<0.1	0.1	0.1	<0.1	0.1	0.0	0.1	0.2	<0.1	<0.1	0.2	0.1	0.1	0.2	0.1	0.1	<0.1	<0.1	0.1	0.0
Strontium	mg/kg	-	-	46	40	42	32	36	39	5	33	30	38	37	39	35	4	37	31	36	34	35	35	2
Thallium	mg/kg	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	0.0	0.2	0.2	<0.2	<0.2	0.2	0.2	0.0	0.3	0.2	<0.2	<0.2	<0.2	0.2	0.0
Tin	mg/kg	-	-	1.4	0.8	1.0	0.7	0.6	0.9	0.3	1.2	1.3	1.0	1.0	1.5	1.2	0.2	1.7	1.6	1.1	0.5	0.5	1.1	0.6
Titanium	mg/kg	-	-	790	920	800	420	750	736	188	770	690	970	920	1050	880	147	770	600	810	750	760	738	80
Uranium	mg/kg	104.4[d]	-	0.8	0.8	1.2	1.2	0.6	0.9	0.3	1.1	1.1	0.8	0.9	1.3	1.0	0.2	1.3	1.3	0.9	0.4	0.4	0.9	0.5
Vanadium	mg/kg	-	-	25	24	23	22	18	22	3	27	27	22	20	32	26	5	36	25	24	16	15	23	8
Zinc	mg/kg	120	820	62	53	71	85	59	66	12	100	110	71	64	110	91	22	130	120	94	34	29	81	47

Concentration exceeds LEL

Concentration exceeds SEL

[a] Provincial Sediment Quality Guideline. OMOE (Ontario Ministry of Environment) 1993. Guidelines For The Protection and Management of Aquatic Sediment Quality In Ontario. August 1993, Reprinted October, 1996. MOE (1993).

[b] Lowest effect level

[c] Severe effect level

[d] Thompson et al. 2005. Thompson, P.A., J. Jurias, and S Mihok. 2005. Derivation and sue of sediment quality guidelines for ecological risk assessment of metals and radionuclides released to the environment from uranium Mining and millin activities in Canada. Environmental Monitoring and Assessment 110:71-85

TOC - Total Organic Carbon

TKN - Total Kjeldahl Nitrogen

Table D.3: Sediment chemistry and grain size results from ponar sampling in the lakes in the Côté Gold area, September 2013.

			Watershed	Mollie Lake Watershed																				
Analyte	Units	PSQG[a] LEL[b]	PSQG[a] SEL[c]	Upper Three Duck Lake							Middle Three Duck Lake							Lower Three Duck Lake						
				1	2	3	4	5	Mean	SD	1	2	3	4	5	Mean	SD	1	2	3	4	5	Mean	SD
Dry weight	g	-	-	30.08	34.45	48.10	36.08	58.12	41.37	11.50	25.44	143.52	37.20	190.56	85.53	96.45	70.26	48.04	43.97	42.99	51.38	35.14	44.30	6.12
Moisture	%	-	-	94.38	85.98	90.47	89.22	85.64	89.14	3.59	91.64	67.36	89.02	51.23	84.01	76.65	17.06	87.98	89.50	91.05	90.43	90.05	89.80	1.16
TOC	%	-	-	19.7	18.1	15.5	24.3	14.7	18.5	3.8	20.6	2.7	12.6	1.4	8.7	9.2	7.8	14.1	15.2	18.2	16.8	18.6	16.6	1.9
TOC	mg/kg	10,000	100,000	197,000	181,000	155,000	243,000	147,000	184,600	38,299	206,000	26,600	126,000	14,100	87,200	91,980	78,295	141,000	152,000	182,000	168,000	186,000	165,800	19,241
Gravel	wt %	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	0.00	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	0.00	<0.10	<0.10	<0.10	0.31	<0.10	0.14	0.09
Sand	wt %	-	-	64	41	47	53	47	50	9	<0.10	91	49	97	74	78	22	14	8	32	17	24	19	9
Silt	wt %	-	-	30	48	38	37	47	40	8	73	7	36	3	19	28	28	58	59	48	63	60	58	6
Clay	wt %	-	-	6	11	15	10	6	10	4	27	2	15	1	7	10.314	11	29	33	20	20	16	23.6	7
TKN	mg/kg	550	48,000	10,400	9,610	8,070	8,620	6,370	8,614	1,542	9,160	2,310	5,410	1,110	5,290	4,656	3,136	6,980	7,210	9,300	7,500	9,220	8,042	1,127
Mercury	mg/kg	0.2	2	0.78	0.49	0.35	0.43	0.43	0.50	0.17	0.45	0.10	0.63	0.06	0.18	0.28	0.25	0.27	0.37	0.32	0.63	0.15	0.35	0.18
Aluminum	mg/kg	-	-	16,600	18,200	15,800	17,200	15,300	16,620	1,145	21,400	6,700	19,200	6,000	11,400	12,940	7,075	18,000	15,700	17,400	18,600	18,700	17,680	1,224
Antimony	mg/kg	-	-	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.4	<0.2	0.4	<0.2	0.2	0.3	0.1	0.3	0.3	0.4	0.3	0.3	0.3	0.0
Arsenic	mg/kg	6	33	6.6	6.9	5.7	6.6	4.7	6.1	0.9	9.1	2.2	7.4	1.8	5.1	5.1	3.2	7.8	5.4	7.8	7.3	8.0	7.3	1.1
Barium	mg/kg	-	-	57	59	50	54	45	53	6	66	18	58	14	32	38	23	63	54	59	60	64	60	4
Beryllium	mg/kg	-	-	0.4	0.4	0.3	0.4	0.3	0.4	0.1	0.5	0.2	0.4	0.2	0.3	0.3	0.1	0.4	0.3	0.4	0.4	0.4	0.4	0.0
Boron	mg/kg	-	-	8	6	4	5	4	5	2	9	3	10	2	7	6	4	7	7	8	10	10	8	2
Cadmium	mg/kg	0.6	10	1.6	1.4	1.2	1.3	1.0	1.3	0.2	1.4	0.4	1.2	0.3	0.6	0.8	0.5	0.9	1.2	1.0	0.9	1.2	1.0	0.2
Chromium	mg/kg	26	110	27	28	24	26	24	26	2	31	11	27	10	17	19	9	32	29	30	30	32	31	1
Cobalt	mg/kg	-	-	6.8	7.1	6.8	6.9	6.0	6.7	0.4	7.9	3.7	7.8	3.9	5.8	5.8	2.0	8.6	6.0	7.2	7.4	7.9	7.4	1.0
Copper	mg/kg	16	110	37	36	31	35	26	33	5	46	9	35	5	20	23	17	52	54	56	54	61	55	3
Iron	mg/kg	20,000	40,000	19,300	16,400	18,000	18,200	16,400	17,660	1,252	25,200	9,900	24,400	10,800	17,900	17,640	7,239	18,500	15,100	16,400	17,800	19,100	17,380	1,624
Lead	mg/kg	31	250	50	46	37	45	35	43	6	51	11	47	8	24	28	20	35	40	44	42	46	41	4
Manganese	mg/kg	460	1,100	400	420	460	410	350	408	40	550	190	600	150	330	364	205	590	380	460	530	560	504	84
Molybdenum	mg/kg	-	-	0.8	0.8	0.6	0.7	0.6	0.7	0.1	1.0	0.3	0.9	0.3	0.8	0.7	0.3	1.1	0.8	1.2	0.9	0.9	1.0	0.2
Nickel	mg/kg	16	75	22	21	18	20	16	19	2	23	7	19	6	12	13	8	20	20	21	21	24	21	2
Phosphorus	mg/kg	600	2,000	1,200	1,300	1,100	1,200	1,100	1,180	84	1,500	500	1,300	410	840	910	480	1,200	1,200	1,200	1,300	1,400	1,260	89
Selenium	mg/kg	-	-	1.7	1.6	1.4	1.6	1.2	1.5	0.2	2.0	0.4	1.4	0.2	0.8	1.0	0.7	1.6	1.6	1.8	1.7	1.8	1.7	0.1
Silver	mg/kg	-	-	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.2	<0.1	0.2	<0.1	<0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.0
Strontium	mg/kg	-	-	31	31	30	31	33	31	1	29	23	35	18	27	26	6	41	33	29	30	33	33	5
Thallium	mg/kg	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	0.0	0.2	<0.2	<0.2	<0.2	<0.2	0.2	0.0	0.2	<0.2	0.2	<0.2	0.2	0.2	0.0
Tin	mg/kg	-	-	1.6	1.5	1.3	1.4	1.2	1.4	0.2	1.8	0.5	1.7	0.4	0.9	1.1	0.7	1.4	1.4	1.6	1.5	1.6	1.5	0.1
Titanium	mg/kg	-	-	610	630	650	630	760	656	60	640	650	820	610	790	702	96	990	740	670	770	750	784	121
Uranium	mg/kg	104.4[d]	-	1.1	1.0	0.9	1.0	0.8	1.0	0.1	1.2	0.4	1.2	0.4	0.7	0.8	0.4	1.2	1.0	1.2	1.1	1.1	1.1	0.1
Vanadium	mg/kg	-	-	34	33	29	32	30	32	2	40	16	40	15	30	28	12	37	29	34	35	35	34	3
Zinc	mg/kg	120	820	100	100	86	99	81	93	9	120	36	110	36	70	74	40	93	90	98	94	110	97	8

Concentration exceeds LEL

Concentration exceeds SEL

[a] Provincial Sediment Quality Guideline. OMOE (Ontario Ministry of Environment) 1993. Guidelines For The Protection and Management of Aquatic Sediment Quality In Ontario. August 1993, Reprinted October, 1996. MOE (1993).

[b] Lowest effect level

[c] Severe effect level

[d] Thompson et al. 2005. Thompson, P.A., J. Jurias, and S Mihok. 2005. Derivation and sue of sediment quality guidelines for ecological risk assessment of metals and radionuclides released to the environment from uranium Mining and millin activities in Canada. Environmental Monitoring and Assessment 110:71-85

TOC - Total Organic Carbon

TKN - Total Kjeldahl Nitrogen

Table D.3: Sediment chemistry and grain size results from ponar sampling in the lakes in the Côté Gold area, September 2013.

			Watershed	Mollie Lake Watershed														Neville Lake Watershed						
Analyte	Units	PSQG[a] LEL[b]	PSQG[a] SEL[c]	Unnamed Lake #3							Delaney Lake							Schist Lake (Deep)						
				1	2	3	4	5	Mean	SD	1	2	3	4	5	Mean	SD	1	2	3	4	5	Mean	SD
Dry weight	g	-	-	38.12	43.69	37.37	30.72	42.36	38.45	5.09	96.58	87.03	80.08	95.03	88.51	89.45	6.64	19.45	24.96	19.49	24.51	25.04	22.69	2.95
Moisture	%	-	-	92.69	93.11	92.80	91.49	93.57	92.73	0.77	84.73	86.03	86.95	85.20	82.52	85.09	1.67	96.35	96.86	97.19	97.50	96.67	96.91	0.45
TOC	%	-	-	22.5	22.9	23.3	25.0	22.5	23.2	1.0	17.1	20.2	21.0	18.0	13.7	18.0	2.9	26.8	27.3	35.0	35.6	31.5	31.2	4.1
TOC	mg/kg	10,000	100,000	225,000	229,000	233,000	250,000	225,000	232,400	10,383	171,000	202,000	210,000	180,000	137,000	180,000	28,784	268,000	273,000	350,000	356,000	315,000	312,400	41,368
Gravel	wt %	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	0.00	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	0.00	1.60	<0.10	<0.10	<0.10	<0.10	0.40	0.67
Sand	wt %	-	-	47	19	57	8	55	37	22	11	13	1	11	41	15	15	23	19	4	3	10	12	9
Silt	wt %	-	-	37	52	30	51	33	41	10	77	69	87	85	54	74	13	40	47	45	53	47	46	5
Clay	wt %	-	-	16	29	13	42	12	22	13	11	18	12	4	6	10.04	6	36	34	51	44	43	42	7
TKN	mg/kg	550	48,000	15,400	14,300	12,000	12,400	12,700	13,360	1,436	7,470	9,160	9,600	7,430	7,580	8,248	1,046	22,600	21,600	27,900	29,500	25,800	25,480	3,371
Mercury	mg/kg	0.2	2	0.41	0.23	0.35	0.31	0.58	0.38	0.13	0.30	0.29	0.49	0.34	0.11	0.31	0.14	0.24	0.24	0.40	0.91	0.27	0.41	0.29
Aluminum	mg/kg	-	-	8,100	7,700	10,600	7,900	8,200	8,500	1,190	11,500	11,900	12,700	11,200	9,400	11,340	1,222	10,200	8,300	6,300	7,600	9,200	8,320	1,492
Antimony	mg/kg	-	-	0.3	<0.2	0.7	0.5	0.4	0.4	0.2	<0.2	<0.2	0.2	<0.2	<0.2	0.2	0.0	0.8	0.6	0.6	0.8	1.0	0.8	0.2
Arsenic	mg/kg	6	33	4.6	3.2	5.7	5.1	4.7	4.7	0.9	5.0	5.3	5.4	5.3	4.5	5.1	0.4	15.0	11.0	12.0	15.0	16.0	13.8	2.2
Barium	mg/kg	-	-	48	41	60	49	49	49	7	44	48	52	44	37	45	6	42	36	37	48	45	42	5
Beryllium	mg/kg	-	-	0.2	0.1	0.2	0.2	0.2	0.2	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.2	0.2	0.1	0.2	0.2	0.2	0.0
Boron	mg/kg	-	-	<1	<1	5	4	4	3	2	<1	<1	<1	<1	<1	1	0	6	3	4	6	6	5	1
Cadmium	mg/kg	0.6	10	0.8	0.6	1.2	1.0	1.0	0.9	0.2	1.1	1.4	1.4	1.1	1.0	1.2	0.2	1.9	1.5	1.7	2.0	2.0	1.8	0.2
Chromium	mg/kg	26	110	16	16	20	16	16	17	2	25	26	26	25	21	25	2	23	21	19	22	24	22	2
Cobalt	mg/kg	-	-	4.0	3.4	5.0	4.2	4.0	4.1	0.6	5.2	5.6	5.8	5.3	5.4	5.5	0.2	7.0	5.8	5.3	6.3	7.1	6.3	0.8
Copper	mg/kg	16	110	24	22	28	21	25	24	3	17	19	21	18	14	18	3	44	34	44	53	47	44	7
Iron	mg/kg	20,000	40,000	5,300	4,400	6,700	5,300	5,400	5,420	823	11,900	11,900	12,600	11,400	10,700	11,700	704	15,800	12,200	9,000	11,200	14,100	12,460	2,621
Lead	mg/kg	31	250	26	17	40	33	31	29	9	25	32	34	24	23	28	5	76	61	53	64	78	66	11
Manganese	mg/kg	460	1,100	150	120	190	160	150	154	25	290	260	270	280	260	272	13	220	180	160	200	230	198	29
Molybdenum	mg/kg	-	-	0.9	0.9	1.1	0.9	1.0	1.0	0.1	0.6	0.5	0.5	0.5	0.4	0.5	0.1	1.8	1.4	2.2	2.5	2.1	2.0	0.4
Nickel	mg/kg	16	75	14	13	18	14	15	15	2	17	19	20	17	14	17	2	26	22	25	30	28	26	3
Phosphorus	mg/kg	600	2,000	940	840	1,100	820	880	916	113	920	980	1,000	960	790	930	84	1,500	1,200	1,000	1,200	1,400	1,260	195
Selenium	mg/kg	-	-	1.3	1.1	1.7	1.3	1.4	1.4	0.2	1.3	1.4	1.5	1.3	1.1	1.3	0.1	2.7	2.1	2.4	2.8	2.8	2.6	0.3
Silver	mg/kg	-	-	0.1	<0.1	0.1	0.1	0.1	0.1	0.0	<0.1	<0.1	0.1	<0.1	<0.1	0.1	0.0	0.2	0.2	0.1	0.2	0.2	0.2	0.0
Strontium	mg/kg	-	-	26	22	32	28	27	27	4	36	37	35	33	32	35	2	36	33	26	32	36	33	4
Thallium	mg/kg	-	-	<0.2	<0.2	0.2	<0.2	<0.2	0.2	0.0	<0.2	<0.2	0.2	<0.2	<0.2	0.2	0.0	0.2	<0.2	<0.2	0.2	0.2	0.2	0.0
Tin	mg/kg	-	-	0.8	0.5	1.3	1.1	1.0	0.9	0.3	1.0	1.1	1.2	0.9	0.9	1.0	0.1	2.4	1.7	1.4	1.6	2.2	1.9	0.4
Titanium	mg/kg	-	-	370	290	480	430	380	390	71	810	770	660	700	800	748	65	560	630	340	420	570	504	120
Uranium	mg/kg	104.4[d]	-	1.2	1.1	1.3	1.1	1.2	1.2	0.1	1.1	0.9	1.0	1.1	1.0	1.0	0.1	0.8	0.6	0.7	0.8	0.8	0.7	0.1
Vanadium	mg/kg	-	-	18	15	22	18	18	18	2	24	23	24	23	22	23	1	21	19	14	17	22	19	3
Zinc	mg/kg	120	820	60	51	82	65	68	65	11	82	93	97	86	73	86	9	140	100	110	140	140	126	19

Concentration exceeds LEL

Concentration exceeds SEL

[a] Provincial Sediment Quality Guideline. OMOE (Ontario Ministry of Environment) 1993. Guidelines For The Protection and Management of Aquatic Sediment Quality In Ontario. August 1993, Reprinted October, 1996. MOE (1993).

[b] Lowest effect level

[c] Severe effect level

[d] Thompson et al. 2005. Thompson, P.A., J. Jurias, and S Mihok. 2005. Derivation and sue of sediment quality guidelines for ecological risk assessment of metals and radionuclides released to the environment from uranium Mining and millin activities in Canada. Environmental Monitoring and Assessment 110:71-85

TOC - Total Organic Carbon

TKN - Total Kjeldahl Nitrogen

Table D.3: Sediment chemistry and grain size results from ponar sampling in the lakes in the Côté Gold area, September 2013.

			Watershed	Neville Lake Watershed																				
Analyte	Units	PSQG[a] LEL[b]	PSQG[a] SEL[c]	Schist Lake (Shallow)							Bagsverd Lake (South Arm)							Bagsverd Lake (Main Basin)						
				1	2	3	4	5	Mean	SD	1	2	3	4	5	Mean	SD	1	2	3	4	5	Mean	SD
Dry weight	g	-	-	17.79	12.88	20.64	16.76	15.24	16.66	2.89	12.60	38.09	28.73	37.12	16.03	26.51	11.78	33.62	36.07	32.75	30.49	37.95	34.18	2.91
Moisture	%	-	-	97.52	97.93	97.34	96.92	96.93	97.33	0.43	96.38	95.46	96.59	95.75	95.90	96.02	0.46	93.59	93.31	93.96	92.36	90.43	92.73	1.42
TOC	%	-	-	33.1	35.6	33.7	31.8	28.5	32.5	2.6	33.7	26.8	31.1	28.7	25.5	29.2	3.3	26.8	20.4	20.8	21.1	23.3	22.5	2.7
TOC	mg/kg	10,000	100,000	331,000	356,000	337,000	318,000	285,000	325,400	26,406	337,000	268,000	311,000	287,000	255,000	291,600	32,997	268,000	204,000	208,000	211,000	233,000	224,800	26,640
Gravel	wt %	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	0.00	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	0.00	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	0.00
Sand	wt %	-	-	11	3	2	16	26	12	10	11	12	19	22	5	14	7	24	25	26	43	34	30	8
Silt	wt %	-	-	44	29	33	44	39	38	7	40	65	41	37	40	45	12	59	54	53	39	51	51	7
Clay	wt %	-	-	46	68	66	40	35	51	15	50	23	40	42	55	42	12	16	21	21	17	15	18	3
TKN	mg/kg	550	48,000	25,400	27,400	22,500	22,000	19,600	23,380	3,050	23,700	18,400	18,800	17,800	8,700	17,480	5,442	15,500	12,300	15,900	14,300	14,600	14,520	1,401
Mercury	mg/kg	0.2	2	0.14	0.56	0.15	0.24	0.24	0.27	0.17	0.50	0.18	0.51	0.81	0.15	0.43	0.27	0.25	0.20	0.65	0.23	0.25	0.32	0.19
Aluminum	mg/kg	-	-	5,700	4,800	6,200	6,900	7,000	6,120	909	6,100	6,600	6,400	6,900	7,200	6,640	428	13,400	11,000	13,700	12,700	13,200	12,800	1,070
Antimony	mg/kg	-	-	0.3	0.4	0.4	0.5	0.4	0.4	0.1	0.4	0.2	<0.2	0.3	0.2	0.3	0.1	0.5	0.2	0.5	0.4	0.4	0.4	0.1
Arsenic	mg/kg	6	33	13.0	11.0	11.0	13.0	12.0	12.0	1.0	7.4	6.5	8.7	6.9	8.1	7.5	0.9	22.0	13.0	20.0	15.0	17.0	17.4	3.6
Barium	mg/kg	-	-	72	53	73	55	49	60	11	45	62	46	48	62	53	9	67	40	50	46	49	50	10
Beryllium	mg/kg	-	-	0.2	0.1	0.2	0.2	0.2	0.2	0.0	0.2	0.1	0.2	0.2	0.2	0.2	0.0	0.4	0.2	0.3	0.3	0.3	0.3	0.1
Boron	mg/kg	-	-	4	4	3	5	4	4	1	8	4	6	6	5	6	1	13	7	10	9	9	10	2
Cadmium	mg/kg	0.6	10	0.6	0.8	0.9	1.4	1.2	1.0	0.3	1.4	0.4	0.7	1.5	0.6	0.9	0.5	2.0	1.0	1.9	1.6	1.7	1.6	0.4
Chromium	mg/kg	26	110	17	15	17	20	22	18	3	13	14	16	14	14	14	1	38	22	27	25	27	28	6
Cobalt	mg/kg	-	-	3.7	3.3	3.9	4.6	5.1	4.1	0.7	4.4	3.3	4.4	4.5	3.9	4.1	0.5	9.5	5.3	7.0	6.2	6.8	7.0	1.6
Copper	mg/kg	16	110	38	34	31	37	38	36	3	29	26	33	25	33	29	4	42	20	31	28	29	30	8
Iron	mg/kg	20,000	40,000	8,900	6,900	8,900	9,700	10,600	9,000	1,367	6,800	7,600	9,000	7,700	6,900	7,600	880	23,200	17,000	24,200	23,500	22,300	22,040	2,899
Lead	mg/kg	31	250	18	29	34	51	46	36	13	35	6	11	36	16	21	14	48	25	50	36	40	40	10
Manganese	mg/kg	460	1,100	190	200	240	180	220	206	24	330	290	260	360	240	296	49	640	410	520	470	500	508	85
Molybdenum	mg/kg	-	-	2.4	2.1	1.6	1.6	1.5	1.8	0.4	1.2	1.8	1.8	0.9	1.8	1.5	0.4	1.2	0.6	1.0	1.0	1.0	1.0	0.2
Nickel	mg/kg	16	75	19	18	20	23	23	21	2	21	18	20	18	19	19	1	29	15	23	20	21	22	5
Phosphorus	mg/kg	600	2,000	520	710	610	730	700	654	88	1,400	470	630	800	460	752	388	1,200	750	980	850	960	948	168
Selenium	mg/kg	-	-	1.4	1.5	1.5	1.8	1.7	1.6	0.2	1.9	1.1	1.5	1.6	1.2	1.5	0.3	2.3	1.2	2.0	1.6	1.7	1.8	0.4
Silver	mg/kg	-	-	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.0	0.1	<0.1	<0.1	0.1	<0.1	0.1	0.0	0.1	<0.1	0.2	0.1	0.1	0.1	0.0
Strontium	mg/kg	-	-	26	27	29	28	29	28	1	23	22	25	26	24	24	2	47	27	34	39	36	37	7
Thallium	mg/kg	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	0.0	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	0.0	0.2	<0.2	<0.2	<0.2	<0.2	0.2	0.0
Tin	mg/kg	-	-	0.5	0.7	0.9	1.4	1.2	0.9	0.4	0.9	0.2	0.3	1.0	0.4	0.6	0.4	1.6	0.8	1.6	1.2	1.2	1.3	0.3
Titanium	mg/kg	-	-	270	220	320	420	510	348	117	270	250	300	280	260	272	19	960	570	650	770	760	742	147
Uranium	mg/kg	104.4[d]	-	0.6	0.6	0.6	0.6	0.6	0.6	0.0	0.6	0.9	0.8	0.7	0.9	0.8	0.1	1.2	0.7	0.8	0.8	0.8	0.9	0.2
Vanadium	mg/kg	-	-	15	12	16	18	19	16	3	11	12	12	10	13	12	1	35	21	27	25	26	27	5
Zinc	mg/kg	120	820	65	64	71	89	91	76	13	97	50	70	92	57	73	21	140	73	120	110	110	111	24

Concentration exceeds LEL

Concentration exceeds SEL

[a] Provincial Sediment Quality Guideline. OMOE (Ontario Ministry of Environment) 1993. Guidelines For The Protection and Management of Aquatic Sediment Quality In Ontario. August 1993, Reprinted October, 1996. MOE (1993).

[b] Lowest effect level

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[d] Thompson et al. 2005. Thompson, P.A., J. Jurias, and S Mihok. 2005. Derivation and sue of sediment quality guidelines for ecological risk assessment of metals and radionuclides released to the environment from uranium Mining and millin activities in Canada. Environmental Monitoring and Assessment 110:71-85

TOC - Total Organic Carbon

TKN - Total Kjeldahl Nitrogen

Table D.3: Sediment chemistry and grain size results from ponar sampling in the lakes in the Côté Gold area, September 2013.

			Watershed	Neville Lake Watershed																				
Analyte	Units	PSQG[a] LEL[b]	PSQG[a] SEL[c]	Unnamed Lake #2							Unnamed Lake #1							Neville Lake						
				1	2	3	4	5	Mean	SD	1	2	3	4	5	Mean	SD	1	2	3	4	5	Mean	SD
Dry weight	g	-	-	94.53	62.64	52.24	46.27	73.43	65.82	19.10	49.40	74.50	56.59	58.73	52.44	58.33	9.74	113.03	109.76	98.74	82.43	76.20	96.03	16.30
Moisture	%	-	-	81.27	89.84	89.54	87.46	86.74	86.97	3.45	90.20	87.64	89.36	88.87	90.24	89.26	1.08	85.87	84.90	86.49	88.58	88.08	86.78	1.53
TOC	%	-	-	11.2	28.5	25.2	24.6	17.0	21.3	7.0	22.7	20.0	23.9	25.1	28.0	23.9	3.0	16.5	15.7	15.4	16.4	18.0	16.4	1.0
TOC	mg/kg	10,000	100,000	112,000	285,000	252,000	246,000	170,000	213,000	70,434	227,000	200,000	239,000	251,000	280,000	239,400	29,535	165,000	157,000	154,000	164,000	180,000	164,000	10,075
Gravel	wt %	-	-	<0.10	<0.10	<0.10	<0.10	0.21	0.12	0.05	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	0.00	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	0.00
Sand	wt %	-	-	36	26	27	39	32	32	6	24	61	29	19	26	32	17	8	15	18	24	21	17	6
Silt	wt %	-	-	56	61	63	45	56	56	7	62	33	64	64	65	58	14	75	80	70	72	65	72	6
Clay	wt %	-	-	8	13	10	16	11	12	3	14	6	8	17	9	11	5	17	5	12	4	14	10	6
TKN	mg/kg	550	48,000	6,070	12,300	11,400	9,980	8,340	9,618	2,486	11,300	10,700	12,200	12,100	13,200	11,900	951	7,210	7,040	8,180	9,030	9,600	8,212	1,115
Mercury	mg/kg	0.2	2	0.23	0.47	0.30	0.30	0.36	0.33	0.09	0.32	0.47	0.62	0.24	0.61	0.45	0.17	0.20	0.26	0.25	0.35	0.26	0.26	0.05
Aluminum	mg/kg	-	-	13,300	16,400	16,500	14,600	15,500	15,260	1,339	17,400	17,000	17,300	14,600	13,800	16,020	1,692	13,800	14,800	15,500	17,800	17,900	15,960	1,828
Antimony	mg/kg	-	-	<0.2	0.5	0.3	0.4	0.4	0.4	0.1	0.2	0.3	0.2	0.2	0.3	0.2	0.1	<0.2	0.4	0.3	0.3	0.4	0.3	0.1
Arsenic	mg/kg	6	33	5.3	8.0	6.8	6.9	9.9	7.4	1.7	6.5	6.6	6.8	6.4	5.7	6.4	0.4	4.4	6.8	7.6	7.7	9.1	7.1	1.7
Barium	mg/kg	-	-	41	74	69	64	60	62	13	56	57	56	54	57	56	1	57	60	62	64	61	61	3
Beryllium	mg/kg	-	-	0.4	0.6	0.6	0.5	0.5	0.5	0.1	0.5	0.5	0.5	0.4	0.5	0.5	0.0	0.3	0.3	0.4	0.5	0.4	0.4	0.1
Boron	mg/kg	-	-	2	<1	<1	<1	<1	1	0	4	3	3	3	2	3	1	<1	<1	<1	1	<1	1	0
Cadmium	mg/kg	0.6	10	0.7	1.6	1.4	1.3	1.1	1.2	0.3	1.0	1.2	1.2	1.0	1.2	1.1	0.1	1.1	1.0	0.9	0.8	1.0	1.0	0.1
Chromium	mg/kg	26	110	24	31	30	27	27	28	3	27	27	29	25	24	26	2	28	28	31	29	28	29	1
Cobalt	mg/kg	-	-	8.6	11.0	11.0	9.5	16.0	11.2	2.9	8.3	7.6	7.3	7.0	6.0	7.2	0.8	8.0	11.0	12.0	11.0	11.0	10.6	1.5
Copper	mg/kg	16	110	16	29	25	28	20	24	6	30	29	32	32	34	31	2	15	15	16	21	23	18	4
Iron	mg/kg	20,000	40,000	14,300	18,200	17,500	16,100	25,900	18,400	4,450	13,600	13,200	14,100	12,700	10,600	12,840	1,354	12,800	15,700	19,200	18,600	18,600	16,980	2,706
Lead	mg/kg	31	250	18	43	31	40	34	33	10	20	26	25	18	23	22	3	29	26	30	33	38	31	5
Manganese	mg/kg	460	1,100	400	590	580	520	620	542	87	340	290	360	470	500	392	89	520	620	720	550	430	568	109
Molybdenum	mg/kg	-	-	0.6	0.8	0.6	0.8	1.0	0.8	0.2	0.7	0.7	0.6	0.7	0.6	0.7	0.1	0.5	0.6	0.6	0.7	0.8	0.6	0.1
Nickel	mg/kg	16	75	14	21	19	18	18	18	3	21	21	22	19	19	20	1	14	15	15	17	17	16	1
Phosphorus	mg/kg	600	2,000	960	1,200	1,400	1,000	1,200	1,152	178	1,000	1,100	1,100	900	940	1,008	91	940	1,000	1,100	1,200	1,200	1,088	117
Selenium	mg/kg	-	-	1.1	2.1	1.8	1.9	1.6	1.7	0.4	1.9	2.0	2.2	2.0	2.3	2.1	0.2	1.2	1.2	1.2	1.4	1.6	1.3	0.2
Silver	mg/kg	-	-	<0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	<0.1	0.1	0.1	0.0	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.0
Strontium	mg/kg	-	-	38	38	38	37	34	37	2	36	29	35	39	38	35	4	46	43	41	36	31	39	6
Thallium	mg/kg	-	-	0.2	0.3	0.3	0.2	0.4	0.3	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.0	<0.2	0.2	0.2	0.2	0.3	0.2	0.0
Tin	mg/kg	-	-	0.8	1.5	1.1	1.4	1.3	1.2	0.3	0.8	0.9	0.9	0.7	0.8	0.8	0.1	1.0	1.0	1.1	1.2	1.2	1.1	0.1
Titanium	mg/kg	-	-	970	510	570	660	720	686	178	610	450	560	660	510	558	82	980	980	930	790	660	868	140
Uranium	mg/kg	104.4[d]	-	1.5	2.5	2.3	2.4	2.0	2.1	0.4	2.3	2.1	2.4	3.0	3.5	2.7	0.6	2.1	2.1	2.2	2.6	2.8	2.4	0.3
Vanadium	mg/kg	-	-	31	41	38	38	49	39	7	28	27	26	26	25	26	1	30	33	36	39	40	36	4
Zinc	mg/kg	120	820	72	110	110	96	110	100	17	88	90	92	87	93	90	3	75	72	78	85	89	80	7

Concentration exceeds LEL

Concentration exceeds SEL

[a] Provincial Sediment Quality Guideline. OMOE (Ontario Ministry of Environment) 1993. Guidelines For The Protection and Management of Aquatic Sediment Quality In Ontario. August 1993, Reprinted October, 1996. MOE (1993).

[b] Lowest effect level

[c] Severe effect level

[d] Thompson et al. 2005. Thompson, P.A., J. Jurias, and S Mihok. 2005. Derivation and sue of sediment quality guidelines for ecological risk assessment of metals and radionuclides released to the environment from uranium Mining and millin activities in Canada. Environmental Monitoring and Assessment 110:71-85

TOC - Total Organic Carbon

TKN - Total Kjeldahl Nitrogen

Table D.4: Sediment chemistry and grain size results from ponar sampling in streams in the Côté Gold area, September 2013.

Analyte	Units	PSQG[a] LEL[b]	PSQG[a] SEL[c]	Bagsverd Creek							Errington Creek						
				1	2	3	4	5	Mean	SD	1	2	3	4	5	Mean	SD
Dry weight	g	-	-	77.44	112.14	77.08	76.62	55.99	79.85	20.22	38.66	26.83	20.20	95.14	118.05	59.78	44.00
Moisture	%	-	-	73.25	79.10	83.55	80.22	85.10	80.24	4.60	88.43	91.30	92.78	81.55	75.90	85.99	7.10
Total Organic Carbon	%	-	-	7.99	12.00	19.70	17.80	24.00	16.30	6.34	17.00	24.90	39.50	10.50	11.00	20.58	12.07
Total Organic Carbon	mg/kg	10,000	100,000	79,900	120,000	197,000	178,000	240,000	162,980	63,373	170,000	249,000	395,000	105,000	110,000	205,800	120,709
Gravel	wt %	-	-	<0.10	<0.10	<0.10	0.75	<0.10	0.23	0.29	<0.10	<0.10	<0.10	0.20	0.21	0.14	0.06
Sand	wt %	-	-	81	61	55	72	46	63	14	42	85	41	42	92	60	26
Silt	wt %	-	-	17	32	37	24	42	30	10	51	9	37	55	6	32	23
Clay	wt %	-	-	2.9	7.5	7.9	3.6	12.0	6.8	3.7	8.0	5.6	22.0	3.1	1.9	8.1	8.1
Total Kjeldahl Nitrogen	mg/kg	550	48,000	4,310	5,930	7,390	7,460	9,490	6,916	1,931	8,170	9,470	17,000	4,930	4,020	8,718	5,145
Mercury	mg/kg	0.2	2	0.12	0.13	0.11	0.10	0.17	0.13	0.03	0.18	0.19	0.23	0.10	0.10	0.16	0.06
Aluminum	mg/kg	-	-	7,700	8,800	8,500	8,600	8,800	8,480	455	9,300	6,500	6,600	10,900	6,900	8,040	1,969
Antimony	mg/kg	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	0.0	<0.2	0.3	0.3	<0.2	<0.2	0.2	0.1
Arsenic	mg/kg	6	33	2.8	3.3	4.4	4.5	5.0	4.0	0.9	9.5	6.0	6.9	4.6	4.9	6.4	2.0
Barium	mg/kg	-	-	37	47	62	59	65	54	12	35	40	49	41	23	38	10
Beryllium	mg/kg	-	-	0.2	0.2	0.2	0.2	0.3	0.2	0.0	0.3	0.2	0.2	0.2	0.2	0.2	0.0
Boron	mg/kg	-	-	2	2	2	3	2	2	0	5	4	5	3	4	4	1
Cadmium	mg/kg	0.6	10	0.5	0.6	0.8	0.8	0.8	0.7	0.1	0.7	1.0	1.5	0.5	0.7	0.9	0.4
Chromium	mg/kg	26	110	15	18	17	18	18	17	1	19	12	12	21	13	15	4
Cobalt	mg/kg	-	-	7.9	6.8	8.4	8.9	9.2	8.2	0.9	6.0	6.4	5.6	5.6	4.6	5.6	0.7
Copper	mg/kg	16	110	10	11	14	16	18	14	3	33	21	32	36	13	27	10
Iron	mg/kg	20,000	40,000	8,200	8,200	10,000	10,300	11,100	9,560	1,305	11,600	7,700	7,400	12,900	8,200	9,560	2,515
Lead	mg/kg	31	250	9.4	8.9	13.0	12.0	14.0	11.5	2.2	17.0	22.0	29.0	13.0	14.0	19.0	6.6
Manganese	mg/kg	460	1,100	590	920	1,350	1,440	1,600	1,180	415	140	250	240	200	100	186	65
Molybdenum	mg/kg	-	-	0.3	0.3	0.3	0.4	0.5	0.4	0.1	1.3	1.2	2.1	0.7	0.6	1.2	0.6
Nickel	mg/kg	16	75	7.5	8.2	8.8	9.5	9.9	8.8	1.0	12.0	9.7	12.0	12.0	7.5	10.6	2.0
Phosphorus	mg/kg	600	2,000	470	610	610	580	610	576	61	530	420	740	540	330	512	154
Selenium	mg/kg	-	-	0.6	0.8	1.0	1.1	1.2	0.9	0.2	1.0	1.3	1.9	0.7	0.8	1.1	0.5
Silver	mg/kg	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.0	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.0
Strontium	mg/kg	-	-	57	39	40	45	43	45	7	36	31	32	45	31	35	6
Thallium	mg/kg	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	0.0	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	0.0
Tin	mg/kg	-	-	0.4	0.4	0.5	0.5	0.5	0.5	0.1	0.5	0.5	0.8	0.6	0.4	0.6	0.2
Titanium	mg/kg	-	-	770	910	820	900	790	838	64	780	400	310	1,100	580	634	317
Uranium	mg/kg	104.4[d]	-	1.4	1.4	2.2	2.7	2.6	2.1	0.6	2.1	1.2	1.6	1.3	2.0	1.6	0.4
Vanadium	mg/kg	-	-	17	20	20	22	20	20	2	22	16	15	28	16	19	6
Zinc	mg/kg	120	820	44	46	60	62	64	55	9	47	53	72	42	38	50	13

Concentration exceeds LEL

Concentration exceeds SEL

[a] Provincial Sediment Quality Guideline. OMOE (Ontario Ministry of Environment) 1993. Guidelines For The Protection and Management of Aquatic Sediment Quality In Ontario. August 1993, Reprinted October, 1996. MOE (1993).

[b] Lowest effect level

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[d] Thompson et al. 2005. Thompson, P.A., J. Jurias, and S Mihok. 2005. Derivation and sue of sediment quality guidelines for ecological risk assessment of metals and radionuclides released to the environment from uranium Mining and millin activities in Canada. Environmental Monitoring and Assessment 110:71-85

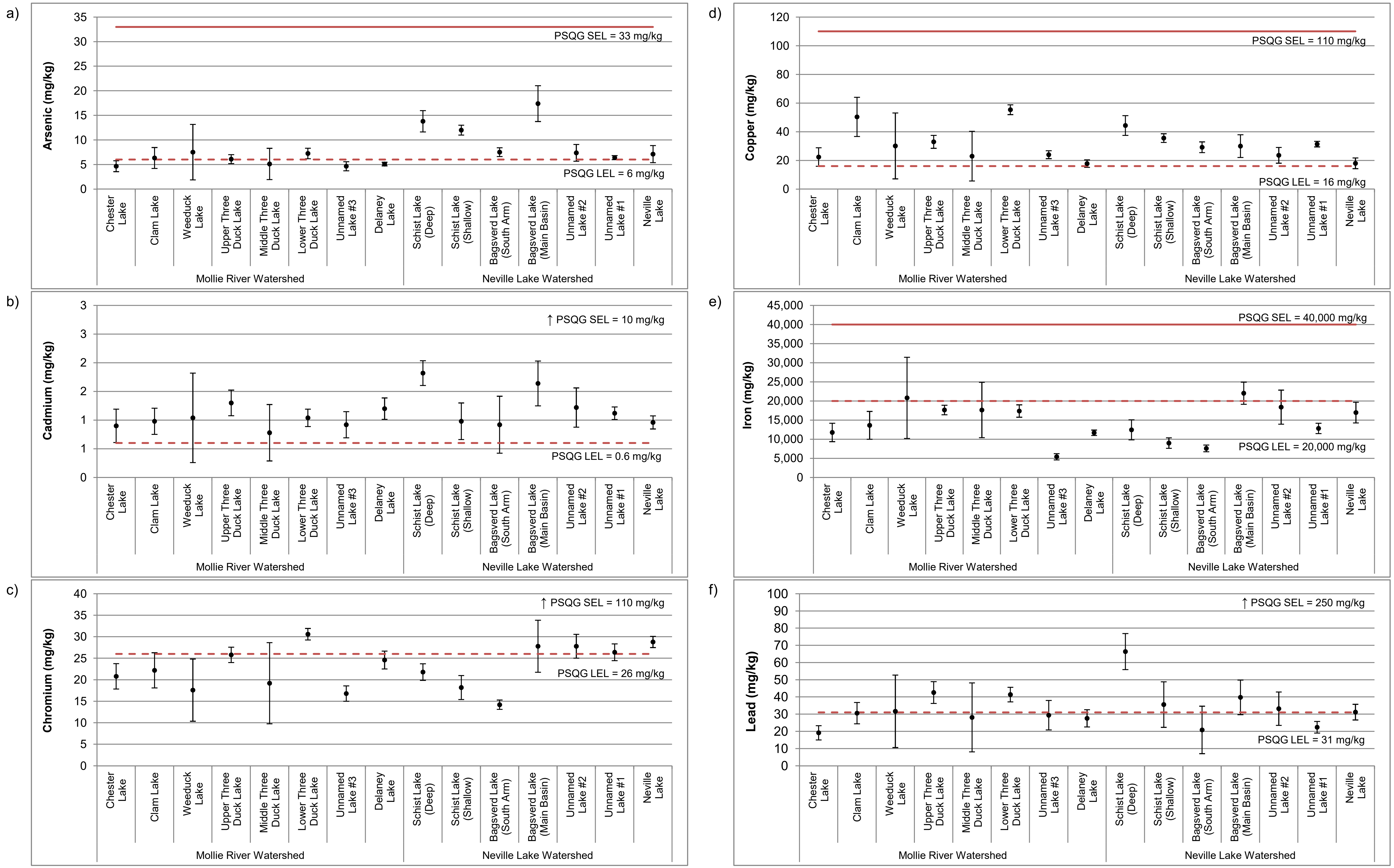
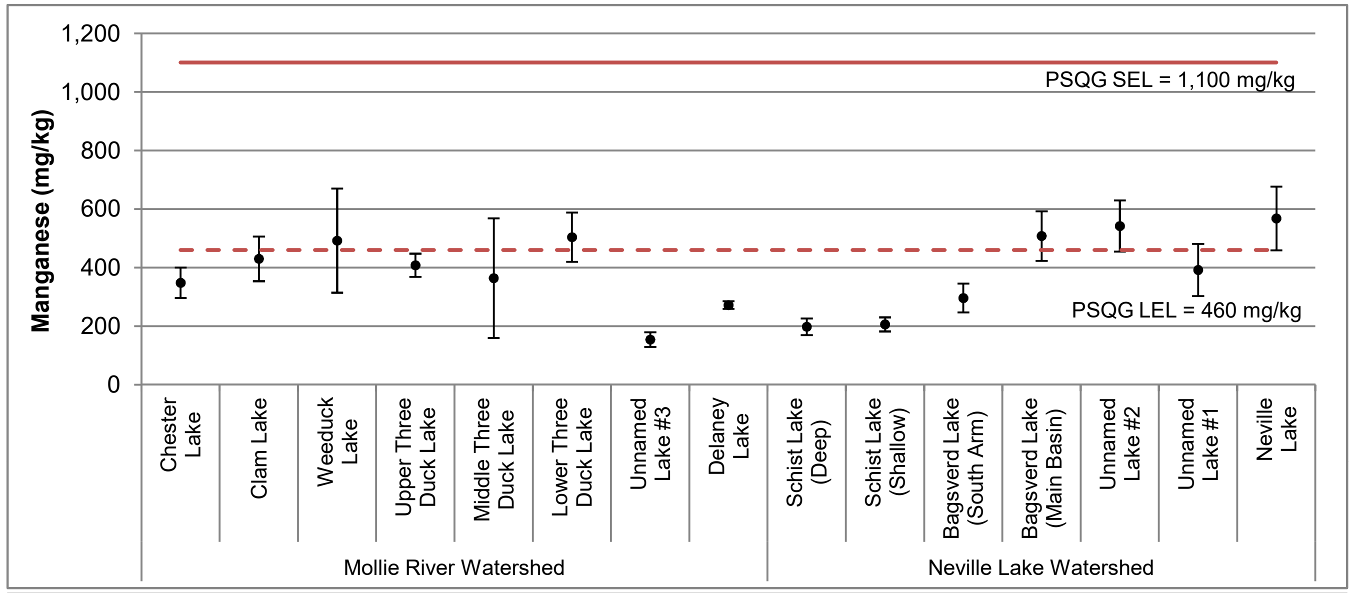


Figure D.1: Mean sediment concentrations (n=5) and standard deviations of analytes measured at benthic invertebrate stations in various lakes in the Côté Gold area, September 2013: a) arsenic, b) cadmium, c) chromium, d) copper, e) iron, f) lead, g) manganese, h) mercury, i) nickel, j) phosphorus, k) Total Kjeldahl Nitrogen, l) Total Organic Carbon (TOC), and m) zinc. The red solid line and the red dotted line indicate the Provincial Sediment Quality Guidelines (PSQGs) Severe Effect Level (SEL) and PSQG Lowest Effect Level (LEL), respectively.
*** These figures present the current configuration of the Mollie River and Neville Lake watersheds.**

g)



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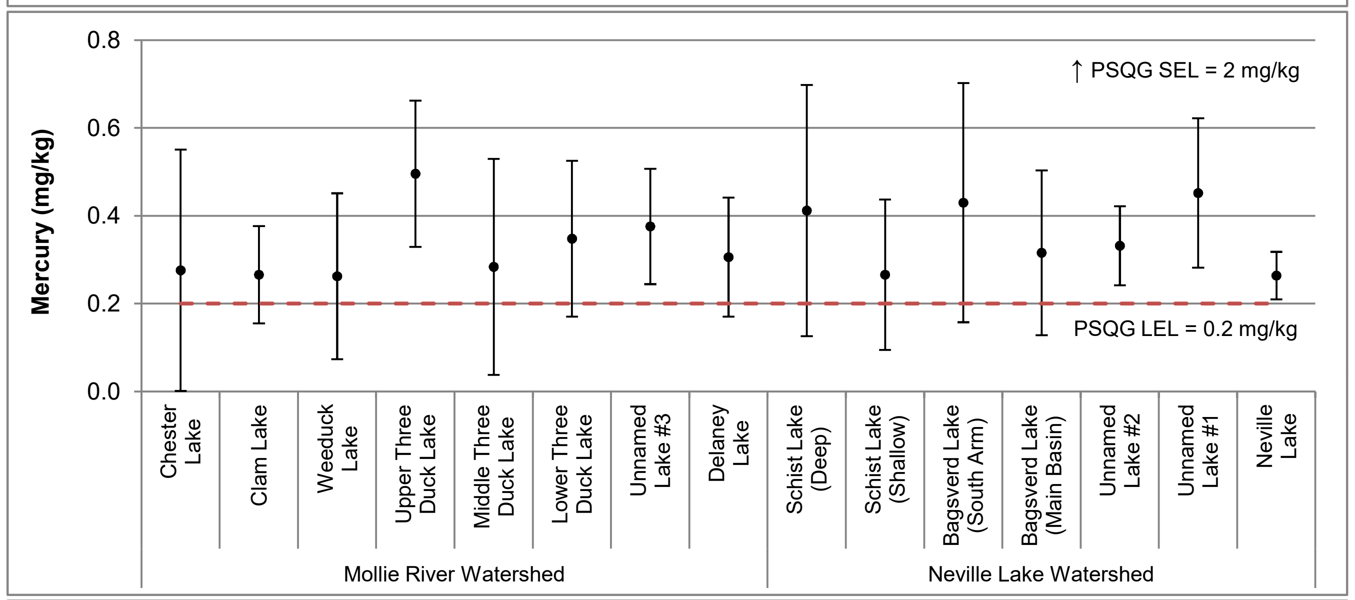

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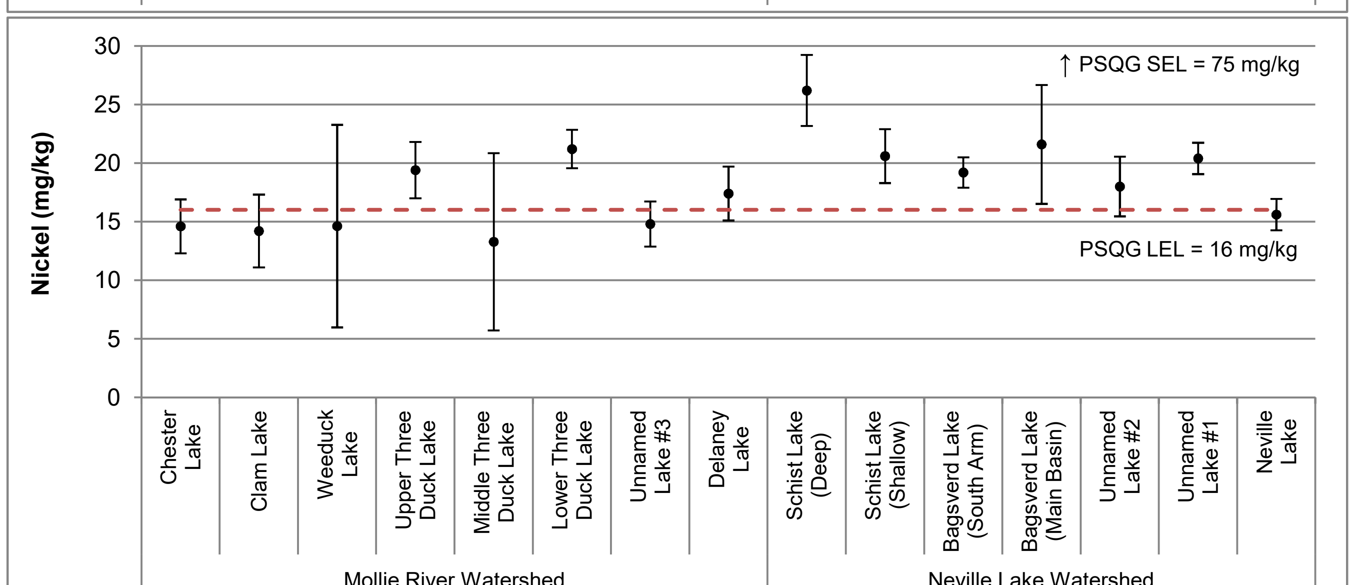

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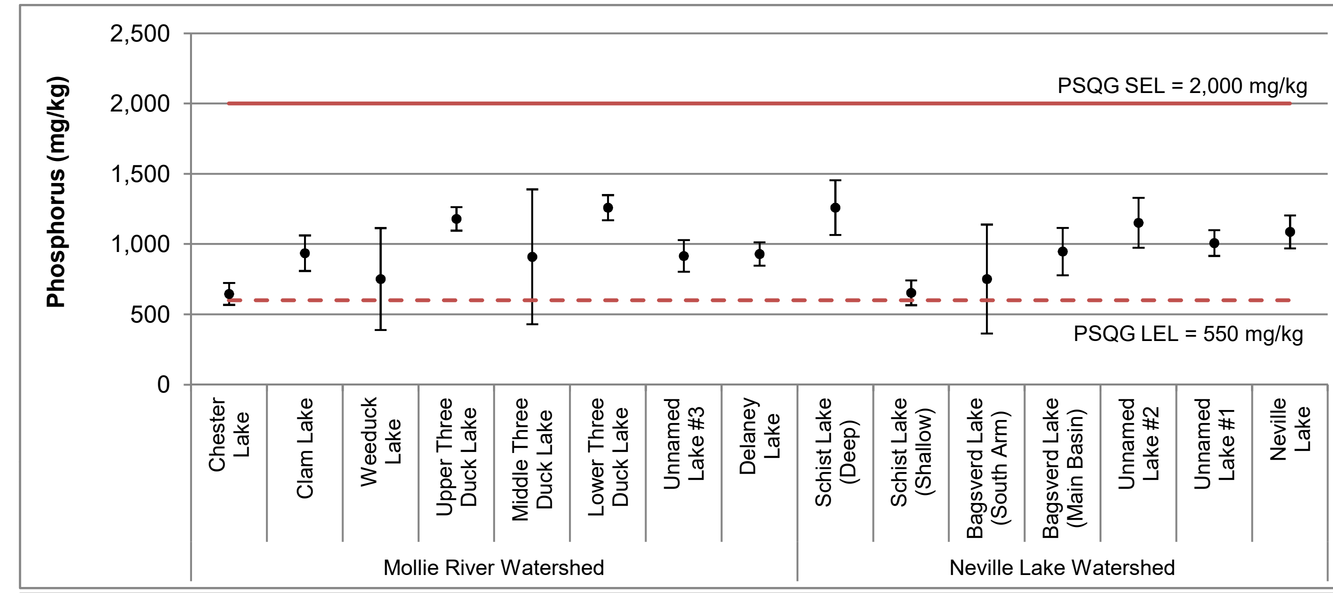
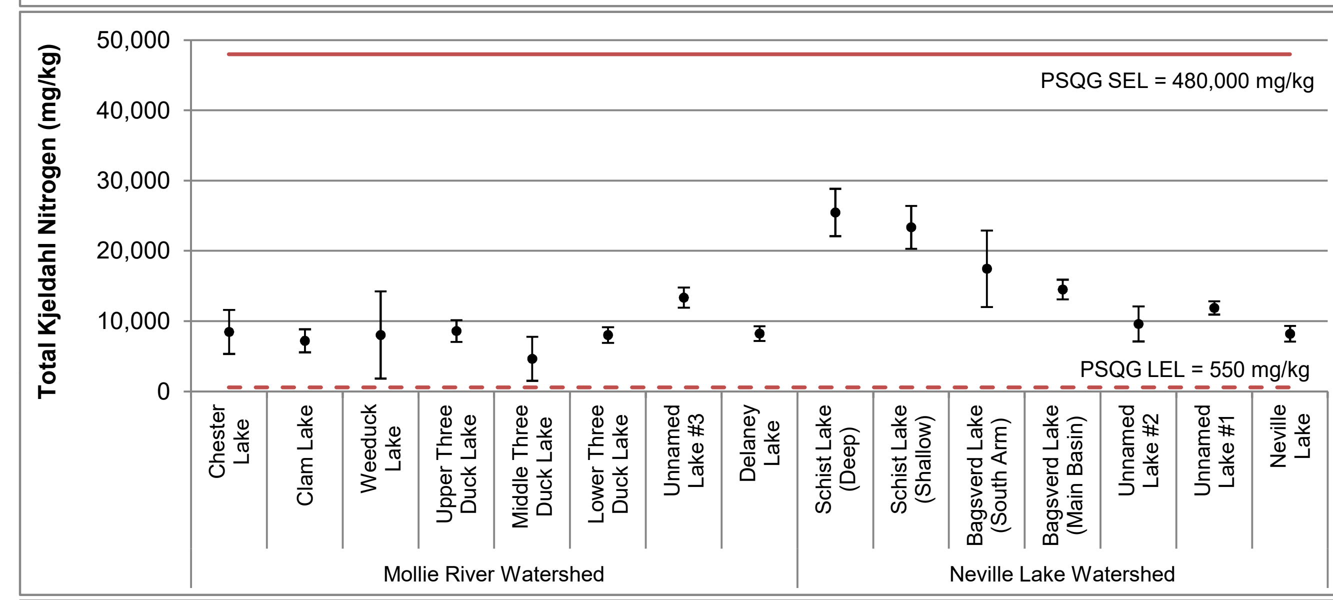


k)



l)

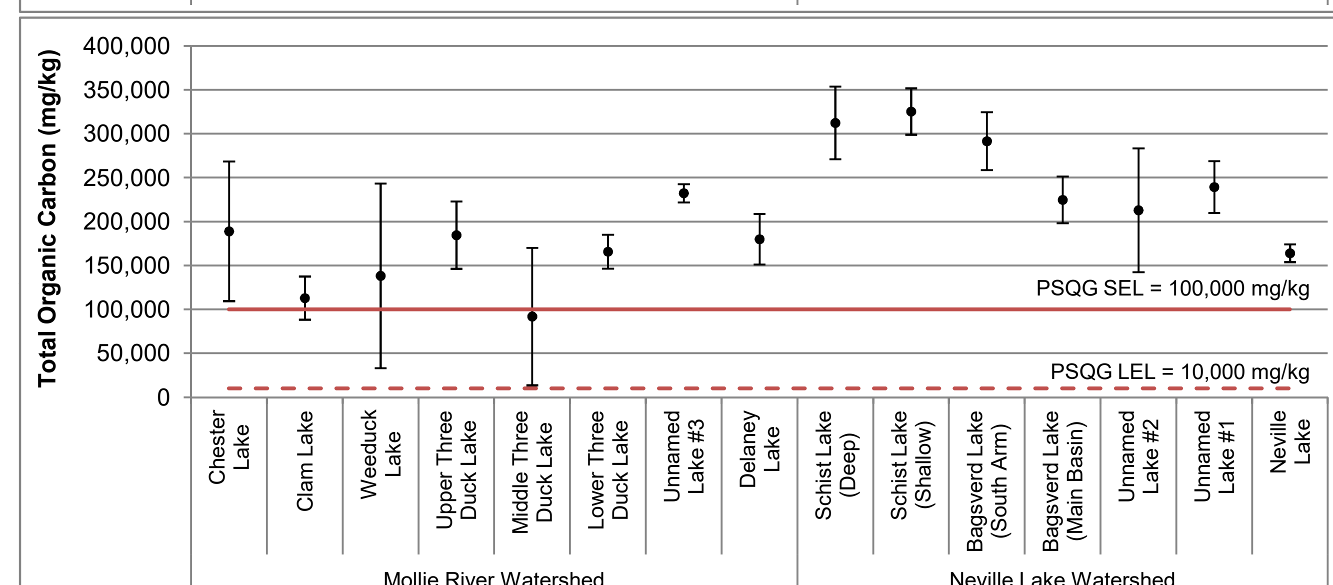


Figure D.1: Mean sediment concentrations (n=5) and standard deviations of analytes measured at benthic invertebrate stations in various lakes in the Côté Gold area, September 2013: a) arsenic, b) cadmium, c) chromium, d) copper, e) iron, f) lead, g) manganese, h) mercury, i) nickel, j) phosphorus, k) Total Kjeldahl Nitrogen, l) Total Organic Carbon (TOC), and m) zinc. The red solid line and the red dotted line indicate the Provincial Sediment Quality Guidelines (PSQGs) Severe Effect Level (SEL) and PSQG Lowest Effect Level (LEL), respectively.
*** These figures present the current configuration of the Mollie River and Neville Lake watersheds.**

m)

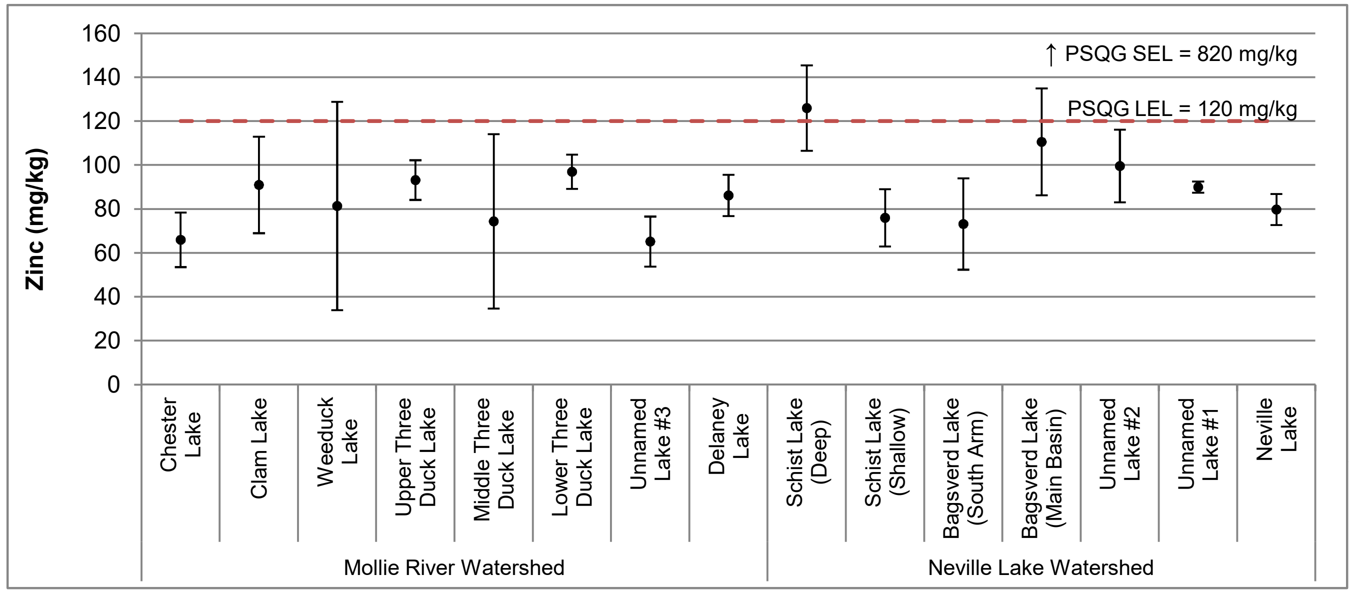


Figure D.1: Mean sediment concentrations (n=5) and standard deviations of analytes measured at benthic invertebrate stations in various lakes in the Côté Gold area, September 2013: a) arsenic, b) cadmium, c) chromium, d) copper, e) iron, f) lead, g) manganese, h) mercury, i) nickel, j) phosphorus, k) Total Kjeldahl Nitrogen, l) Total Organic Carbon (TOC), and m) zinc. The red solid line and the red dotted line indicate the Provincial Sediment Quality Guidelines (PSQGs) Severe Effect Level (SEL) and PSQG Lowest Effect Level (LEL), respectively.
*** These figures present the current configuration of the Mollie River and Neville Lake watersheds.**

SEDIMENT LAB DATA

SRC Group # 2013-5887

SRC ANALYTICAL

Aug 22, 2013

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

Minnow Environmental Inc.
2 Lamb Street
Georgetown, ON L7G 3M9
Attn: Kim Connors

Date Samples Received: Jun-19-2013 Client P.O.: 2496

This is a final report.

Organics results have been authorized by Pat Moser, Supervisor

ICP results have been authorized by Keith Gipman, Supervisor

Inorganics and Radiochemistry results have been authorized by Jeff Zimmer, Supervisor

SLOWPOKE-2 results have been authorized by Dave Chorney

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as

    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

SRC ANALYTICAL

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Minnow Environmental Inc.
2 Lamb Street
Georgetown, ON L7G 3M9
Attn: Kim Connors

Date Samples Received: Jun-19-2013 Client P.O.: 2496

18256 **06/04/2013 BAGL-C1-01 *SEDIMENT***
18257 **06/04/2013 BAGL-C1-02 *SEDIMENT***
18258 **06/04/2013 BAGL-C1-03 *SEDIMENT***

Analyte	Units	18256	18257	18258
Inorganic Chemistry				
Mercury	ug/g	0.39	0.34	0.32
Organic carbon	%	28.2	27.7	27.7
Dry weight	g	3.72	3.57	1.7
Moisture	%	97.38	97.06	97.05
Sulfur	%	1.37	1.47	1.45
ICP				
Aluminum	ug/g	8700	8500	8200
Antimony	ug/g	0.4	0.4	0.3
Arsenic	ug/g	7.2	7.5	7.1
Barium	ug/g	46	41	40
Beryllium	ug/g	0.2	0.2	0.2
Boron	ug/g	17	14	10
Cadmium	ug/g	1.0	1.0	1.0
Chromium	ug/g	18	17	16
Cobalt	ug/g	5.2	5.1	5.0
Copper	ug/g	31	30	29
Iron	ug/g	12500	12400	11800
Lead	ug/g	48	49	48
Manganese	ug/g	320	310	300
Molybdenum	ug/g	1.0	1.1	1.1
Nickel	ug/g	20	20	18
Selenium	ug/g	1.9	2.0	1.9
Silver	ug/g	0.1	0.1	0.1
Strontium	ug/g	24	22	21

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Minnow Environmental Inc.

18256 06/04/2013 BAGL-C1-01 *SEDIMENT*
18257 06/04/2013 BAGL-C1-02 *SEDIMENT*
18258 06/04/2013 BAGL-C1-03 *SEDIMENT*

Analyte	Units	18256	18257	18258
ICP				
Thallium	ug/g	<0.2	<0.2	<0.2
Thorium	ug/g	2.3	2.3	2.2
Tin	ug/g	1.5	1.4	1.3
Titanium	ug/g	260	270	260
Uranium	ug/g	0.7	0.7	0.7
Vanadium	ug/g	14	14	14
Zinc	ug/g	94	89	88

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18259 06/04/2013 BAGL-C1-04 *SEDIMENT*
18260 06/04/2013 BAGL-C1-05 *SEDIMENT*
18261 06/04/2013 BAGL-C2-01 *SEDIMENT*

Analyte	Units	18259	18260	18261
Inorganic Chemistry				
Mercury	ug/g	0.25	0.49	0.32
Organic carbon	%	27.8	28.1	21.6
Dry weight	g	2.09	2.63	4.33
Moisture	%	96.41	96.86	97.20
Sulfur	%	1.45	1.57	0.66
ICP				
Aluminum	ug/g	8200	8900	14800
Antimony	ug/g	0.4	0.4	0.5
Arsenic	ug/g	7.2	8.3	12
Barium	ug/g	40	38	72
Beryllium	ug/g	0.2	0.2	0.3
Boron	ug/g	9	9	12
Cadmium	ug/g	1.1	1.1	1.2
Chromium	ug/g	18	18	30
Cobalt	ug/g	5.0	5.2	6.0
Copper	ug/g	30	32	30
Iron	ug/g	11700	13000	17200
Lead	ug/g	49	52	64
Manganese	ug/g	300	290	550
Molybdenum	ug/g	1.1	1.1	0.7
Nickel	ug/g	19	20	21
Selenium	ug/g	1.9	1.9	1.9
Silver	ug/g	0.1	0.1	0.2
Strontium	ug/g	21	22	32
Thallium	ug/g	<0.2	<0.2	<0.2
Thorium	ug/g	2.3	2.3	3.9
Tin	ug/g	1.4	1.4	2.0
Titanium	ug/g	270	290	580
Uranium	ug/g	0.7	0.7	0.8
Vanadium	ug/g	14	15	30
Zinc	ug/g	88	93	93

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Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18262 06/04/2013 BAGL-C2-02 *SEDIMENT*
18263 06/04/2013 BAGL-C2-03 *SEDIMENT*
18264 06/04/2013 BAGL-C2-04 *SEDIMENT*

Analyte	Units	18262	18263	18264
Inorganic Chemistry				
Mercury	ug/g	0.26	0.23	0.29
Organic carbon	%	21.4	21.1	21.8
Dry weight	g	4.44	2.40	2.72
Moisture	%	96.07	93.62	95.06
Sulfur	%	0.67	0.66	0.74
ICP				
Aluminum	ug/g	15400	15100	14800
Antimony	ug/g	0.5	0.6	0.6
Arsenic	ug/g	12	12	12
Barium	ug/g	62	62	55
Beryllium	ug/g	0.3	0.3	0.3
Boron	ug/g	26	20	12
Cadmium	ug/g	1.3	1.4	1.3
Chromium	ug/g	29	32	28
Cobalt	ug/g	6.0	6.3	6.0
Copper	ug/g	32	35	32
Iron	ug/g	15300	15200	15000
Lead	ug/g	69	71	69
Manganese	ug/g	430	440	380
Molybdenum	ug/g	0.8	0.9	0.9
Nickel	ug/g	22	23	22
Selenium	ug/g	2.0	2.0	2.1
Silver	ug/g	0.2	0.2	0.2
Strontium	ug/g	34	34	31
Thallium	ug/g	<0.2	<0.2	<0.2
Thorium	ug/g	3.8	4.0	3.8
Tin	ug/g	2.2	2.1	1.9
Titanium	ug/g	610	650	580
Uranium	ug/g	0.9	1.0	0.9
Vanadium	ug/g	31	33	30
Zinc	ug/g	99	100	99

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18265 06/04/2013 BAGL-C2-05 *SEDIMENT*
18266 06/06/2013 UNL1-C1-01 *SEDIMENT*
18267 06/06/2013 UNL1-C1-02 *SEDIMENT*

Analyte	Units	18265	18266	18267
Inorganic Chemistry				
Mercury	ug/g	0.25	0.28	0.29
Organic carbon	%	21.2	23.2	22.8
Dry weight	g	3.33	5.37	6.12
Moisture	%	94.55	93.67	91.18
Sulfur	%	0.91	0.31	0.38
ICP				
Aluminum	ug/g	15800	13500	13500
Antimony	ug/g	0.7	0.3	0.3
Arsenic	ug/g	15	5.0	4.8
Barium	ug/g	59	54	51
Beryllium	ug/g	0.3	0.4	0.4
Boron	ug/g	28	12	5
Cadmium	ug/g	1.5	1.0	1.0
Chromium	ug/g	33	28	26
Cobalt	ug/g	6.5	4.9	4.8
Copper	ug/g	35	27	26
Iron	ug/g	16800	13000	11400
Lead	ug/g	77	20	20
Manganese	ug/g	360	420	370
Molybdenum	ug/g	1.0	0.4	0.4
Nickel	ug/g	23	20	19
Selenium	ug/g	2.1	1.8	1.8
Silver	ug/g	0.2	0.1	0.1
Strontium	ug/g	34	36	34
Thallium	ug/g	<0.2	<0.2	<0.2
Thorium	ug/g	4.2	5.3	5.5
Tin	ug/g	2.2	0.8	0.8
Titanium	ug/g	630	680	630
Uranium	ug/g	1.0	2.4	2.4
Vanadium	ug/g	33	24	22
Zinc	ug/g	110	74	71

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18268 06/06/2013 UNL1-C1-03 *SEDIMENT*
18269 06/06/2013 UNL1-C1-04 *SEDIMENT*
18270 06/06/2013 UNL1-C1-05 *SEDIMENT*

Analyte	Units	18268	18269	18270
Inorganic Chemistry				
Mercury	ug/g	0.37	0.17	0.36
Organic carbon	%	23.2	22.8	22.4
Dry weight	g	6.71	8.38	9.84
Moisture	%	90.25	89.36	88.88
Sulfur	%	0.43	0.48	0.56
ICP				
Aluminum	ug/g	13300	14200	13900
Antimony	ug/g	0.3	0.3	0.3
Arsenic	ug/g	4.9	5.9	6.5
Barium	ug/g	50	52	53
Beryllium	ug/g	0.5	0.4	0.4
Boron	ug/g	3	3	3
Cadmium	ug/g	0.9	1.0	1.0
Chromium	ug/g	26	27	29
Cobalt	ug/g	5.0	5.7	7.2
Copper	ug/g	26	28	27
Iron	ug/g	11400	11300	11800
Lead	ug/g	20	20	19
Manganese	ug/g	340	330	310
Molybdenum	ug/g	0.4	0.5	0.5
Nickel	ug/g	18	19	19
Selenium	ug/g	1.8	1.8	1.7
Silver	ug/g	0.1	<0.1	0.1
Strontium	ug/g	35	35	35
Thallium	ug/g	<0.2	0.2	0.2
Thorium	ug/g	5.3	5.5	4.6
Tin	ug/g	0.8	0.8	0.7
Titanium	ug/g	640	680	700
Uranium	ug/g	2.3	2.5	2.2
Vanadium	ug/g	22	24	25
Zinc	ug/g	72	77	78

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Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18271 **06/06/2013 UNL2-C1-01 *SEDIMENT***
18272 **06/06/2013 UNL2-C1-02 *SEDIMENT***
18273 **06/06/2013 UNL2-C1-03 *SEDIMENT***

Analyte	Units	18271	18272	18273
Inorganic Chemistry				
Mercury	ug/g	0.34	0.18	0.56
Organic carbon	%	23.9	23.8	23.6
Dry weight	g	4.92	4.68	4.43
Moisture	%	94.74	93.28	92.62
Sulfur	%	0.74	0.85	0.89
ICP				
Aluminum	ug/g	16300	17700	16800
Antimony	ug/g	0.6	0.7	0.7
Arsenic	ug/g	9.2	10	10
Barium	ug/g	77	82	75
Beryllium	ug/g	0.6	0.6	0.6
Boron	ug/g	4	10	6
Cadmium	ug/g	1.1	1.3	1.2
Chromium	ug/g	29	29	28
Cobalt	ug/g	10	11	10
Copper	ug/g	27	29	28
Iron	ug/g	25400	25200	24300
Lead	ug/g	68	77	79
Manganese	ug/g	480	470	420
Molybdenum	ug/g	0.9	1.0	0.9
Nickel	ug/g	19	20	20
Selenium	ug/g	2.2	2.3	2.2
Silver	ug/g	0.2	0.2	0.2
Strontium	ug/g	27	31	28
Thallium	ug/g	0.2	0.2	0.2
Thorium	ug/g	4.9	5.1	4.9
Tin	ug/g	2.0	2.4	2.2
Titanium	ug/g	420	450	450
Uranium	ug/g	1.8	1.9	1.9
Vanadium	ug/g	80	82	79
Zinc	ug/g	110	120	120

Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Minnow Environmental Inc.

18274 **06/06/2013 UNL2-C1-04 *SEDIMENT***
18275 **06/06/2013 UNL2-C1-05 *SEDIMENT***
18276 **06/06/2013 UNL2-C1-01X *SEDIMENT***

Analyte	Units	18274	18275	18276
Inorganic Chemistry				
Mercury	ug/g	0.53	0.65	0.26
Organic carbon	%	23.0	23.3	24.5
Dry weight	g	5.72	7.76	6.68
Moisture	%	91.31	91.20	95.05
Sulfur	%	0.93	0.90	0.72
ICP				
Aluminum	ug/g	16600	17800	16700
Antimony	ug/g	0.8	0.9	0.7
Arsenic	ug/g	11	12	8.1
Barium	ug/g	74	80	81
Beryllium	ug/g	0.6	0.6	0.5
Boron	ug/g	6	4	4
Cadmium	ug/g	1.3	1.4	1.1
Chromium	ug/g	28	30	28
Cobalt	ug/g	10	11	9.4
Copper	ug/g	29	31	26
Iron	ug/g	23900	25500	26900
Lead	ug/g	88	101	64
Manganese	ug/g	410	430	470
Molybdenum	ug/g	1.0	1.0	0.9
Nickel	ug/g	20	21	17
Selenium	ug/g	2.1	2.4	2.1
Silver	ug/g	0.2	0.2	0.2
Strontium	ug/g	27	28	26
Thallium	ug/g	0.2	0.2	<0.2
Thorium	ug/g	5.0	5.2	4.8
Tin	ug/g	2.4	2.7	1.9
Titanium	ug/g	440	470	420
Uranium	ug/g	1.9	2.0	1.8
Vanadium	ug/g	81	87	80
Zinc	ug/g	110	120	110

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Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Minnow Environmental Inc.

18277 **06/06/2013 UNL2-C1-02X *SEDIMENT***
18278 **06/06/2013 UNL2-C1-03X *SEDIMENT***
18279 **06/06/2013 UNL2-C1-04X *SEDIMENT***

Analyte	Units	18277	18278	18279
Inorganic Chemistry				
Mercury	ug/g	0.28	0.27	0.49
Organic carbon	%	24.4	24.1	23.5
Dry weight	g	4.04	5.02	6.47
Moisture	%	93.92	93.07	92.19
Sulfur	%	0.69	0.73	0.76
ICP				
Aluminum	ug/g	16600	17000	16800
Antimony	ug/g	0.7	0.7	0.7
Arsenic	ug/g	8.5	9.5	10
Barium	ug/g	81	82	73
Beryllium	ug/g	0.6	0.5	0.5
Boron	ug/g	4	4	2
Cadmium	ug/g	1.2	1.2	1.1
Chromium	ug/g	27	28	27
Cobalt	ug/g	10	10	9.9
Copper	ug/g	27	28	28
Iron	ug/g	26800	27300	25900
Lead	ug/g	68	74	80
Manganese	ug/g	520	480	440
Molybdenum	ug/g	0.9	1.0	0.9
Nickel	ug/g	18	19	19
Selenium	ug/g	2.2	2.2	2.1
Silver	ug/g	0.2	0.2	0.2
Strontium	ug/g	27	27	26
Thallium	ug/g	0.2	0.2	0.2
Thorium	ug/g	4.7	4.9	4.9
Tin	ug/g	1.9	2.2	2.2
Titanium	ug/g	410	430	420
Uranium	ug/g	1.8	1.8	1.8
Vanadium	ug/g	82	84	81
Zinc	ug/g	120	110	110

Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18280	06/06/2013 UNL2-C1-05X *SEDIMENT*
18281	06/05/2013 NEVL-C1-01 *SEDIMENT*
18282	06/05/2013 NEVL-C1-02 *SEDIMENT*

Analyte	Units	18280	18281	18282
Inorganic Chemistry				
Mercury	ug/g	0.37	0.17	0.13
Organic carbon	%	23.9	18.9	18.3
Dry weight	g	5.85	5.65	6.34
Moisture	%	90.42	91.86	91.38
Sulfur	%	0.65	0.47	0.47
ICP				
Aluminum	ug/g	17300	12300	12900
Antimony	ug/g	0.8	0.3	0.3
Arsenic	ug/g	11	6.7	7.4
Barium	ug/g	75	74	74
Beryllium	ug/g	0.6	0.3	0.3
Boron	ug/g	3	14	9
Cadmium	ug/g	1.2	1.0	1.1
Chromium	ug/g	29	25	27
Cobalt	ug/g	10	6.4	7.1
Copper	ug/g	29	17	19
Iron	ug/g	27000	15300	16600
Lead	ug/g	92	43	47
Manganese	ug/g	430	300	330
Molybdenum	ug/g	0.9	0.6	0.7
Nickel	ug/g	20	14	15
Selenium	ug/g	2.3	1.3	1.5
Silver	ug/g	0.2	0.1	0.1
Strontium	ug/g	26	32	34
Thallium	ug/g	0.2	<0.2	<0.2
Thorium	ug/g	5.1	3.8	4.2
Tin	ug/g	2.5	1.2	1.3
Titanium	ug/g	440	630	660
Uranium	ug/g	1.9	1.7	1.8
Vanadium	ug/g	84	37	41
Zinc	ug/g	110	80	85

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Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18283 **06/05/2013 NEVL-C1-03 *SEDIMENT***
18284 **06/05/2013 NEVL-C1-04 *SEDIMENT***
18285 **06/05/2013 NEVL-C1-05 *SEDIMENT***

Analyte	Units	18283	18284	18285
Inorganic Chemistry				
Mercury	ug/g	0.22	0.10	0.22
Organic carbon	%	18.3	18.7	18.5
Dry weight	g	6.72	5.59	7.40
Moisture	%	90.66	89.56	88.66
Sulfur	%	0.46	0.47	0.46
ICP				
Aluminum	ug/g	12300	13200	11900
Antimony	ug/g	0.3	0.3	0.3
Arsenic	ug/g	7.0	7.7	7.2
Barium	ug/g	70	76	69
Beryllium	ug/g	0.3	0.4	0.3
Boron	ug/g	3	2	1
Cadmium	ug/g	0.9	1.0	0.9
Chromium	ug/g	24	27	24
Cobalt	ug/g	6.8	7.2	6.4
Copper	ug/g	18	19	18
Iron	ug/g	15600	17000	15900
Lead	ug/g	44	48	43
Manganese	ug/g	310	320	300
Molybdenum	ug/g	0.7	0.6	0.6
Nickel	ug/g	13	14	14
Selenium	ug/g	1.4	1.4	1.4
Silver	ug/g	0.1	0.1	0.1
Strontium	ug/g	32	35	31
Thallium	ug/g	<0.2	<0.2	<0.2
Thorium	ug/g	4.1	4.3	3.8
Tin	ug/g	1.2	1.3	1.2
Titanium	ug/g	640	710	620
Uranium	ug/g	1.7	1.9	1.7
Vanadium	ug/g	39	41	38
Zinc	ug/g	81	86	79

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Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18286	**06/07/2013 DELL-C1-01**	***SEDIMENT***
18287	**06/07/2013 DELL-C1-02**	***SEDIMENT***
18288	**06/07/2013 DELL-C1-03**	***SEDIMENT***

Analyte	Units	18286	18287	18288
Inorganic Chemistry				
Mercury	ug/g	0.37	0.40	0.29
Organic carbon	%	20.0	19.5	20.8
Dry weight	g	6.22	5.09	6.69
Moisture	%	93.10	91.89	91.10
Sulfur	%	0.34	0.29	0.33
ICP				
Aluminum	ug/g	11300	11200	11900
Antimony	ug/g	0.3	0.3	0.2
Arsenic	ug/g	3.8	3.6	3.8
Barium	ug/g	52	51	54
Beryllium	ug/g	0.2	0.2	0.2
Boron	ug/g	1	2	9
Cadmium	ug/g	1.4	1.4	1.2
Chromium	ug/g	25	25	26
Cobalt	ug/g	4.7	4.5	4.6
Copper	ug/g	19	19	19
Iron	ug/g	13700	12000	12000
Lead	ug/g	31	31	32
Manganese	ug/g	270	260	260
Molybdenum	ug/g	0.4	0.4	0.4
Nickel	ug/g	19	19	19
Selenium	ug/g	1.4	1.4	1.5
Silver	ug/g	0.1	0.1	<0.1
Strontium	ug/g	33	33	34
Thallium	ug/g	<0.2	<0.2	<0.2
Thorium	ug/g	3.3	3.1	3.4
Tin	ug/g	1.2	1.1	1.2
Titanium	ug/g	630	630	650
Uranium	ug/g	0.9	0.9	0.9
Vanadium	ug/g	22	22	23
Zinc	ug/g	77	78	79

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Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Minnow Environmental Inc.

18289 **06/07/2013 DELL-C1-04 *SEDIMENT***
18290 **06/07/2013 DELL-C1-05 *SEDIMENT***
18291 **06/07/2013 DELL-C1-01X *SEDIMENT***

Analyte	Units	18289	18290	18291
Inorganic Chemistry				
Mercury	ug/g	0.43	0.37	0.37
Organic carbon	%	20.9	20.0	20.9
Dry weight	g	7.09	10.69	6.50
Moisture	%	91.52	90.63	94.48
Sulfur	%	0.38	0.34	0.31
ICP				
Aluminum	ug/g	11000	11500	11600
Antimony	ug/g	0.2	0.2	0.2
Arsenic	ug/g	3.6	4.4	4.0
Barium	ug/g	47	50	54
Beryllium	ug/g	0.2	0.2	0.2
Boron	ug/g	7	4	3
Cadmium	ug/g	1.2	1.3	1.1
Chromium	ug/g	24	25	24
Cobalt	ug/g	4.1	4.3	4.6
Copper	ug/g	17	18	18
Iron	ug/g	11000	11200	12800
Lead	ug/g	28	30	29
Manganese	ug/g	220	220	290
Molybdenum	ug/g	0.4	0.5	0.4
Nickel	ug/g	18	18	18
Selenium	ug/g	1.4	1.4	1.3
Silver	ug/g	<0.1	<0.1	<0.1
Strontium	ug/g	30	32	32
Thallium	ug/g	<0.2	<0.2	<0.2
Thorium	ug/g	3.1	3.3	3.1
Tin	ug/g	1.1	1.2	1.2
Titanium	ug/g	610	660	620
Uranium	ug/g	0.9	0.9	0.9
Vanadium	ug/g	21	22	22
Zinc	ug/g	72	77	73

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Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18292 **06/07/2013 DELL-C1-02X *SEDIMENT***
18293 **06/07/2013 DELL-C1-03X *SEDIMENT***
18294 **06/07/2013 DELL-C1-04X *SEDIMENT***

Analyte	Units	18292	18293	18294
Inorganic Chemistry				
Mercury	ug/g	0.19	0.16	0.37
Organic carbon	%	20.8	20.8	20.8
Dry weight	g	5.40	4.45	7.49
Moisture	%	92.79	91.32	91.13
Sulfur	%	0.33	0.33	0.40
ICP				
Aluminum	ug/g	11400	11000	9600
Antimony	ug/g	0.2	0.2	0.2
Arsenic	ug/g	3.6	3.5	3.4
Barium	ug/g	50	51	44
Beryllium	ug/g	0.2	0.2	0.2
Boron	ug/g	3	3	3
Cadmium	ug/g	1.3	1.2	1.1
Chromium	ug/g	25	24	22
Cobalt	ug/g	4.4	4.3	3.8
Copper	ug/g	18	18	16
Iron	ug/g	11800	11100	9600
Lead	ug/g	30	30	27
Manganese	ug/g	250	230	200
Molybdenum	ug/g	0.4	0.4	0.4
Nickel	ug/g	20	18	16
Selenium	ug/g	1.4	1.4	1.2
Silver	ug/g	<0.1	<0.1	<0.1
Strontium	ug/g	31	31	27
Thallium	ug/g	<0.2	<0.2	<0.2
Thorium	ug/g	3.3	3.1	2.9
Tin	ug/g	1.1	1.1	1.0
Titanium	ug/g	620	620	550
Uranium	ug/g	0.9	0.9	0.8
Vanadium	ug/g	22	22	19
Zinc	ug/g	74	75	67

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Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18295	**06/07/2013 DELL-C1-05X *SEDIMENT***	
18296	**06/08/2013 UNL3-C1-01 *SEDIMENT***	
18297	**06/08/2013 UNL3-C1-02 *SEDIMENT***	

Analyte	Units	18295	18296	18297
Inorganic Chemistry				
Mercury	ug/g	0.42	0.77	0.13
Organic carbon	%	20.9	27.9	28.2
Dry weight	g	11.44	2.83	1.76
Moisture	%	89.60	96.98	95.69
Sulfur	%	0.34	1.26	1.25
ICP				
Aluminum	ug/g	11300	9400	11800
Antimony	ug/g	0.3	0.7	1.1
Arsenic	ug/g	4.7	8.0	11
Barium	ug/g	51	53	70
Beryllium	ug/g	0.2	0.2	0.2
Boron	ug/g	3	4	4
Cadmium	ug/g	1.2	1.7	1.9
Chromium	ug/g	25	15	19
Cobalt	ug/g	4.5	6.4	7.7
Copper	ug/g	18	29	32
Iron	ug/g	10800	11400	14100
Lead	ug/g	31	97	93
Manganese	ug/g	220	140	180
Molybdenum	ug/g	0.4	1.1	1.4
Nickel	ug/g	18	20	23
Selenium	ug/g	1.4	2.0	2.2
Silver	ug/g	0.1	0.2	0.2
Strontium	ug/g	32	21	29
Thallium	ug/g	<0.2	0.2	0.3
Thorium	ug/g	3.4	2.5	3.4
Tin	ug/g	1.2	2.2	2.6
Titanium	ug/g	660	330	420
Uranium	ug/g	0.9	0.8	1.2
Vanadium	ug/g	22	25	30
Zinc	ug/g	78	100	130

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Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18298 **06/08/2013 UNL3-C1-03 *SEDIMENT***
18299 **06/08/2013 UNL3-C1-04 *SEDIMENT***
18300 **06/08/2013 UNL3-C1-05 *SEDIMENT***

Analyte	Units	18298	18299	18300
Inorganic Chemistry				
Mercury	ug/g	0.87	0.43	0.17
Organic carbon	%	27.6	26.9	27.0
Dry weight	g	2.91	4.61	4.26
Moisture	%	94.86	94.75	94.67
Sulfur	%	1.00	0.86	0.67
ICP				
Aluminum	ug/g	9600	9300	9300
Antimony	ug/g	0.8	0.8	0.7
Arsenic	ug/g	8.1	7.1	6.2
Barium	ug/g	58	55	54
Beryllium	ug/g	0.2	0.2	0.2
Boron	ug/g	3	6	5
Cadmium	ug/g	1.5	1.2	1.1
Chromium	ug/g	15	14	14
Cobalt	ug/g	5.4	4.6	3.9
Copper	ug/g	25	24	22
Iron	ug/g	10600	9300	7900
Lead	ug/g	66	56	41
Manganese	ug/g	150	140	150
Molybdenum	ug/g	1.1	1.1	0.9
Nickel	ug/g	17	16	14
Selenium	ug/g	1.6	1.5	1.4
Silver	ug/g	0.2	0.2	0.1
Strontium	ug/g	24	22	24
Thallium	ug/g	0.2	<0.2	<0.2
Thorium	ug/g	2.7	2.6	2.7
Tin	ug/g	1.9	1.6	1.2
Titanium	ug/g	360	340	330
Uranium	ug/g	1.0	1.0	1.0
Vanadium	ug/g	24	22	20
Zinc	ug/g	92	82	72

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Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Minnow Environmental Inc.

18301	**06/08/2013 UNL3-C1-01X**	***SEDIMENT***
18302	**06/08/2013 UNL3-C1-02X**	***SEDIMENT***
18303	**06/08/2013 UNL3-C1-03X**	***SEDIMENT***

Analyte	Units	18301	18302	18303
Inorganic Chemistry				
Mercury	ug/g	0.26	0.25	0.24
Organic carbon	%	25.5	27.0	26.7
Dry weight	g	5.46	3.50	4.12
Moisture	%	96.12	95.19	94.56
Sulfur	%	1.41	1.20	0.92
ICP				
Aluminum	ug/g	10700	9800	9400
Antimony	ug/g	0.9	0.9	0.9
Arsenic	ug/g	9.2	9.0	8.0
Barium	ug/g	59	56	56
Beryllium	ug/g	0.2	0.2	0.2
Boron	ug/g	5	4	4
Cadmium	ug/g	2.0	1.7	1.6
Chromium	ug/g	17	15	15
Cobalt	ug/g	7.9	6.2	5.0
Copper	ug/g	31	26	25
Iron	ug/g	14100	11700	9800
Lead	ug/g	104	71	64
Manganese	ug/g	150	140	140
Molybdenum	ug/g	1.2	1.1	1.1
Nickel	ug/g	22	18	16
Selenium	ug/g	2.1	1.7	1.6
Silver	ug/g	0.2	0.2	0.2
Strontium	ug/g	23	22	23
Thallium	ug/g	0.3	0.2	0.2
Thorium	ug/g	2.9	2.8	2.8
Tin	ug/g	2.6	2.1	2.0
Titanium	ug/g	370	350	330
Uranium	ug/g	0.9	1.0	1.0
Vanadium	ug/g	26	24	24
Zinc	ug/g	120	100	95

Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18304 **06/08/2013 UNL3-C1-04X *SEDIMENT***
18305 **06/08/2013 UNL3-C1-05X *SEDIMENT***
18306 **06/08/2013 MESL-C1-01 *SEDIMENT***

Analyte	Units	18304	18305	18306
Inorganic Chemistry				
Mercury	ug/g	0.47	0.54	0.40
Organic carbon	%	26.9	27.5	13.6
Dry weight	g	5.04	4.19	11.22
Moisture	%	94.71	95.20	93.96
Sulfur	%	0.78	0.70	0.65
ICP				
Aluminum	ug/g	8600	8000	19900
Antimony	ug/g	0.7	0.5	0.7
Arsenic	ug/g	6.8	5.9	16
Barium	ug/g	56	53	120
Beryllium	ug/g	0.2	0.2	0.7
Boron	ug/g	3	6	4
Cadmium	ug/g	1.3	1.2	1.5
Chromium	ug/g	16	14	35
Cobalt	ug/g	5.2	4.5	11
Copper	ug/g	25	24	30
Iron	ug/g	8300	7300	35900
Lead	ug/g	51	39	97
Manganese	ug/g	160	160	1830
Molybdenum	ug/g	1.2	1.0	1.6
Nickel	ug/g	20	14	22
Selenium	ug/g	1.5	1.4	2.2
Silver	ug/g	0.2	0.1	0.2
Strontium	ug/g	24	23	31
Thallium	ug/g	<0.2	<0.2	0.3
Thorium	ug/g	2.7	2.6	6.0
Tin	ug/g	1.6	1.2	2.8
Titanium	ug/g	380	310	850
Uranium	ug/g	1.1	1.0	4.1
Vanadium	ug/g	22	20	76
Zinc	ug/g	81	74	150

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18307 **06/08/2013 MESL-C1-02 *SEDIMENT***
18308 **06/08/2013 MESL-C1-03 *SEDIMENT***
18309 **06/08/2013 MESL-C1-04 *SEDIMENT***

Analyte	Units	18307	18308	18309
Inorganic Chemistry				
Mercury	ug/g	0.60	0.49	0.38
Organic carbon	%	14.5	12.5	11.6
Dry weight	g	5.36	5.99	9.17
Moisture	%	94.47	92.08	90.70
Sulfur	%	0.69	0.91	1.08
ICP				
Aluminum	ug/g	19300	20800	21200
Antimony	ug/g	0.6	0.8	0.9
Arsenic	ug/g	15	21	23
Barium	ug/g	120	120	110
Beryllium	ug/g	0.7	0.7	0.7
Boron	ug/g	4	5	4
Cadmium	ug/g	1.6	2.0	1.8
Chromium	ug/g	32	36	37
Cobalt	ug/g	10	12	13
Copper	ug/g	29	34	31
Iron	ug/g	34600	35200	33000
Lead	ug/g	82	173	150
Manganese	ug/g	1640	1440	1170
Molybdenum	ug/g	1.9	1.9	1.9
Nickel	ug/g	21	25	26
Selenium	ug/g	2.3	2.5	2.2
Silver	ug/g	0.2	0.3	0.3
Strontium	ug/g	28	31	32
Thallium	ug/g	0.2	0.3	0.3
Thorium	ug/g	5.6	6.2	6.6
Tin	ug/g	2.4	3.6	3.6
Titanium	ug/g	800	840	980
Uranium	ug/g	4.2	4.4	3.7
Vanadium	ug/g	74	76	73
Zinc	ug/g	150	180	170

Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18310 **06/08/2013 MESL-C1-05 *SEDIMENT***
18311 **06/08/2013 MESL-C2-01 *SEDIMENT***
18312 **06/08/2013 MESL-C2-02 *SEDIMENT***

Analyte	Units	18310	18311	18312
Inorganic Chemistry				
Mercury	ug/g	0.24	0.26	0.17
Organic carbon	%	9.63	8.62	8.20
Dry weight	g	12.31	12.93	8.43
Moisture	%	87.15	90.86	87.09
Sulfur	%	0.81	0.21	0.30
ICP				
Aluminum	ug/g	20100	17300	18000
Antimony	ug/g	0.8	0.5	0.5
Arsenic	ug/g	18	7.0	7.4
Barium	ug/g	100	77	76
Beryllium	ug/g	0.6	0.6	0.5
Boron	ug/g	4	4	4
Cadmium	ug/g	1.4	1.2	1.2
Chromium	ug/g	36	33	34
Cobalt	ug/g	13	6.9	7.8
Copper	ug/g	24	23	22
Iron	ug/g	27900	24100	22300
Lead	ug/g	80	65	71
Manganese	ug/g	850	620	530
Molybdenum	ug/g	1.5	1.0	0.9
Nickel	ug/g	21	20	22
Selenium	ug/g	1.6	1.5	1.4
Silver	ug/g	0.2	0.2	0.2
Strontium	ug/g	33	34	37
Thallium	ug/g	0.3	0.2	0.2
Thorium	ug/g	7.0	6.2	6.5
Tin	ug/g	3.0	2.0	2.2
Titanium	ug/g	1200	1100	1100
Uranium	ug/g	3.0	2.8	2.7
Vanadium	ug/g	67	55	54
Zinc	ug/g	130	110	120

Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18313 **06/08/2013 MESL-C2-03 *SEDIMENT***
18314 **06/08/2013 MESL-C2-04 *SEDIMENT***
18315 **06/08/2013 MESL-C2-05 *SEDIMENT***

Analyte	Units	18313	18314	18315
Inorganic Chemistry				
Mercury	ug/g	0.21	0.20	0.26
Organic carbon	%	7.19	8.12	11.2
Dry weight	g	14.56	11.54	10.22
Moisture	%	85.51	86.45	89.61
Sulfur	%	0.35	0.39	0.40
ICP				
Aluminum	ug/g	20600	17000	17000
Antimony	ug/g	0.6	0.5	0.5
Arsenic	ug/g	8.7	8.9	8.2
Barium	ug/g	87	72	68
Beryllium	ug/g	0.5	0.4	0.5
Boron	ug/g	8	6	5
Cadmium	ug/g	1.3	0.9	1.0
Chromium	ug/g	40	32	30
Cobalt	ug/g	9.7	12	9.4
Copper	ug/g	21	17	19
Iron	ug/g	23800	20500	20200
Lead	ug/g	56	36	33
Manganese	ug/g	530	430	460
Molybdenum	ug/g	0.9	0.9	1.4
Nickel	ug/g	22	17	15
Selenium	ug/g	1.2	1.0	1.1
Silver	ug/g	0.2	0.1	0.1
Strontium	ug/g	43	35	32
Thallium	ug/g	0.3	0.2	0.2
Thorium	ug/g	7.3	6.1	6.1
Tin	ug/g	2.2	1.6	1.2
Titanium	ug/g	1400	1200	900
Uranium	ug/g	2.6	2.4	3.6
Vanadium	ug/g	57	50	53
Zinc	ug/g	110	82	87

Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18316 **06/08/2013 MESL-C3-01 *SEDIMENT***
18317 **06/08/2013 MESL-C3-02 *SEDIMENT***
18318 **06/08/2013 MESL-C3-03 *SEDIMENT***

Analyte	Units	18316	18317	18318
Inorganic Chemistry				
Mercury	ug/g	0.21	0.51	0.25
Organic carbon	%	14.0	13.0	11.3
Dry weight	g	9.40	5.31	4.93
Moisture	%	93.94	93.15	92.13
Sulfur	%	0.30	0.44	0.50
ICP				
Aluminum	ug/g	16000	20800	22600
Antimony	ug/g	0.6	0.9	1.0
Arsenic	ug/g	81	24	22
Barium	ug/g	350	260	220
Beryllium	ug/g	0.6	0.7	0.7
Boron	ug/g	4	5	6
Cadmium	ug/g	1.4	2.4	2.6
Chromium	ug/g	28	37	40
Cobalt	ug/g	14	16	23
Copper	ug/g	28	37	37
Iron	ug/g	96100	45700	83200
Lead	ug/g	76	182	179
Manganese	ug/g	16300	12200	13000
Molybdenum	ug/g	11	5.2	4.8
Nickel	ug/g	18	31	34
Selenium	ug/g	2.6	2.7	2.8
Silver	ug/g	0.2	0.3	0.4
Strontium	ug/g	30	32	33
Thallium	ug/g	<0.2	0.3	0.4
Thorium	ug/g	4.9	5.8	6.2
Tin	ug/g	2.1	3.5	4.6
Titanium	ug/g	630	890	1100
Uranium	ug/g	3.2	3.2	3.1
Vanadium	ug/g	72	73	82
Zinc	ug/g	140	190	220

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Note for Sample # 18317

This sample was reanalyzed for all ICP-MS analytes. Reanalysis confirmed original results within the expected measurement uncertainty.

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18319 **06/08/2013 MESL-C3-04 *SEDIMENT***
18320 **06/08/2013 MESL-C3-05 *SEDIMENT***
18331 **06/08/2013 MESL-C4-01 *SEDIMENT***

Analyte	Units	18319	18320	18331
Inorganic Chemistry				
Mercury	ug/g	0.51	0.20	0.34
Organic carbon	%	11.0	13.8	10.7
Dry weight	g	6.00	5.49	11.50
Moisture	%	92.12	91.05	92.66
Sulfur	%	0.34	0.42	0.29
ICP				
Aluminum	ug/g	20300	17100	15500
Antimony	ug/g	1.0	1.1	0.7
Arsenic	ug/g	18	21	76
Barium	ug/g	190	210	230
Beryllium	ug/g	0.6	0.6	0.6
Boron	ug/g	5	6	3
Cadmium	ug/g	2.2	2.2	1.5
Chromium	ug/g	34	31	30
Cobalt	ug/g	18	20	12
Copper	ug/g	28	26	28
Iron	ug/g	82600	100000	122000
Lead	ug/g	88	72	120
Manganese	ug/g	9800	10000	8300
Molybdenum	ug/g	2.8	3.1	8.8
Nickel	ug/g	21	17	21
Selenium	ug/g	2.0	2.0	2.3
Silver	ug/g	0.2	0.2	0.2
Strontium	ug/g	29	25	34
Thallium	ug/g	0.4	0.4	<0.2
Thorium	ug/g	5.7	5.4	4.3
Tin	ug/g	3.4	2.7	2.7
Titanium	ug/g	1000	800	730
Uranium	ug/g	2.5	2.9	2.4
Vanadium	ug/g	70	69	63
Zinc	ug/g	150	140	130

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Note for Sample # 18331

SRC ANALYTICAL

Minnow Environmental Inc.

This sample was reanalyzed for all ICP-MS analytes. Reanalysis confirmed original results within the expected measurement uncertainty.

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18332 **06/08/2013 MESL-C4-02 *SEDIMENT***
18333 **06/08/2013 MESL-C4-03 *SEDIMENT***
18334 **06/08/2013 MESL-C4-04 *SEDIMENT***

Analyte	Units	18332	18333	18334
Inorganic Chemistry				
Mercury	ug/g	0.33	0.33	0.24
Organic carbon	%	11.3	13.9	15.1
Dry weight	g	4.57	5.10	4.57
Moisture	%	92.37	92.46	92.16
Sulfur	%	0.65	0.60	0.35
ICP				
Aluminum	ug/g	18900	18900	17300
Antimony	ug/g	0.9	0.8	0.4
Arsenic	ug/g	35	21	16
Barium	ug/g	150	150	140
Beryllium	ug/g	0.6	0.6	0.5
Boron	ug/g	6	12	15
Cadmium	ug/g	1.9	1.5	0.9
Chromium	ug/g	35	34	32
Cobalt	ug/g	16	18	12
Copper	ug/g	31	30	30
Iron	ug/g	84200	66900	47200
Lead	ug/g	100	66	33
Manganese	ug/g	2720	2240	2020
Molybdenum	ug/g	4.6	4.5	3.4
Nickel	ug/g	22	17	14
Selenium	ug/g	2.4	2.1	1.6
Silver	ug/g	0.3	0.2	0.2
Strontium	ug/g	33	31	28
Thallium	ug/g	0.3	0.3	<0.2
Thorium	ug/g	5.2	5.4	5.3
Tin	ug/g	3.2	2.2	1.0
Titanium	ug/g	940	810	640
Uranium	ug/g	2.7	3.1	3.4
Vanadium	ug/g	69	70	61
Zinc	ug/g	160	120	87

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18335 06/08/2013 MESL-C4-05 *SEDIMENT*
18336 06/09/2013 MESL-C5-01 *SEDIMENT*
18337 06/09/2013 MESL-C5-02 *SEDIMENT*

Analyte	Units	18335	18336	18337
Inorganic Chemistry				
Mercury	ug/g	0.24	0.26	0.23
Organic carbon	%	15.6	11.0	12.2
Dry weight	g	9.37	7.79	4.95
Moisture	%	91.57	94.03	92.83
Sulfur	%	0.25	0.36	0.18
ICP				
Aluminum	ug/g	19200	17800	12500
Antimony	ug/g	<0.2	0.8	0.4
Arsenic	ug/g	14	15	92
Barium	ug/g	160	220	560
Beryllium	ug/g	0.6	0.5	0.5
Boron	ug/g	5	5	4
Cadmium	ug/g	0.7	2.2	1.3
Chromium	ug/g	35	31	23
Cobalt	ug/g	8.1	17	18
Copper	ug/g	34	26	22
Iron	ug/g	46200	68600	127000
Lead	ug/g	17	80	46
Manganese	ug/g	2200	10000	35900
Molybdenum	ug/g	3.0	3.2	17
Nickel	ug/g	15	22	19
Selenium	ug/g	1.6	2.0	2.1
Silver	ug/g	0.1	0.2	0.2
Strontium	ug/g	29	28	30
Thallium	ug/g	<0.2	0.4	0.3
Thorium	ug/g	6.2	5.1	4.0
Tin	ug/g	0.6	2.9	1.5
Titanium	ug/g	680	890	580
Uranium	ug/g	4.0	2.5	2.7
Vanadium	ug/g	68	58	52
Zinc	ug/g	92	140	120

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18338 06/09/2013 MESL-C5-03 *SEDIMENT*
18339 06/09/2013 MESL-C5-04 *SEDIMENT*
18340 06/09/2013 MESL-C5-05 *SEDIMENT*

Analyte	Units	18338	18339	18340
Inorganic Chemistry				
Mercury	ug/g	0.33	0.27	0.24
Organic carbon	%	12.0	11.1	11.5
Dry weight	g	6.70	6.92	9.09
Moisture	%	91.92	91.48	90.74
Sulfur	%	0.30	0.41	0.14
ICP				
Aluminum	ug/g	16100	19300	11800
Antimony	ug/g	0.6	0.8	0.5
Arsenic	ug/g	37	18	55
Barium	ug/g	420	300	630
Beryllium	ug/g	0.6	0.6	0.4
Boron	ug/g	5	7	3
Cadmium	ug/g	2.0	2.2	1.0
Chromium	ug/g	29	35	21
Cobalt	ug/g	13	15	17
Copper	ug/g	28	31	20
Iron	ug/g	62000	55800	111000
Lead	ug/g	99	130	37
Manganese	ug/g	24600	15200	64300
Molybdenum	ug/g	8.7	4.6	22
Nickel	ug/g	23	29	18
Selenium	ug/g	2.2	2.3	2.0
Silver	ug/g	0.2	0.3	0.1
Strontium	ug/g	31	33	36
Thallium	ug/g	0.3	0.4	0.2
Thorium	ug/g	4.8	5.4	3.7
Tin	ug/g	2.4	3.2	1.3
Titanium	ug/g	780	1000	600
Uranium	ug/g	2.9	2.9	2.5
Vanadium	ug/g	56	60	44
Zinc	ug/g	150	180	95

Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Minnow Environmental Inc.

18341 **06/04/2013 UTDL-C1-01 *SEDIMENT***
18342 **06/04/2013 UTDL-C1-02 *SEDIMENT***
18343 **06/04/2013 UTDL-C1-03 *SEDIMENT***

Analyte	Units	18341	18342	18343
Inorganic Chemistry				
Mercury	ug/g	0.49	0.44	0.61
Organic carbon	%	19.2	18.8	18.8
Dry weight	g	1.58	5.08	4.95
Moisture	%	98.43	95.46	95.40
Sulfur	%	0.30	0.33	0.30
ICP				
Aluminum	ug/g	15600	16700	16600
Antimony	ug/g	0.3	0.3	0.3
Arsenic	ug/g	5.3	5.5	5.3
Barium	ug/g	78	80	78
Beryllium	ug/g	0.3	0.3	0.3
Boron	ug/g	8	12	13
Cadmium	ug/g	1.3	1.3	1.2
Chromium	ug/g	29	31	31
Cobalt	ug/g	5.7	6.0	5.7
Copper	ug/g	54	58	57
Iron	ug/g	17100	17200	17100
Lead	ug/g	47	49	48
Manganese	ug/g	530	490	450
Molybdenum	ug/g	0.8	0.8	0.7
Nickel	ug/g	20	20	20
Selenium	ug/g	1.5	1.6	1.6
Silver	ug/g	0.2	0.2	0.2
Strontium	ug/g	30	31	31
Thallium	ug/g	<0.2	<0.2	<0.2
Thorium	ug/g	3.8	4.0	4.0
Tin	ug/g	1.6	1.6	1.6
Titanium	ug/g	640	660	730
Uranium	ug/g	1.0	1.0	1.0
Vanadium	ug/g	31	33	32
Zinc	ug/g	86	87	84

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18344 **06/04/2013 UTDL-C1-04 *SEDIMENT***
18345 **06/04/2013 UTDL-C1-05 *SEDIMENT***
18346 **06/05/2013 MTDL-C1-01 *SEDIMENT***

Analyte	Units	18344	18345	18346
Inorganic Chemistry				
Mercury	ug/g	0.47	0.66	0.62
Organic carbon	%	18.9	18.8	19.7
Dry weight	g	4.96	5.24	5.09
Moisture	%	94.79	94.35	96.72
Sulfur	%	0.32	0.33	0.36
ICP				
Aluminum	ug/g	16500	16100	16100
Antimony	ug/g	0.3	0.3	0.3
Arsenic	ug/g	5.3	5.1	6.9
Barium	ug/g	78	71	78
Beryllium	ug/g	0.3	0.3	0.3
Boron	ug/g	7	7	12
Cadmium	ug/g	1.2	1.2	1.4
Chromium	ug/g	33	30	27
Cobalt	ug/g	6.0	5.6	5.5
Copper	ug/g	59	58	42
Iron	ug/g	16800	15500	22000
Lead	ug/g	50	49	63
Manganese	ug/g	440	390	380
Molybdenum	ug/g	0.8	0.8	1.0
Nickel	ug/g	21	20	19
Selenium	ug/g	1.6	1.6	1.8
Silver	ug/g	0.2	0.2	0.2
Strontium	ug/g	31	30	28
Thallium	ug/g	<0.2	<0.2	<0.2
Thorium	ug/g	4.0	4.1	4.6
Tin	ug/g	1.6	1.6	2.0
Titanium	ug/g	720	710	590
Uranium	ug/g	1.1	1.0	1.0
Vanadium	ug/g	33	31	43
Zinc	ug/g	89	84	95

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Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18347 06/05/2013 MTDL-C1-02 *SEDIMENT*
18348 06/05/2013 MTDL-C1-03 *SEDIMENT*
18349 06/05/2013 MTDL-C1-04 *SEDIMENT*

Analyte	Units	18347	18348	18349
Inorganic Chemistry				
Mercury	ug/g	0.56	0.37	0.52
Organic carbon	%	20.0	19.7	19.8
Dry weight	g	3.13	3.81	4.33
Moisture	%	96.22	95.47	95.17
Sulfur	%	0.35	0.35	0.34
ICP				
Aluminum	ug/g	15400	15800	17100
Antimony	ug/g	0.3	0.3	0.4
Arsenic	ug/g	6.6	6.6	6.3
Barium	ug/g	75	77	79
Beryllium	ug/g	0.3	0.3	0.3
Boron	ug/g	10	9	9
Cadmium	ug/g	1.3	1.4	1.5
Chromium	ug/g	26	28	30
Cobalt	ug/g	5.2	5.4	5.5
Copper	ug/g	41	43	45
Iron	ug/g	20000	20600	21100
Lead	ug/g	60	64	67
Manganese	ug/g	350	350	350
Molybdenum	ug/g	1.0	1.0	1.0
Nickel	ug/g	18	19	20
Selenium	ug/g	1.7	1.8	1.9
Silver	ug/g	0.2	0.2	0.2
Strontium	ug/g	26	27	28
Thallium	ug/g	<0.2	<0.2	<0.2
Thorium	ug/g	4.1	4.4	4.4
Tin	ug/g	1.8	1.9	2.0
Titanium	ug/g	520	560	600
Uranium	ug/g	0.9	1.0	1.0
Vanadium	ug/g	41	41	44
Zinc	ug/g	93	94	98

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Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18350 **06/05/2013 MTDL-C1-05 *SEDIMENT***
18351 **06/09/2013 LTDL-C1-01 *SEDIMENT***
18352 **06/09/2013 LTDL-C1-02 *SEDIMENT***

Analyte	Units	18350	18351	18352
Inorganic Chemistry				
Mercury	ug/g	0.38	0.22	0.19
Organic carbon	%	19.8	15.4	15.0
Dry weight	g	4.33	5.48	3.83
Moisture	%	93.90	93.80	93.34
Sulfur	%	0.34	0.29	0.27
ICP				
Aluminum	ug/g	16300	15800	15500
Antimony	ug/g	0.4	0.3	0.3
Arsenic	ug/g	6.2	4.6	4.8
Barium	ug/g	76	65	60
Beryllium	ug/g	0.3	0.3	0.3
Boron	ug/g	9	3	3
Cadmium	ug/g	1.5	1.3	1.3
Chromium	ug/g	28	27	27
Cobalt	ug/g	5.5	6.8	6.8
Copper	ug/g	46	30	31
Iron	ug/g	20100	18100	18000
Lead	ug/g	69	46	45
Manganese	ug/g	340	490	480
Molybdenum	ug/g	1.0	0.7	0.7
Nickel	ug/g	20	18	18
Selenium	ug/g	1.8	1.4	1.3
Silver	ug/g	0.2	0.2	0.2
Strontium	ug/g	28	34	34
Thallium	ug/g	<0.2	<0.2	<0.2
Thorium	ug/g	4.6	3.9	4.1
Tin	ug/g	2.0	1.6	1.5
Titanium	ug/g	570	820	780
Uranium	ug/g	1.0	0.9	0.9
Vanadium	ug/g	43	35	34
Zinc	ug/g	100	95	92

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Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18353 **06/09/2013 LTDL-C1-03 *SEDIMENT***
18354 **06/09/2013 LTDL-C1-04 *SEDIMENT***
18355 **06/09/2013 LTDL-C1-05 *SEDIMENT***

Analyte	Units	18353	18354	18355
Inorganic Chemistry				
Mercury	ug/g	0.19	0.39	0.44
Organic carbon	%	14.6	13.3	14.3
Dry weight	g	7.08	10.76	12.69
Moisture	%	90.75	90.76	90.08
Sulfur	%	0.31	0.31	0.32
ICP				
Aluminum	ug/g	15300	15000	15600
Antimony	ug/g	0.3	0.3	0.3
Arsenic	ug/g	4.9	4.8	5.2
Barium	ug/g	57	53	52
Beryllium	ug/g	0.3	0.3	0.3
Boron	ug/g	3	3	3
Cadmium	ug/g	1.3	1.2	1.2
Chromium	ug/g	33	27	27
Cobalt	ug/g	6.8	6.5	6.8
Copper	ug/g	29	27	26
Iron	ug/g	17200	16500	17000
Lead	ug/g	43	40	38
Manganese	ug/g	430	380	380
Molybdenum	ug/g	0.7	0.6	0.6
Nickel	ug/g	19	17	18
Selenium	ug/g	1.3	1.2	1.2
Silver	ug/g	0.1	0.2	0.2
Strontium	ug/g	34	32	34
Thallium	ug/g	<0.2	<0.2	<0.2
Thorium	ug/g	4.0	3.8	4.1
Tin	ug/g	1.4	1.4	1.3
Titanium	ug/g	820	800	820
Uranium	ug/g	0.9	0.9	1.0
Vanadium	ug/g	34	33	34
Zinc	ug/g	90	83	84

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Results are reported on a dry basis.

SRC ANALYTICAL

Minnow Environmental Inc.

18356 **06/04/2013 WEEL-C-1-01 *SEDIMENT***
18357 **06/04/2013 WEEL-C-1-02 *SEDIMENT***
18358 **06/04/2013 WEEL-C-1-03 *SEDIMENT***

Analyte	Units	18356	18357	18358
Inorganic Chemistry				
Mercury	ug/g	0.55	0.25	0.53
Organic carbon	%	25.7	25.0	24.8
Dry weight	g	1.96	1.81	4.65
Moisture	%	98.54	97.16	98.16
Sulfur	%	1.61	1.80	1.46
ICP				
Aluminum	ug/g	12200	11600	12100
Antimony	ug/g	0.6	0.7	0.8
Arsenic	ug/g	7.9	8.6	9.6
Barium	ug/g	66	62	61
Beryllium	ug/g	0.3	0.3	0.3
Boron	ug/g	6	5	5
Cadmium	ug/g	2.0	2.0	2.0
Chromium	ug/g	22	21	23
Cobalt	ug/g	8.1	8.1	7.8
Copper	ug/g	49	48	48
Iron	ug/g	20400	21400	22600
Lead	ug/g	84	89	96
Manganese	ug/g	530	450	430
Molybdenum	ug/g	1.5	1.6	1.6
Nickel	ug/g	21	22	23
Selenium	ug/g	2.7	2.6	2.5
Silver	ug/g	0.2	0.2	0.2
Strontium	ug/g	24	22	23
Thallium	ug/g	<0.2	<0.2	0.2
Thorium	ug/g	3.2	3.0	3.1
Tin	ug/g	2.3	3.7	2.4
Titanium	ug/g	440	410	430
Uranium	ug/g	1.0	1.0	1.0
Vanadium	ug/g	26	27	29
Zinc	ug/g	140	140	140

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SRC ANALYTICAL

Minnow Environmental Inc.

18359 **06/04/2013 WEEL-C-1-04 *SEDIMENT***
18360 **06/04/2013 WEEL-C-1-05 *SEDIMENT***
18361 **06/09/2013 CHEL-C1-01 *SEDIMENT***

Analyte	Units	18359	18360	18361
Inorganic Chemistry				
Mercury	ug/g	0.43	0.39	0.39
Organic carbon	%	23.5	23.7	19.4
Dry weight	g	3.76	8.77	6.35
Moisture	%	97.64	96.75	91.42
Sulfur	%	2.10	1.94	0.30
ICP				
Aluminum	ug/g	13100	12900	14600
Antimony	ug/g	0.9	1.1	0.3
Arsenic	ug/g	13	14	5.2
Barium	ug/g	63	64	60
Beryllium	ug/g	0.3	0.4	0.3
Boron	ug/g	5	5	3
Cadmium	ug/g	2.0	1.9	1.1
Chromium	ug/g	23	23	31
Cobalt	ug/g	8.4	8.0	6.2
Copper	ug/g	51	50	28
Iron	ug/g	25600	24400	15400
Lead	ug/g	110	110	39
Manganese	ug/g	440	440	520
Molybdenum	ug/g	2.0	1.9	0.6
Nickel	ug/g	24	24	21
Selenium	ug/g	2.8	2.6	1.7
Silver	ug/g	0.2	0.2	0.1
Strontium	ug/g	24	24	32
Thallium	ug/g	0.2	0.2	<0.2
Thorium	ug/g	3.6	3.5	4.0
Tin	ug/g	2.7	2.7	1.4
Titanium	ug/g	450	450	720
Uranium	ug/g	1.1	1.0	1.0
Vanadium	ug/g	34	33	30
Zinc	ug/g	150	140	74

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SRC ANALYTICAL

Minnow Environmental Inc.

18362 06/09/2013 CHEL-C1-02 *SEDIMENT*
18363 06/09/2013 CHEL-C1-03 *SEDIMENT*
18364 06/09/2013 CHEL-C1-04 *SEDIMENT*

Analyte	Units	18362	18363	18364
Inorganic Chemistry				
Mercury	ug/g	0.46	0.40	0.52
Organic carbon	%	20.3	20.0	23.3
Dry weight	g	6.35	7.14	8.02
Moisture	%	89.66	89.37	89.53
Sulfur	%	0.34	0.41	0.52
ICP				
Aluminum	ug/g	13900	15100	14900
Antimony	ug/g	0.3	0.3	0.4
Arsenic	ug/g	5.2	6.9	7.3
Barium	ug/g	55	60	58
Beryllium	ug/g	0.3	0.3	0.3
Boron	ug/g	3	3	14
Cadmium	ug/g	1.0	1.2	1.2
Chromium	ug/g	28	32	30
Cobalt	ug/g	5.8	6.8	6.8
Copper	ug/g	27	30	28
Iron	ug/g	13200	13700	13800
Lead	ug/g	37	41	37
Manganese	ug/g	410	400	360
Molybdenum	ug/g	0.6	0.7	0.7
Nickel	ug/g	20	22	21
Selenium	ug/g	1.6	1.8	1.8
Silver	ug/g	0.1	0.2	0.1
Strontium	ug/g	29	33	33
Thallium	ug/g	<0.2	0.2	0.2
Thorium	ug/g	3.8	4.3	4.2
Tin	ug/g	1.4	1.4	1.4
Titanium	ug/g	590	730	700
Uranium	ug/g	0.9	1.1	1.0
Vanadium	ug/g	28	32	31
Zinc	ug/g	76	82	78

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Sulfur was subcontracted to SRC Geoanalytical Laboratories

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SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18365 **06/09/2013 CHEL-C1-05 *SEDIMENT***
18366 **06/09/2013 CLAL-C1-01 *SEDIMENT***
18367 **06/09/2013 CLAL-C1-02 *SEDIMENT***

Analyte	Units	18365	18366	18367
Inorganic Chemistry				
Mercury	ug/g	0.43	0.32	0.21
Organic carbon	%	22.3	22.3	22.3
Dry weight	g	7.99	4.45	7.07
Moisture	%	89.13	96.40	94.96
Sulfur	%	0.51	0.76	0.81
ICP				
Aluminum	ug/g	13400	17000	16200
Antimony	ug/g	0.3	0.4	0.5
Arsenic	ug/g	6.5	7.9	7.9
Barium	ug/g	52	63	59
Beryllium	ug/g	0.2	0.4	0.3
Boron	ug/g	9	4	3
Cadmium	ug/g	1.0	1.4	1.6
Chromium	ug/g	28	27	25
Cobalt	ug/g	6.4	5.3	4.9
Copper	ug/g	26	82	77
Iron	ug/g	13300	14600	13900
Lead	ug/g	31	48	58
Manganese	ug/g	350	320	300
Molybdenum	ug/g	0.6	1.6	1.5
Nickel	ug/g	19	17	16
Selenium	ug/g	1.5	2.0	2.0
Silver	ug/g	0.1	0.2	0.2
Strontium	ug/g	30	22	20
Thallium	ug/g	<0.2	<0.2	<0.2
Thorium	ug/g	3.8	3.8	3.5
Tin	ug/g	1.1	1.3	1.4
Titanium	ug/g	640	460	450
Uranium	ug/g	1.0	1.2	1.1
Vanadium	ug/g	28	30	28
Zinc	ug/g	67	110	100

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SRC ANALYTICAL

Aug 22, 2013

Minnow Environmental Inc.

18368 06/09/2013 CLAL-C1-03 *SEDIMENT*
18369 06/09/2013 CLAL-C1-04 *SEDIMENT*
18370 06/09/2013 CLAL-C1-05 *SEDIMENT*

Analyte	Units	18368	18369	18370
Inorganic Chemistry				
Mercury	ug/g	0.20	0.25	0.53
Organic carbon	%	21.7	19.9	21.8
Dry weight	g	3.27	3.90	4.11
Moisture	%	93.67	94.08	93.27
Sulfur	%	0.55	0.54	0.51
ICP				
Aluminum	ug/g	20100	17200	16900
Antimony	ug/g	0.4	0.2	<0.2
Arsenic	ug/g	7.2	5.1	4.1
Barium	ug/g	73	61	58
Beryllium	ug/g	0.5	0.4	0.4
Boron	ug/g	4	3	3
Cadmium	ug/g	1.2	0.9	0.8
Chromium	ug/g	30	26	25
Cobalt	ug/g	5.0	4.0	3.9
Copper	ug/g	86	72	71
Iron	ug/g	15000	12500	11400
Lead	ug/g	25	17	12
Manganese	ug/g	380	320	290
Molybdenum	ug/g	1.8	1.6	1.6
Nickel	ug/g	16	13	13
Selenium	ug/g	1.9	1.5	1.4
Silver	ug/g	0.2	0.2	0.2
Strontium	ug/g	25	22	20
Thallium	ug/g	<0.2	<0.2	<0.2
Thorium	ug/g	4.5	3.8	3.6
Tin	ug/g	0.6	0.4	0.4
Titanium	ug/g	460	410	390
Uranium	ug/g	1.4	1.2	1.2
Vanadium	ug/g	35	30	28
Zinc	ug/g	110	88	84

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Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC Group # 2013-9503

SRC ANALYTICAL

Nov 20, 2013

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

Minnow Environmental Inc.
2 Lamb Street
Georgetown, ON   L7G 3M9
Attn: Kim Connors

Date Samples Received: Sep-19-2013   Client P.O.: 2496

This is a final report.

Organics results have been authorized by Pat Moser, Supervisor

ICP results have been authorized by Keith Gipman, Supervisor

Inorganics and Radiochemistry results have been authorized by Jeff Zimmer, Supervisor

SLOWPOKE-2 results have been authorized by Dave Chorney

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as

    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

SRC ANALYTICAL

Nov 20, 2013

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
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Minnow Environmental Inc.
2 Lamb Street
Georgetown, ON   L7G 3M9
Attn: Kim Connors

Date Samples Received: Sep-19-2013   Client P.O.: 2496

29982   **09/12/2013 UTDL-P1 *SEDIMENT***
29983   **09/12/2013 UTDL-P2 *SEDIMENT***
29984   **09/12/2013 UTDL-P3 *SEDIMENT***

Analyte	Units	29982	29983	29984
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	6980	7210	9300
Mercury	ug/g	0.27	0.37	0.32
Organic carbon	%	14.1	15.2	18.2
Dry weight	g	48.04	43.97	42.99
Moisture	%	87.98	89.50	91.05
ICP				
Aluminum	ug/g	18000	15700	17400
Antimony	ug/g	0.3	0.3	0.4
Arsenic	ug/g	7.8	5.4	7.8
Barium	ug/g	63	54	59
Beryllium	ug/g	0.4	0.3	0.4
Boron	ug/g	7	7	8
Cadmium	ug/g	0.9	1.2	1.0
Chromium	ug/g	32	29	30
Cobalt	ug/g	8.6	6.0	7.2
Copper	ug/g	52	54	56
Iron	ug/g	18500	15100	16400
Lead	ug/g	35	40	44
Manganese	ug/g	590	380	460
Molybdenum	ug/g	1.1	0.8	1.2
Nickel	ug/g	20	20	21
Phosphorus	ug/g	1200	1200	1200
Selenium	ug/g	1.6	1.6	1.8
Silver	ug/g	0.2	0.2	0.2

SRC ANALYTICAL

Nov 20, 2013

Minnow Environmental Inc.

29982 09/12/2013 UTDL-P1 *SEDIMENT*
29983 09/12/2013 UTDL-P2 *SEDIMENT*
29984 09/12/2013 UTDL-P3 *SEDIMENT*

Analyte	Units	29982	29983	29984
ICP				
Strontium	ug/g	41	33	29
Thallium	ug/g	0.2	<0.2	0.2
Tin	ug/g	1.4	1.4	1.6
Titanium	ug/g	990	740	670
Uranium	ug/g	1.2	1.0	1.2
Vanadium	ug/g	37	29	34
Zinc	ug/g	93	90	98

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Organic carbon was subcontracted to SRC Geoanalytical Laboratories

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SRC ANALYTICAL

Nov 20, 2013

Minnow Environmental Inc.

29985 **09/12/2013 UTDL-P4 *SEDIMENT***
29986 **09/12/2013 UTDL-P5 *SEDIMENT***
29987 **09/12/2013 UTDL-P1Z *SEDIMENT***

Analyte	Units	29985	29986	29987
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	7500	9220	5910
Mercury	ug/g	0.63	0.15	0.42
Organic carbon	%	16.8	18.6	14.4
Dry weight	g	51.38	35.14	53.37
Moisture	%	90.43	90.05	87.11
ICP				
Aluminum	ug/g	18600	18700	15600
Antimony	ug/g	0.3	0.3	0.3
Arsenic	ug/g	7.3	8.0	7.0
Barium	ug/g	60	64	50
Beryllium	ug/g	0.4	0.4	0.4
Boron	ug/g	10	10	7
Cadmium	ug/g	0.9	1.2	0.8
Chromium	ug/g	30	32	27
Cobalt	ug/g	7.4	7.9	7.3
Copper	ug/g	54	61	48
Iron	ug/g	17800	19100	16300
Lead	ug/g	42	46	32
Manganese	ug/g	530	560	510
Molybdenum	ug/g	0.9	0.9	0.9
Nickel	ug/g	21	24	18
Phosphorus	ug/g	1300	1400	1100
Selenium	ug/g	1.7	1.8	1.3
Silver	ug/g	0.2	0.2	0.1
Strontium	ug/g	30	33	32
Thallium	ug/g	<0.2	0.2	<0.2
Tin	ug/g	1.5	1.6	1.2
Titanium	ug/g	770	750	790
Uranium	ug/g	1.1	1.1	0.9
Vanadium	ug/g	35	35	30
Zinc	ug/g	94	110	80

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SRC ANALYTICAL

Nov 20, 2013

Minnow Environmental Inc.

29988 **09/13/2013 MTDL-P1 *SEDIMENT***
29989 **09/13/2013 MTDL-P2 *SEDIMENT***
29990 **09/13/2013 MTDL-P3 *SEDIMENT***

Analyte	Units	29988	29989	29990
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	9160	2310	5410
Mercury	ug/g	0.45	0.10	0.63
Organic carbon	%	20.6	2.66	12.6
Dry weight	g	25.44	143.52	37.20
Moisture	%	91.64	67.36	89.02
ICP				
Aluminum	ug/g	21400	6700	19200
Antimony	ug/g	0.4	<0.2	0.4
Arsenic	ug/g	9.1	2.2	7.4
Barium	ug/g	66	18	58
Beryllium	ug/g	0.5	0.2	0.4
Boron	ug/g	9	3	10
Cadmium	ug/g	1.4	0.4	1.2
Chromium	ug/g	31	11	27
Cobalt	ug/g	7.9	3.7	7.8
Copper	ug/g	46	8.6	35
Iron	ug/g	25200	9900	24400
Lead	ug/g	51	11	47
Manganese	ug/g	550	190	600
Molybdenum	ug/g	1.0	0.3	0.9
Nickel	ug/g	23	6.6	19
Phosphorus	ug/g	1500	500	1300
Selenium	ug/g	2.0	0.4	1.4
Silver	ug/g	0.2	<0.1	0.2
Strontium	ug/g	29	23	35
Thallium	ug/g	0.2	<0.2	<0.2
Tin	ug/g	1.8	0.5	1.7
Titanium	ug/g	640	650	820
Uranium	ug/g	1.2	0.4	1.2
Vanadium	ug/g	40	16	40
Zinc	ug/g	120	36	110

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SRC ANALYTICAL

Minnow Environmental Inc.

29991 **09/13/2013 MTDL-P4 *SEDIMENT***
29992 **09/13/2013 MTDL-P5 *SEDIMENT***
29993 **09/13/2013 MTDL-P1Z *SEDIMENT***

Analyte	Units	29991	29992	29993
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	1110	5290	10200
Mercury	ug/g	0.06	0.18	1.1
Organic carbon	%	1.41	8.72	18.6
Dry weight	g	190.56	85.53	30.25
Moisture	%	51.23	84.01	94.35
ICP				
Aluminum	ug/g	6000	11400	20700
Antimony	ug/g	<0.2	0.2	0.4
Arsenic	ug/g	1.8	5.1	8.7
Barium	ug/g	14	32	65
Beryllium	ug/g	0.2	0.3	0.4
Boron	ug/g	2	7	9
Cadmium	ug/g	0.3	0.6	1.3
Chromium	ug/g	10	17	31
Cobalt	ug/g	3.9	5.8	7.7
Copper	ug/g	5.3	20	44
Iron	ug/g	10800	17900	24800
Lead	ug/g	7.7	24	49
Manganese	ug/g	150	330	530
Molybdenum	ug/g	0.3	0.8	1.0
Nickel	ug/g	5.8	12	23
Phosphorus	ug/g	410	840	1400
Selenium	ug/g	0.2	0.8	1.8
Silver	ug/g	<0.1	<0.1	0.2
Strontium	ug/g	18	27	30
Thallium	ug/g	<0.2	<0.2	0.2
Tin	ug/g	0.4	0.9	1.7
Titanium	ug/g	610	790	650
Uranium	ug/g	0.4	0.7	1.2
Vanadium	ug/g	15	30	40
Zinc	ug/g	36	70	120

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SRC ANALYTICAL

Minnow Environmental Inc.

29994 **09/13/2013 LTDL-P1 *SEDIMENT***
29995 **09/13/2013 LTDL-P2 *SEDIMENT***
29996 **09/13/2013 LTDL-P3 *SEDIMENT***

Analyte	Units	29994	29995	29996
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	10400	9610	8070
Mercury	ug/g	0.78	0.49	0.35
Organic carbon	%	19.7	18.1	15.5
Dry weight	g	30.08	34.45	48.10
Moisture	%	94.38	85.98	90.47
ICP				
Aluminum	ug/g	16600	18200	15800
Antimony	ug/g	0.3	0.3	0.3
Arsenic	ug/g	6.6	6.9	5.7
Barium	ug/g	57	59	50
Beryllium	ug/g	0.4	0.4	0.3
Boron	ug/g	8	6	4
Cadmium	ug/g	1.6	1.4	1.2
Chromium	ug/g	27	28	24
Cobalt	ug/g	6.8	7.1	6.8
Copper	ug/g	37	36	31
Iron	ug/g	19300	16400	18000
Lead	ug/g	50	46	37
Manganese	ug/g	400	420	460
Molybdenum	ug/g	0.8	0.8	0.6
Nickel	ug/g	22	21	18
Phosphorus	ug/g	1200	1300	1100
Selenium	ug/g	1.7	1.6	1.4
Silver	ug/g	0.2	0.2	0.1
Strontium	ug/g	31	31	30
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	1.6	1.5	1.3
Titanium	ug/g	610	630	650
Uranium	ug/g	1.1	1.0	0.9
Vanadium	ug/g	34	33	29
Zinc	ug/g	100	100	86

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SRC ANALYTICAL

Nov 20, 2013

Minnow Environmental Inc.

29997 **09/13/2013 LTDL-P4 *SEDIMENT***
29998 **09/13/2013 LTDL-P5 *SEDIMENT***
29999 **09/13/2013 LTDL-P1Z *SEDIMENT***

Analyte	Units	29997	29998	29999
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	8620	6370	9920
Mercury	ug/g	0.43	0.43	0.29
Organic carbon	%	24.3	14.7	19.3
Dry weight	g	36.08	58.12	22.63
Moisture	%	89.22	85.64	91.52
ICP				
Aluminum	ug/g	17200	15300	18000
Antimony	ug/g	0.3	0.3	0.4
Arsenic	ug/g	6.6	4.7	6.4
Barium	ug/g	54	45	63
Beryllium	ug/g	0.4	0.3	0.4
Boron	ug/g	5	4	9
Cadmium	ug/g	1.3	1.0	1.5
Chromium	ug/g	26	24	29
Cobalt	ug/g	6.9	6.0	7.0
Copper	ug/g	35	26	37
Iron	ug/g	18200	16400	19300
Lead	ug/g	45	35	51
Manganese	ug/g	410	350	410
Molybdenum	ug/g	0.7	0.6	0.9
Nickel	ug/g	20	16	21
Phosphorus	ug/g	1200	1100	1200
Selenium	ug/g	1.6	1.2	1.7
Silver	ug/g	0.2	0.1	0.2
Strontium	ug/g	31	33	35
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	1.4	1.2	1.7
Titanium	ug/g	630	760	690
Uranium	ug/g	1.0	0.8	1.2
Vanadium	ug/g	32	30	35
Zinc	ug/g	99	81	100

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SRC ANALYTICAL

Nov 20, 2013

Minnow Environmental Inc.

30000 **09/12/2013 WEEL-P1 *SEDIMENT***
30001 **09/12/2013 WEEL-P2 *SEDIMENT***
30002 **09/12/2013 WEEL-P3 *SEDIMENT***

Analyte	Units	30000	30001	30002
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	11000	15900	9880
Mercury	ug/g	0.39	0.45	0.16
Organic carbon	%	22.5	23.7	17.8
Dry weight	g	29.43	20.05	36.74
Moisture	%	92.43	95.65	91.85
ICP				
Aluminum	ug/g	16400	12100	11100
Antimony	ug/g	0.7	1.1	0.5
Arsenic	ug/g	16	10	6.3
Barium	ug/g	75	49	46
Beryllium	ug/g	0.6	0.4	0.4
Boron	ug/g	7	8	6
Cadmium	ug/g	1.7	1.9	1.1
Chromium	ug/g	27	22	18
Cobalt	ug/g	9.0	7.4	6.3
Copper	ug/g	47	56	35
Iron	ug/g	35000	26800	21300
Lead	ug/g	52	51	36
Manganese	ug/g	770	470	540
Molybdenum	ug/g	1.9	2.6	1.3
Nickel	ug/g	21	24	17
Phosphorus	ug/g	1000	1200	780
Selenium	ug/g	2.3	2.8	1.6
Silver	ug/g	0.2	0.1	0.1
Strontium	ug/g	37	31	36
Thallium	ug/g	0.3	0.2	<0.2
Tin	ug/g	1.7	1.6	1.1
Titanium	ug/g	770	600	810
Uranium	ug/g	1.3	1.3	0.9
Vanadium	ug/g	36	25	24
Zinc	ug/g	130	120	94

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SRC ANALYTICAL

Minnow Environmental Inc.

30003 **09/12/2013 WEEL-P4 *SEDIMENT***
30004 **09/12/2013 WEEL-P5 *SEDIMENT***
30005 **09/12/2013 WEEL-P1Z *SEDIMENT***

Analyte	Units	30003	30004	30005
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	1880	1570	12000
Mercury	ug/g	0.05	<0.05	0.28
Organic carbon	%	3.20	1.93	24.9
Dry weight	g	190.02	219.00	29.30
Moisture	%	61.03	57.54	92.66
ICP				
Aluminum	ug/g	7700	8100	17000
Antimony	ug/g	<0.2	<0.2	0.7
Arsenic	ug/g	3.2	2.1	15
Barium	ug/g	29	27	72
Beryllium	ug/g	0.2	0.2	0.5
Boron	ug/g	2	2	6
Cadmium	ug/g	0.3	0.2	1.7
Chromium	ug/g	10	11	26
Cobalt	ug/g	2.9	2.9	8.9
Copper	ug/g	7.7	5.0	47
Iron	ug/g	10700	10300	37300
Lead	ug/g	11	8.4	53
Manganese	ug/g	340	340	770
Molybdenum	ug/g	0.4	0.3	1.9
Nickel	ug/g	6.0	5.1	21
Phosphorus	ug/g	360	420	1000
Selenium	ug/g	0.4	0.3	2.4
Silver	ug/g	<0.1	<0.1	0.2
Strontium	ug/g	34	35	36
Thallium	ug/g	<0.2	<0.2	0.3
Tin	ug/g	0.5	0.5	1.7
Titanium	ug/g	750	760	770
Uranium	ug/g	0.4	0.4	1.2
Vanadium	ug/g	16	15	36
Zinc	ug/g	34	29	140

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SRC ANALYTICAL

Minnow Environmental Inc.

30006 **09/13/2013 CHEL-P1 *SEDIMENT***
30007 **09/13/2013 CHEL-P2 *SEDIMENT***
30008 **09/13/2013 CHEL-P3 *SEDIMENT***

Analyte	Units	30006	30007	30008
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	6930	7120	9180
Mercury	ug/g	0.22	0.10	0.24
Organic carbon	%	16.2	12.2	20.4
Dry weight	g	119.89	121.43	101.32
Moisture	%	82.66	84.77	87.46
ICP				
Aluminum	ug/g	13000	11900	12800
Antimony	ug/g	<0.2	<0.2	0.2
Arsenic	ug/g	4.2	4.9	5.0
Barium	ug/g	51	38	49
Beryllium	ug/g	0.2	0.2	0.3
Boron	ug/g	2	2	3
Cadmium	ug/g	0.8	0.5	1.0
Chromium	ug/g	20	22	23
Cobalt	ug/g	5.1	5.9	5.6
Copper	ug/g	19	21	25
Iron	ug/g	13400	13500	12800
Lead	ug/g	20	16	24
Manganese	ug/g	360	300	380
Molybdenum	ug/g	0.5	0.7	0.6
Nickel	ug/g	14	15	17
Phosphorus	ug/g	620	660	740
Selenium	ug/g	1.2	1.2	1.6
Silver	ug/g	<0.1	<0.1	0.1
Strontium	ug/g	46	40	42
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	1.4	0.8	1.0
Titanium	ug/g	790	920	800
Uranium	ug/g	0.8	0.8	1.2
Vanadium	ug/g	25	24	23
Zinc	ug/g	62	53	71

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SRC ANALYTICAL

Nov 20, 2013

Minnow Environmental Inc.

30009 09/13/2013 CHEL-P4 *SEDIMENT*
30010 09/13/2013 CHEL-P5 *SEDIMENT*
30011 09/12/2013 CLAL-P1 *SEDIMENT*

Analyte	Units	30009	30010	30011
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	13600	5600	7840
Mercury	ug/g	0.75	0.07	0.37
Organic carbon	%	32.0	13.7	12.7
Dry weight	g	61.65	161.87	62.96
Moisture	%	92.64	79.70	88.18
ICP				
Aluminum	ug/g	10500	7800	15700
Antimony	ug/g	0.2	<0.2	0.4
Arsenic	ug/g	6.1	3.1	8.0
Barium	ug/g	52	36	50
Beryllium	ug/g	0.3	0.2	0.4
Boron	ug/g	3	2	4
Cadmium	ug/g	1.3	0.9	1.0
Chromium	ug/g	23	16	23
Cobalt	ug/g	5.9	4.2	6.4
Copper	ug/g	32	15	57
Iron	ug/g	11500	7700	15700
Lead	ug/g	22	14	32
Manganese	ug/g	410	290	470
Molybdenum	ug/g	0.8	0.4	1.4
Nickel	ug/g	16	11	15
Phosphorus	ug/g	680	530	960
Selenium	ug/g	2.0	1.0	1.5
Silver	ug/g	0.1	<0.1	0.1
Strontium	ug/g	32	36	33
Thallium	ug/g	<0.2	<0.2	0.2
Tin	ug/g	0.7	0.6	1.2
Titanium	ug/g	420	750	770
Uranium	ug/g	1.2	0.6	1.1
Vanadium	ug/g	22	18	27
Zinc	ug/g	85	59	100

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SRC ANALYTICAL

Minnow Environmental Inc.

30012 09/12/2013 CLAL-P2 *SEDIMENT*
30013 09/15/2013 CLAL-P3 *SEDIMENT*
30014 09/15/2013 CLAL-P4 *SEDIMENT*

Analyte	Units	30012	30013	30014
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	8340	5090	5900
Mercury	ug/g	0.38	0.17	0.14
Organic carbon	%	13.5	8.22	9.05
Dry weight	g	72.16	89.02	83.93
Moisture	%	86.23	81.23	82.23
ICP				
Aluminum	ug/g	16300	12300	11300
Antimony	ug/g	0.5	0.2	0.2
Arsenic	ug/g	7.5	4.5	3.6
Barium	ug/g	50	38	35
Beryllium	ug/g	0.4	0.3	0.2
Boron	ug/g	4	3	3
Cadmium	ug/g	1.2	0.8	0.7
Chromium	ug/g	25	18	18
Cobalt	ug/g	6.6	4.4	3.8
Copper	ug/g	57	35	37
Iron	ug/g	15200	11200	8600
Lead	ug/g	33	25	24
Manganese	ug/g	400	500	310
Molybdenum	ug/g	1.3	0.8	0.8
Nickel	ug/g	16	11	11
Phosphorus	ug/g	1000	830	790
Selenium	ug/g	1.6	1.1	1.2
Silver	ug/g	0.2	<0.1	<0.1
Strontium	ug/g	30	38	37
Thallium	ug/g	0.2	<0.2	<0.2
Tin	ug/g	1.3	1.0	1.0
Titanium	ug/g	690	970	920
Uranium	ug/g	1.1	0.8	0.9
Vanadium	ug/g	27	22	20
Zinc	ug/g	110	71	64

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SRC ANALYTICAL

Minnow Environmental Inc.

30015 **09/15/2013 CLAL-P5 *SEDIMENT***
30016 **09/14/2013 BAGLM-P1 *SEDIMENT***
30017 **09/14/2013 BAGLM-P2 *SEDIMENT***

Analyte	Units	30015	30016	30017
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	8900	15500	12300
Mercury	ug/g	0.27	0.25	0.20
Organic carbon	%	13.0	26.8	20.4
Dry weight	g	53.22	33.62	36.07
Moisture	%	88.00	93.59	93.31
ICP				
Aluminum	ug/g	19300	13400	11000
Antimony	ug/g	0.4	0.5	0.2
Arsenic	ug/g	8.1	22	13
Barium	ug/g	57	67	40
Beryllium	ug/g	0.4	0.4	0.2
Boron	ug/g	5	13	7
Cadmium	ug/g	1.2	2.0	1.0
Chromium	ug/g	27	38	22
Cobalt	ug/g	8.0	9.5	5.3
Copper	ug/g	66	42	20
Iron	ug/g	17500	23200	17000
Lead	ug/g	39	48	25
Manganese	ug/g	470	640	410
Molybdenum	ug/g	1.5	1.2	0.6
Nickel	ug/g	18	29	15
Phosphorus	ug/g	1100	1200	750
Selenium	ug/g	1.8	2.3	1.2
Silver	ug/g	0.2	0.1	<0.1
Strontium	ug/g	39	47	27
Thallium	ug/g	0.2	0.2	<0.2
Tin	ug/g	1.5	1.6	0.8
Titanium	ug/g	1050	960	570
Uranium	ug/g	1.3	1.2	0.7
Vanadium	ug/g	32	35	21
Zinc	ug/g	110	140	73

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SRC ANALYTICAL

Minnow Environmental Inc.

30018 09/14/2013 BAGLM-P3 *SEDIMENT*
30019 09/14/2013 BAGLM-P4 *SEDIMENT*
30020 09/14/2013 BAGLM-P5 *SEDIMENT*

Analyte	Units	30018	30019	30020
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	15900	14300	14600
Mercury	ug/g	0.65	0.23	0.25
Organic carbon	%	20.8	21.1	23.3
Dry weight	g	32.75	30.49	37.95
Moisture	%	93.96	92.36	90.43
ICP				
Aluminum	ug/g	13700	12700	13200
Antimony	ug/g	0.5	0.4	0.4
Arsenic	ug/g	20	15	17
Barium	ug/g	50	46	49
Beryllium	ug/g	0.3	0.3	0.3
Boron	ug/g	10	9	9
Cadmium	ug/g	1.9	1.6	1.7
Chromium	ug/g	27	25	27
Cobalt	ug/g	7.0	6.2	6.8
Copper	ug/g	31	28	29
Iron	ug/g	24200	23500	22300
Lead	ug/g	50	36	40
Manganese	ug/g	520	470	500
Molybdenum	ug/g	1.0	1.0	1.0
Nickel	ug/g	23	20	21
Phosphorus	ug/g	980	850	960
Selenium	ug/g	2.0	1.6	1.7
Silver	ug/g	0.2	0.1	0.1
Strontium	ug/g	34	39	36
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	1.6	1.2	1.2
Titanium	ug/g	650	770	760
Uranium	ug/g	0.8	0.8	0.8
Vanadium	ug/g	27	25	26
Zinc	ug/g	120	110	110

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SRC ANALYTICAL

Minnow Environmental Inc.

30021 09/12/2013 BAGLS-P1 *SEDIMENT*
30022 09/12/2013 BAGLS-P2 *SEDIMENT*
30023 09/12/2013 BAGLS-P3 *SEDIMENT*

Analyte	Units	30021	30022	30023
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	23700	18400	18800
Mercury	ug/g	0.50	0.18	0.51
Organic carbon	%	33.7	26.8	31.1
Dry weight	g	12.60	38.09	28.73
Moisture	%	96.38	95.46	96.59
ICP				
Aluminum	ug/g	6100	6600	6400
Antimony	ug/g	0.4	0.2	<0.2
Arsenic	ug/g	7.4	6.5	8.7
Barium	ug/g	45	62	46
Beryllium	ug/g	0.2	0.1	0.2
Boron	ug/g	8	4	6
Cadmium	ug/g	1.4	0.4	0.7
Chromium	ug/g	13	14	16
Cobalt	ug/g	4.4	3.3	4.4
Copper	ug/g	29	26	33
Iron	ug/g	6800	7600	9000
Lead	ug/g	35	6.3	11
Manganese	ug/g	330	290	260
Molybdenum	ug/g	1.2	1.8	1.8
Nickel	ug/g	21	18	20
Phosphorus	ug/g	1400	470	630
Selenium	ug/g	1.9	1.1	1.5
Silver	ug/g	0.1	<0.1	<0.1
Strontium	ug/g	23	22	25
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.9	0.2	0.3
Titanium	ug/g	270	250	300
Uranium	ug/g	0.6	0.9	0.8
Vanadium	ug/g	11	12	12
Zinc	ug/g	97	50	70

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SRC ANALYTICAL

Nov 20, 2013

Minnow Environmental Inc.

30024 **09/12/2013 BAGLS-P4 *SEDIMENT***
30025 **09/12/2013 BAGLS-P5 *SEDIMENT***
30026 **09/12/2013 UNL1-P1 *SEDIMENT***

Analyte	Units	30024	30025	30026
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	17800	8700	11300
Mercury	ug/g	0.81	0.15	0.32
Organic carbon	%	28.7	25.5	22.7
Dry weight	g	37.12	16.03	49.40
Moisture	%	95.75	95.90	90.20
ICP				
Aluminum	ug/g	6900	7200	17400
Antimony	ug/g	0.3	0.2	0.2
Arsenic	ug/g	6.9	8.1	6.5
Barium	ug/g	48	62	56
Beryllium	ug/g	0.2	0.2	0.5
Boron	ug/g	6	5	4
Cadmium	ug/g	1.5	0.6	1.0
Chromium	ug/g	14	14	27
Cobalt	ug/g	4.5	3.9	8.3
Copper	ug/g	25	33	30
Iron	ug/g	7700	6900	13600
Lead	ug/g	36	16	20
Manganese	ug/g	360	240	340
Molybdenum	ug/g	0.9	1.8	0.7
Nickel	ug/g	18	19	21
Phosphorus	ug/g	800	460	1000
Selenium	ug/g	1.6	1.2	1.9
Silver	ug/g	0.1	<0.1	0.1
Strontium	ug/g	26	24	36
Thallium	ug/g	<0.2	<0.2	0.2
Tin	ug/g	1.0	0.4	0.8
Titanium	ug/g	280	260	610
Uranium	ug/g	0.7	0.9	2.3
Vanadium	ug/g	10	13	28
Zinc	ug/g	92	57	88

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Results are reported on a dry basis.

SRC ANALYTICAL

Minnow Environmental Inc.

30027 **09/12/2013 UNL1-P2 *SEDIMENT***
30028 **09/12/2013 UNL1-P3 *SEDIMENT***
30029 **09/12/2013 UNL1-P4 *SEDIMENT***

Analyte	Units	30027	30028	30029
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	10700	12200	12100
Mercury	ug/g	0.47	0.62	0.24
Organic carbon	%	20.0	23.9	25.1
Dry weight	g	74.50	56.59	58.73
Moisture	%	87.64	89.36	88.87
ICP				
Aluminum	ug/g	17000	17300	14600
Antimony	ug/g	0.3	0.2	0.2
Arsenic	ug/g	6.6	6.8	6.4
Barium	ug/g	57	56	54
Beryllium	ug/g	0.5	0.5	0.4
Boron	ug/g	3	3	3
Cadmium	ug/g	1.2	1.2	1.0
Chromium	ug/g	27	29	25
Cobalt	ug/g	7.6	7.3	7.0
Copper	ug/g	29	32	32
Iron	ug/g	13200	14100	12700
Lead	ug/g	26	25	18
Manganese	ug/g	290	360	470
Molybdenum	ug/g	0.7	0.6	0.7
Nickel	ug/g	21	22	19
Phosphorus	ug/g	1100	1100	900
Selenium	ug/g	2.0	2.2	2.0
Silver	ug/g	0.1	0.1	<0.1
Strontium	ug/g	29	35	39
Thallium	ug/g	0.2	0.2	0.2
Tin	ug/g	0.9	0.9	0.7
Titanium	ug/g	450	560	660
Uranium	ug/g	2.1	2.4	3.0
Vanadium	ug/g	27	26	26
Zinc	ug/g	90	92	87

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SRC ANALYTICAL

Nov 20, 2013

Minnow Environmental Inc.

30030 **09/12/2013 UNL1-P5 *SEDIMENT***
30031 **09/12/2013 UNL1-PX *SEDIMENT***
30032 **09/14/2013 UNL2-P1 *SEDIMENT***

Analyte	Units	30030	30031	30032
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	13200	11300	6070
Mercury	ug/g	0.61	0.25	0.23
Organic carbon	%	28.0	22.6	11.2
Dry weight	g	52.44	42.09	94.53
Moisture	%	90.24	90.90	81.27
ICP				
Aluminum	ug/g	13800	16400	13300
Antimony	ug/g	0.3	0.2	<0.2
Arsenic	ug/g	5.7	6.5	5.3
Barium	ug/g	57	52	41
Beryllium	ug/g	0.5	0.4	0.4
Boron	ug/g	2	2	2
Cadmium	ug/g	1.2	1.1	0.7
Chromium	ug/g	24	25	24
Cobalt	ug/g	6.0	7.3	8.6
Copper	ug/g	34	28	16
Iron	ug/g	10600	13100	14300
Lead	ug/g	23	24	18
Manganese	ug/g	500	290	400
Molybdenum	ug/g	0.6	0.6	0.6
Nickel	ug/g	19	20	14
Phosphorus	ug/g	940	1000	960
Selenium	ug/g	2.3	1.8	1.1
Silver	ug/g	0.1	0.1	<0.1
Strontium	ug/g	38	27	38
Thallium	ug/g	0.2	0.2	0.2
Tin	ug/g	0.8	0.8	0.8
Titanium	ug/g	510	410	970
Uranium	ug/g	3.5	2.0	1.5
Vanadium	ug/g	25	24	31
Zinc	ug/g	93	85	72

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SRC ANALYTICAL

Nov 20, 2013

Minnow Environmental Inc.

30033 09/14/2013 UNL2-P2 *SEDIMENT*
30034 09/14/2013 UNL2-P3 *SEDIMENT*
30035 09/14/2013 UNL2-P4 *SEDIMENT*

Analyte	Units	30033	30034	30035
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	12300	11400	9980
Mercury	ug/g	0.47	0.30	0.30
Organic carbon	%	28.5	25.2	24.6
Dry weight	g	62.64	52.24	46.27
Moisture	%	89.84	89.54	87.46
ICP				
Aluminum	ug/g	16400	16500	14600
Antimony	ug/g	0.5	0.3	0.4
Arsenic	ug/g	8.0	6.8	6.9
Barium	ug/g	74	69	64
Beryllium	ug/g	0.6	0.6	0.5
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	1.6	1.4	1.3
Chromium	ug/g	31	30	27
Cobalt	ug/g	11	11	9.5
Copper	ug/g	29	25	28
Iron	ug/g	18200	17500	16100
Lead	ug/g	43	31	40
Manganese	ug/g	590	580	520
Molybdenum	ug/g	0.8	0.6	0.8
Nickel	ug/g	21	19	18
Phosphorus	ug/g	1200	1400	1000
Selenium	ug/g	2.1	1.8	1.9
Silver	ug/g	0.2	0.1	0.2
Strontium	ug/g	38	38	37
Thallium	ug/g	0.3	0.3	0.2
Tin	ug/g	1.5	1.1	1.4
Titanium	ug/g	510	570	660
Uranium	ug/g	2.5	2.3	2.4
Vanadium	ug/g	41	38	38
Zinc	ug/g	110	110	96

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SRC ANALYTICAL

Minnow Environmental Inc.

30036 **09/14/2013 UNL2-P5 *SEDIMENT***
30037 **09/13/2013 SCHL-PS1 *SEDIMENT***
30038 **09/13/2013 SCHL-PS2 *SEDIMENT***

Analyte	Units	30036	30037	30038
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	8340	25400	27400
Mercury	ug/g	0.36	0.14	0.56
Organic carbon	%	17.0	33.1	35.6
Dry weight	g	73.43	17.79	12.88
Moisture	%	86.74	97.52	97.93
ICP				
Aluminum	ug/g	15500	5700	4800
Antimony	ug/g	0.4	0.3	0.4
Arsenic	ug/g	9.9	13	11
Barium	ug/g	60	72	53
Beryllium	ug/g	0.5	0.2	0.1
Boron	ug/g	<1	4	4
Cadmium	ug/g	1.1	0.6	0.8
Chromium	ug/g	27	17	15
Cobalt	ug/g	16	3.7	3.3
Copper	ug/g	20	38	34
Iron	ug/g	25900	8900	6900
Lead	ug/g	34	18	29
Manganese	ug/g	620	190	200
Molybdenum	ug/g	1.0	2.4	2.1
Nickel	ug/g	18	19	18
Phosphorus	ug/g	1200	520	710
Selenium	ug/g	1.6	1.4	1.5
Silver	ug/g	0.1	<0.1	<0.1
Strontium	ug/g	34	26	27
Thallium	ug/g	0.4	<0.2	<0.2
Tin	ug/g	1.3	0.5	0.7
Titanium	ug/g	720	270	220
Uranium	ug/g	2.0	0.6	0.6
Vanadium	ug/g	49	15	12
Zinc	ug/g	110	65	64

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SRC ANALYTICAL

Minnow Environmental Inc.

30039 09/13/2013 SCHL-PS3 *SEDIMENT*
30040 09/13/2013 SCHL-PS4 *SEDIMENT*
30041 09/13/2013 SCHL-PS5 *SEDIMENT*

Analyte	Units	30039	30040	30041
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	22500	22000	19600
Mercury	ug/g	0.15	0.24	0.24
Organic carbon	%	33.7	31.8	28.5
Dry weight	g	20.64	16.76	15.24
Moisture	%	97.34	96.92	96.93
ICP				
Aluminum	ug/g	6200	6900	7000
Antimony	ug/g	0.4	0.5	0.4
Arsenic	ug/g	11	13	12
Barium	ug/g	73	55	49
Beryllium	ug/g	0.2	0.2	0.2
Boron	ug/g	3	5	4
Cadmium	ug/g	0.9	1.4	1.2
Chromium	ug/g	17	20	22
Cobalt	ug/g	3.9	4.6	5.1
Copper	ug/g	31	37	38
Iron	ug/g	8900	9700	10600
Lead	ug/g	34	51	46
Manganese	ug/g	240	180	220
Molybdenum	ug/g	1.6	1.6	1.5
Nickel	ug/g	20	23	23
Phosphorus	ug/g	610	730	700
Selenium	ug/g	1.5	1.8	1.7
Silver	ug/g	<0.1	0.1	0.1
Strontium	ug/g	29	28	29
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.9	1.4	1.2
Titanium	ug/g	320	420	510
Uranium	ug/g	0.6	0.6	0.6
Vanadium	ug/g	16	18	19
Zinc	ug/g	71	89	91

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SRC ANALYTICAL

Nov 20, 2013

Minnow Environmental Inc.

30042 09/13/2013 SCHL-PD1 *SEDIMENT*
30043 09/13/2013 SCHL-PD2 *SEDIMENT*
30044 09/13/2013 SCHL-PD3 *SEDIMENT*

Analyte	Units	30042	30043	30044
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	22600	21600	27900
Mercury	ug/g	0.24	0.24	0.40
Organic carbon	%	26.8	27.3	35.0
Dry weight	g	19.45	24.96	19.49
Moisture	%	96.35	96.86	97.19
ICP				
Aluminum	ug/g	10200	8300	6300
Antimony	ug/g	0.8	0.6	0.6
Arsenic	ug/g	15	11	12
Barium	ug/g	42	36	37
Beryllium	ug/g	0.2	0.2	0.1
Boron	ug/g	6	3	4
Cadmium	ug/g	1.9	1.5	1.7
Chromium	ug/g	23	21	19
Cobalt	ug/g	7.0	5.8	5.3
Copper	ug/g	44	34	44
Iron	ug/g	15800	12200	9000
Lead	ug/g	76	61	53
Manganese	ug/g	220	180	160
Molybdenum	ug/g	1.8	1.4	2.2
Nickel	ug/g	26	22	25
Phosphorus	ug/g	1500	1200	1000
Selenium	ug/g	2.7	2.1	2.4
Silver	ug/g	0.2	0.2	0.1
Strontium	ug/g	36	33	26
Thallium	ug/g	0.2	<0.2	<0.2
Tin	ug/g	2.4	1.7	1.4
Titanium	ug/g	560	630	340
Uranium	ug/g	0.8	0.6	0.7
Vanadium	ug/g	21	19	14
Zinc	ug/g	140	100	110

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SRC ANALYTICAL

Minnow Environmental Inc.

30045	**09/13/2013 SCHL-PD4 *SEDIMENT***
30046	**09/13/2013 SCHL-PD5 *SEDIMENT***
30047	**09/14/2013 NEVL-P1 *SEDIMENT***

Analyte	Units	30045	30046	30047
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	29500	25800	7210
Mercury	ug/g	0.91	0.27	0.20
Organic carbon	%	35.6	31.5	16.5
Dry weight	g	24.51	25.04	113.03
Moisture	%	97.50	96.67	85.87
ICP				
Aluminum	ug/g	7600	9200	13800
Antimony	ug/g	0.8	1.0	<0.2
Arsenic	ug/g	15	16	4.4
Barium	ug/g	48	45	57
Beryllium	ug/g	0.2	0.2	0.3
Boron	ug/g	6	6	<1
Cadmium	ug/g	2.0	2.0	1.1
Chromium	ug/g	22	24	28
Cobalt	ug/g	6.3	7.1	8.0
Copper	ug/g	53	47	15
Iron	ug/g	11200	14100	12800
Lead	ug/g	64	78	29
Manganese	ug/g	200	230	520
Molybdenum	ug/g	2.5	2.1	0.5
Nickel	ug/g	30	28	14
Phosphorus	ug/g	1200	1400	940
Selenium	ug/g	2.8	2.8	1.2
Silver	ug/g	0.2	0.2	<0.1
Strontium	ug/g	32	36	46
Thallium	ug/g	0.2	0.2	<0.2
Tin	ug/g	1.6	2.2	1.0
Titanium	ug/g	420	570	980
Uranium	ug/g	0.8	0.8	2.1
Vanadium	ug/g	17	22	30
Zinc	ug/g	140	140	75

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SRC ANALYTICAL

Minnow Environmental Inc.

30048 **09/14/2013 NEVL-P2 *SEDIMENT***
30049 **09/14/2013 NEVL-P3 *SEDIMENT***
30050 **09/14/2013 NEVL-P4 *SEDIMENT***

Analyte	Units	30048	30049	30050
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	7040	8180	9030
Mercury	ug/g	0.26	0.25	0.35
Organic carbon	%	15.7	15.4	16.4
Dry weight	g	109.76	98.74	82.43
Moisture	%	84.90	86.49	88.58
ICP				
Aluminum	ug/g	14800	15500	17800
Antimony	ug/g	0.4	0.3	0.3
Arsenic	ug/g	6.8	7.6	7.7
Barium	ug/g	60	62	64
Beryllium	ug/g	0.3	0.4	0.5
Boron	ug/g	<1	<1	1
Cadmium	ug/g	1.0	0.9	0.8
Chromium	ug/g	28	31	29
Cobalt	ug/g	11	12	11
Copper	ug/g	15	16	21
Iron	ug/g	15700	19200	18600
Lead	ug/g	26	30	33
Manganese	ug/g	620	720	550
Molybdenum	ug/g	0.6	0.6	0.7
Nickel	ug/g	15	15	17
Phosphorus	ug/g	1000	1100	1200
Selenium	ug/g	1.2	1.2	1.4
Silver	ug/g	<0.1	<0.1	0.1
Strontium	ug/g	43	41	36
Thallium	ug/g	0.2	0.2	0.2
Tin	ug/g	1.0	1.1	1.2
Titanium	ug/g	980	930	790
Uranium	ug/g	2.1	2.2	2.6
Vanadium	ug/g	33	36	39
Zinc	ug/g	72	78	85

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SRC ANALYTICAL

Minnow Environmental Inc.

30051 09/14/2013 NEVL-P5 *SEDIMENT*
30052 09/16/2013 DELL-P1 *SEDIMENT*
30053 09/16/2013 DELL-P2 *SEDIMENT*

Analyte	Units	30051	30052	30053
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	9600	7470	9160
Mercury	ug/g	0.26	0.30	0.29
Organic carbon	%	18.0	17.1	20.2
Dry weight	g	76.20	96.58	87.03
Moisture	%	88.08	84.73	86.03
ICP				
Aluminum	ug/g	17900	11500	11900
Antimony	ug/g	0.4	<0.2	<0.2
Arsenic	ug/g	9.1	5.0	5.3
Barium	ug/g	61	44	48
Beryllium	ug/g	0.4	0.2	0.2
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	1.0	1.1	1.4
Chromium	ug/g	28	25	26
Cobalt	ug/g	11	5.2	5.6
Copper	ug/g	23	17	19
Iron	ug/g	18600	11900	11900
Lead	ug/g	38	25	32
Manganese	ug/g	430	290	260
Molybdenum	ug/g	0.8	0.6	0.5
Nickel	ug/g	17	17	19
Phosphorus	ug/g	1200	920	980
Selenium	ug/g	1.6	1.3	1.4
Silver	ug/g	0.1	<0.1	<0.1
Strontium	ug/g	31	36	37
Thallium	ug/g	0.3	<0.2	<0.2
Tin	ug/g	1.2	1.0	1.1
Titanium	ug/g	660	810	770
Uranium	ug/g	2.8	1.1	0.9
Vanadium	ug/g	40	24	23
Zinc	ug/g	89	82	93

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Nov 20, 2013

Minnow Environmental Inc.

30054 **09/16/2013 DELL-P3 *SEDIMENT***
30055 **09/16/2013 DELL-P4 *SEDIMENT***
30056 **09/16/2013 DELL-P5 *SEDIMENT***

Analyte	Units	30054	30055	30056
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	9600	7430	7580
Mercury	ug/g	0.49	0.34	0.11
Organic carbon	%	21.0	18.0	13.7
Dry weight	g	80.08	95.03	88.51
Moisture	%	86.95	85.20	82.52
ICP				
Aluminum	ug/g	12700	11200	9400
Antimony	ug/g	0.2	<0.2	<0.2
Arsenic	ug/g	5.4	5.3	4.5
Barium	ug/g	52	44	37
Beryllium	ug/g	0.2	0.2	0.2
Boron	ug/g	<1	<1	<1
Cadmium	ug/g	1.4	1.1	1.0
Chromium	ug/g	26	25	21
Cobalt	ug/g	5.8	5.3	5.4
Copper	ug/g	21	18	14
Iron	ug/g	12600	11400	10700
Lead	ug/g	34	24	23
Manganese	ug/g	270	280	260
Molybdenum	ug/g	0.5	0.5	0.4
Nickel	ug/g	20	17	14
Phosphorus	ug/g	1000	960	790
Selenium	ug/g	1.5	1.3	1.1
Silver	ug/g	0.1	<0.1	<0.1
Strontium	ug/g	35	33	32
Thallium	ug/g	0.2	<0.2	<0.2
Tin	ug/g	1.2	0.9	0.9
Titanium	ug/g	660	700	800
Uranium	ug/g	1.0	1.1	1.0
Vanadium	ug/g	24	23	22
Zinc	ug/g	97	86	73

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SRC ANALYTICAL

Minnow Environmental Inc.

30057 09/15/2013 UNL3-P1 *SEDIMENT*
30058 09/15/2013 UNL3-P2 *SEDIMENT*
30059 09/15/2013 UNL3-P3 *SEDIMENT*

Analyte	Units	30057	30058	30059
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	15400	14300	12000
Mercury	ug/g	0.41	0.23	0.35
Organic carbon	%	22.5	22.9	23.3
Dry weight	g	38.12	43.69	37.37
Moisture	%	92.69	93.11	92.80
ICP				
Aluminum	ug/g	8100	7700	10600
Antimony	ug/g	0.3	<0.2	0.7
Arsenic	ug/g	4.6	3.2	5.7
Barium	ug/g	48	41	60
Beryllium	ug/g	0.2	0.1	0.2
Boron	ug/g	<1	<1	5
Cadmium	ug/g	0.8	0.6	1.2
Chromium	ug/g	16	16	20
Cobalt	ug/g	4.0	3.4	5.0
Copper	ug/g	24	22	28
Iron	ug/g	5300	4400	6700
Lead	ug/g	26	17	40
Manganese	ug/g	150	120	190
Molybdenum	ug/g	0.9	0.9	1.1
Nickel	ug/g	14	13	18
Phosphorus	ug/g	940	840	1100
Selenium	ug/g	1.3	1.1	1.7
Silver	ug/g	0.1	<0.1	0.1
Strontium	ug/g	26	22	32
Thallium	ug/g	<0.2	<0.2	0.2
Tin	ug/g	0.8	0.5	1.3
Titanium	ug/g	370	290	480
Uranium	ug/g	1.2	1.1	1.3
Vanadium	ug/g	18	15	22
Zinc	ug/g	60	51	82

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Nov 20, 2013

Minnow Environmental Inc.

30060 **09/15/2013 UNL3-P4 *SEDIMENT***
30061 **09/15/2013 UNL3-P5 *SEDIMENT***
30062 **09/15/2013 UNL3-PX *SEDIMENT***

Analyte	Units	30060	30061	30062
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	12400	12700	12200
Mercury	ug/g	0.31	0.58	0.58
Organic carbon	%	25.0	22.5	23.8
Dry weight	g	30.72	42.36	37.63
Moisture	%	91.49	93.57	92.48
ICP				
Aluminum	ug/g	7900	8200	8100
Antimony	ug/g	0.5	0.4	0.4
Arsenic	ug/g	5.1	4.7	4.4
Barium	ug/g	49	49	50
Beryllium	ug/g	0.2	0.2	0.2
Boron	ug/g	4	4	3
Cadmium	ug/g	1.0	1.0	0.8
Chromium	ug/g	16	16	17
Cobalt	ug/g	4.2	4.0	3.8
Copper	ug/g	21	25	22
Iron	ug/g	5300	5400	5400
Lead	ug/g	33	31	25
Manganese	ug/g	160	150	150
Molybdenum	ug/g	0.9	1.0	0.9
Nickel	ug/g	14	15	14
Phosphorus	ug/g	820	880	940
Selenium	ug/g	1.3	1.4	1.3
Silver	ug/g	0.1	0.1	<0.1
Strontium	ug/g	28	27	28
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	1.1	1.0	0.8
Titanium	ug/g	430	380	420
Uranium	ug/g	1.1	1.2	1.2
Vanadium	ug/g	18	18	19
Zinc	ug/g	65	68	57

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Minnow Environmental Inc.

30063 **09/14/2013 BAGC-P1 *SEDIMENT***
30064 **09/14/2013 BAGC-P2 *SEDIMENT***
30065 **09/14/2013 BAGC-P3 *SEDIMENT***

Analyte	Units	30063	30064	30065
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	4310	5930	7390
Mercury	ug/g	0.12	0.13	0.11
Organic carbon	%	7.99	12.0	19.7
Dry weight	g	77.44	112.14	77.08
Moisture	%	73.25	79.10	83.55
ICP				
Aluminum	ug/g	7700	8800	8500
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	2.8	3.3	4.4
Barium	ug/g	37	47	62
Beryllium	ug/g	0.2	0.2	0.2
Boron	ug/g	2	2	2
Cadmium	ug/g	0.5	0.6	0.8
Chromium	ug/g	15	18	17
Cobalt	ug/g	7.9	6.8	8.4
Copper	ug/g	10	11	14
Iron	ug/g	8200	8200	10000
Lead	ug/g	9.4	8.9	13
Manganese	ug/g	590	920	1350
Molybdenum	ug/g	0.3	0.3	0.3
Nickel	ug/g	7.5	8.2	8.8
Phosphorus	ug/g	470	610	610
Selenium	ug/g	0.6	0.8	1.0
Silver	ug/g	<0.1	<0.1	<0.1
Strontium	ug/g	57	39	40
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.4	0.4	0.5
Titanium	ug/g	770	910	820
Uranium	ug/g	1.4	1.4	2.2
Vanadium	ug/g	17	20	20
Zinc	ug/g	44	46	60

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Nov 20, 2013

Minnow Environmental Inc.

30066 **09/14/2013 BAGC-P4 *SEDIMENT***
30067 **09/14/2013 BAGC-P5 *SEDIMENT***
30068 **09/14/2013 BAGC-P1Z *SEDIMENT***

Analyte	Units	30066	30067	30068
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	7460	9490	3650
Mercury	ug/g	0.10	0.17	0.07
Organic carbon	%	17.8	24.0	7.18
Dry weight	g	76.62	55.99	76.75
Moisture	%	80.22	85.10	73.18
ICP				
Aluminum	ug/g	8600	8800	7200
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	4.5	5.0	2.3
Barium	ug/g	59	65	34
Beryllium	ug/g	0.2	0.3	0.2
Boron	ug/g	3	2	2
Cadmium	ug/g	0.8	0.8	0.4
Chromium	ug/g	18	18	14
Cobalt	ug/g	8.9	9.2	6.4
Copper	ug/g	16	18	8.4
Iron	ug/g	10300	11100	7100
Lead	ug/g	12	14	7.2
Manganese	ug/g	1440	1600	510
Molybdenum	ug/g	0.4	0.5	0.2
Nickel	ug/g	9.5	9.9	6.8
Phosphorus	ug/g	580	610	380
Selenium	ug/g	1.1	1.2	0.5
Silver	ug/g	<0.1	<0.1	<0.1
Strontium	ug/g	45	43	50
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.5	0.5	0.4
Titanium	ug/g	900	790	710
Uranium	ug/g	2.7	2.6	1.1
Vanadium	ug/g	22	20	16
Zinc	ug/g	62	64	35

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Nov 20, 2013

Minnow Environmental Inc.

30069 09/15/2013 ERRC-P1 *SEDIMENT*
30070 09/15/2013 ERRC-P2 *SEDIMENT*
30071 09/15/2013 ERRC-P3 *SEDIMENT*

Analyte	Units	30069	30070	30071
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	8170	9470	17000
Mercury	ug/g	0.18	0.19	0.23
Organic carbon	%	17.0	24.9	39.5
Dry weight	g	38.66	26.83	20.20
Moisture	%	88.43	91.30	92.78
ICP				
Aluminum	ug/g	9300	6500	6600
Antimony	ug/g	<0.2	0.3	0.3
Arsenic	ug/g	9.5	6.0	6.9
Barium	ug/g	35	40	49
Beryllium	ug/g	0.3	0.2	0.2
Boron	ug/g	5	4	5
Cadmium	ug/g	0.7	1.0	1.5
Chromium	ug/g	19	12	12
Cobalt	ug/g	6.0	6.4	5.6
Copper	ug/g	33	21	32
Iron	ug/g	11600	7700	7400
Lead	ug/g	17	22	29
Manganese	ug/g	140	250	240
Molybdenum	ug/g	1.3	1.2	2.1
Nickel	ug/g	12	9.7	12
Phosphorus	ug/g	530	420	740
Selenium	ug/g	1.0	1.3	1.9
Silver	ug/g	<0.1	<0.1	<0.1
Strontium	ug/g	36	31	32
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.5	0.5	0.8
Titanium	ug/g	780	400	310
Uranium	ug/g	2.1	1.2	1.6
Vanadium	ug/g	22	16	15
Zinc	ug/g	47	53	72

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Minnow Environmental Inc.

30072 **09/15/2013 ERRC-P4 *SEDIMENT***
30073 **09/15/2013 ERRC-P5 *SEDIMENT***
30074 **09/15/2013 ERRC-P1Z *SEDIMENT***

Analyte	Units	30072	30073	30074
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	4930	4020	8130
Mercury	ug/g	0.10	0.10	0.13
Organic carbon	%	10.5	11.0	19.3
Dry weight	g	95.14	118.05	40.96
Moisture	%	81.55	75.90	86.33
ICP				
Aluminum	ug/g	10900	6900	11400
Antimony	ug/g	<0.2	<0.2	<0.2
Arsenic	ug/g	4.6	4.9	13
Barium	ug/g	41	23	37
Beryllium	ug/g	0.2	0.2	0.3
Boron	ug/g	3	4	6
Cadmium	ug/g	0.5	0.7	0.8
Chromium	ug/g	21	13	21
Cobalt	ug/g	5.6	4.6	6.9
Copper	ug/g	36	13	37
Iron	ug/g	12900	8200	13000
Lead	ug/g	13	14	18
Manganese	ug/g	200	100	160
Molybdenum	ug/g	0.7	0.6	1.8
Nickel	ug/g	12	7.5	13
Phosphorus	ug/g	540	330	590
Selenium	ug/g	0.7	0.8	1.2
Silver	ug/g	<0.1	<0.1	<0.1
Strontium	ug/g	45	31	40
Thallium	ug/g	<0.2	<0.2	<0.2
Tin	ug/g	0.6	0.4	0.6
Titanium	ug/g	1100	580	850
Uranium	ug/g	1.3	2.0	2.4
Vanadium	ug/g	28	16	24
Zinc	ug/g	42	38	54

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Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

SRC ANALYTICAL

Nov 20, 2013

Minnow Environmental Inc.

30075 09/16/2013 MESL-C6-1 *SEDIMENT*
30076 09/16/2013 MESL-C6-2 *SEDIMENT*
30077 09/16/2013 MESL-C6-3 *SEDIMENT*

Analyte	Units	30075	30076	30077
Inorganic Chemistry				
Total Kjeldahl nitrogen	ug/g	1870	5600	12200
Mercury	ug/g	Not Reported	Not Reported	Not Reported
Organic carbon	%	11.6	13.6	13.7
Dry weight	g	6.36	2.99	2.32
Moisture	%	97.92	97.58	67.58
Sulfur	%	0.16	0.22	0.27
ICP				
Aluminum	ug/g	17300	18200	19700
Antimony	ug/g	0.6	0.6	0.7
Arsenic	ug/g	66	66	63
Barium	ug/g	880	660	580
Beryllium	ug/g	0.6	0.7	0.8
Boron	ug/g	5	5	6
Cadmium	ug/g	1.4	1.5	1.7
Chromium	ug/g	45	27	28
Cobalt	ug/g	20	18	17
Copper	ug/g	23	25	28
Iron	ug/g	147000	139000	122000
Lead	ug/g	58	63	83
Manganese	ug/g	71300	41900	26500
Molybdenum	ug/g	36	9.8	6.8
Nickel	ug/g	107	21	20
Phosphorus	ug/g	6100	6400	6600
Selenium	ug/g	2.3	2.4	2.4
Silver	ug/g	0.2	0.2	0.2
Strontium	ug/g	41	37	33
Thallium	ug/g	0.3	0.3	0.3
Thorium	ug/g	3.9	4.1	4.5
Tin	ug/g	2.0	2.2	2.6
Titanium	ug/g	540	580	620
Uranium	ug/g	3.6	3.8	4.1
Vanadium	ug/g	72	77	86
Zinc	ug/g	160	170	200

Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

SRC ANALYTICAL

Minnow Environmental Inc.

Note for Sample # 30075
Mercury is not reported due to insufficient sample.

Note for Sample # 30076
Mercury is not reported due to insufficient sample.

Note for Sample # 30077
Mercury is not reported due to insufficient sample.

Results are reported on a dry basis.

SRC ANALYTICAL

Minnow Environmental Inc.

30078 09/16/2013 MESL-C6-4 *SEDIMENT*
30079 09/16/2013 MESL-C6-5 *SEDIMENT*

Analyte	Units	30078	30079
Inorganic Chemistry			
Total Kjeldahl nitrogen	ug/g	5940	5470
Mercury	ug/g	Not Reported	Not Reported
Organic carbon	%	14.7	13.1
Dry weight	g	2.90	5.39
Moisture	%	97.30	94.87
Sulfur	%	0.30	0.36
ICP			
Aluminum	ug/g	20400	24400
Antimony	ug/g	0.8	1.1
Arsenic	ug/g	50	27
Barium	ug/g	590	460
Beryllium	ug/g	0.8	0.8
Boron	ug/g	6	6
Cadmium	ug/g	2.2	2.9
Chromium	ug/g	29	34
Cobalt	ug/g	20	15
Copper	ug/g	30	37
Iron	ug/g	108000	76600
Lead	ug/g	111	189
Manganese	ug/g	27300	15600
Molybdenum	ug/g	6.2	3.3
Nickel	ug/g	23	29
Phosphorus	ug/g	5600	3800
Selenium	ug/g	2.6	2.8
Silver	ug/g	0.3	0.3
Strontium	ug/g	34	34
Thallium	ug/g	0.4	0.4
Thorium	ug/g	4.7	5.6
Tin	ug/g	3.1	4.2
Titanium	ug/g	660	810
Uranium	ug/g	4.3	4.6
Vanadium	ug/g	87	87
Zinc	ug/g	220	260

Organic carbon was subcontracted to SRC Geoanalytical Laboratories
Sulfur was subcontracted to SRC Geoanalytical Laboratories

SRC ANALYTICAL

Minnow Environmental Inc.

Note for Sample # 30078
Mercury is not reported due to insufficient sample.

Note for Sample # 30079
Mercury is not reported due to insufficient sample.

Results are reported on a dry basis.

SRC ANALYTICAL

Nov 20, 2013

Minnow Environmental Inc.

32852 **09/15/2013 CLAL-P3Z *SEDIMENT***

Analyte	Units	32852
Inorganic Chemistry		
Total Kjeldahl nitrogen	ug/g	2480
Mercury	ug/g	0.18
Organic carbon	%	0.04
Dry weight	g	68.93
Moisture	%	80.59
ICP		
Aluminum	ug/g	13400
Antimony	ug/g	0.2
Arsenic	ug/g	4.5
Barium	ug/g	52
Beryllium	ug/g	0.2
Boron	ug/g	1
Cadmium	ug/g	0.7
Chromium	ug/g	22
Cobalt	ug/g	4.8
Copper	ug/g	33
Iron	ug/g	12200
Lead	ug/g	24
Manganese	ug/g	500
Molybdenum	ug/g	0.9
Nickel	ug/g	11
Phosphorus	ug/g	790
Selenium	ug/g	0.9
Silver	ug/g	<0.1
Strontium	ug/g	45
Thallium	ug/g	<0.2
Tin	ug/g	1.0
Titanium	ug/g	1020
Uranium	ug/g	0.9
Vanadium	ug/g	24
Zinc	ug/g	67

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Organic carbon was subcontracted to SRC Geoanalytical Laboratories

Results are reported on a dry basis.

Maxxam

Success Through Science®

Your Project #: 2496
Your C.O.C. #: na

Attention: Kim Connors
Minnow Environmental Inc
2 Lamb St
Georgetown, ON
L7G 3M9

Report Date: 2013/10/31

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3G8450
Received: 2013/10/03, 10:30

Sample Matrix: Soil
Samples Received: 94

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Particle size in solids (pipette&sieve) (1)	4	N/A	2013/10/17	ATL SOP 00012	based on MSAMS-1978
Particle size in solids (pipette&sieve) (1)	20	N/A	2013/10/18	ATL SOP 00012	based on MSAMS-1978
Particle size in solids (pipette&sieve) (1)	16	N/A	2013/10/19	ATL SOP 00012	based on MSAMS-1978
Particle size in solids (pipette&sieve) (1)	20	N/A	2013/10/21	ATL SOP 00012	based on MSAMS-1978
Particle size in solids (pipette&sieve) (1)	20	N/A	2013/10/22	ATL SOP 00012	based on MSAMS-1978
Particle size in solids (pipette&sieve) (1)	13	N/A	2013/10/23	ATL SOP 00012	based on MSAMS-1978
Particle size in solids (pipette&sieve) (1)	1	N/A	2013/10/31	ATL SOP 00012	based on MSAMS-1978

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Note: Graphical representation of larger fractions (PHI-4, PHI -3 and PHI -2) not applicable unless these optional parameters are specifically requested.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Jolanta Goralczyk, Project Manager
Email: JGoralczyk@maxxam.ca
Phone# (905) 817-5751

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

Maxxam Job #: B3G8450
Report Date: 2013/10/31

Minnow Environmental Inc
Client Project #: 2496

RESULTS OF ANALYSES OF SOIL

Maxxam ID		TI3896	TI3897	TI3898	TI3899		TI3900		
Sampling Date		2013/09/12	2013/09/12	2013/09/12	2013/09/12		2013/09/12		
COC Number		na	na	na	na		na		
	Units	**UNL1-PX**	**UNL1-P1**	**UNL1-P2**	**UNL1-P3**	**QC Batch**	**UNL1-P4**	**RDL**	**QC Batch**
Inorganics									
< -1 Phi (2 mm)	%	100	100	100	100	3382693	100	0.10	3385514
< 0 Phi (1 mm)	%	99	98	98	95	3382693	99	0.10	3385514
< +1 Phi (0.5 mm)	%	97	93	87	87	3382693	97	0.10	3385514
< +2 Phi (0.25 mm)	%	94	87	73	80	3382693	95	0.10	3385514
< +3 Phi (0.12 mm)	%	90	81	53	76	3382693	91	0.10	3385514
< +4 Phi (0.062 mm)	%	85	76	39	71	3382693	81	0.10	3385514
< +5 Phi (0.031 mm)	%	86	74	37	73	3382693	82	0.10	3385514
< +6 Phi (0.016 mm)	%	73	65	26	64	3382693	50	0.10	3385514
< +7 Phi (0.0078 mm)	%	41	26	10	14	3382693	20	0.10	3385514
< +8 Phi (0.0039 mm)	%	30	14	6.0	7.7	3382693	17	0.10	3385514
< +9 Phi (0.0020 mm)	%	9.7	6.2	4.0	4.6	3382693	7.0	0.10	3385514
Gravel	%	ND	ND	ND	ND	3382693	ND	0.10	3385514
Sand	%	15	24	61	29	3382693	19	0.10	3385514
Silt	%	56	62	33	64	3382693	64	0.10	3385514
Clay	%	30	14	6.0	7.7	3382693	17	0.10	3385514

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B3G8450
Report Date: 2013/10/31

Minnow Environmental Inc
Client Project #: 2496

RESULTS OF ANALYSES OF SOIL

Maxxam ID		TI3901	TI3902	TI3903	TI3904	TI3905	TI3906		
Sampling Date		2013/09/12	2013/09/14	2013/09/14	2013/09/14	2013/09/14	2013/09/14		
COC Number		na	na	na	na	na	na		
	Units	**UNL1-P5**	**UNL2-P1**	**UNL2-P2**	**UNL2-P3**	**UNL2-P4**	**UNL2-P5**	**RDL**	**QC Batch**
Inorganics									
< -1 Phi (2 mm)	%	100	100	100	100	100	100	0.10	3385514
< 0 Phi (1 mm)	%	98	100	96	96	99	99	0.10	3385514
< +1 Phi (0.5 mm)	%	92	100	90	92	95	95	0.10	3385514
< +2 Phi (0.25 mm)	%	85	99	84	87	87	89	0.10	3385514
< +3 Phi (0.12 mm)	%	79	94	79	82	73	80	0.10	3385514
< +4 Phi (0.062 mm)	%	74	64	74	73	61	68	0.10	3385514
< +5 Phi (0.031 mm)	%	77	49	71	70	59	63	0.10	3385514
< +6 Phi (0.016 mm)	%	27	28	53	47	41	44	0.10	3385514
< +7 Phi (0.0078 mm)	%	10	13	22	16	22	18	0.10	3385514
< +8 Phi (0.0039 mm)	%	8.8	8.4	13	9.6	16	11	0.10	3385514
< +9 Phi (0.0020 mm)	%	4.6	3.9	6.4	5.1	8.1	4.9	0.10	3385514
Gravel	%	ND	ND	ND	ND	ND	0.21	0.10	3385514
Sand	%	26	36	26	27	39	32	0.10	3385514
Silt	%	65	56	61	63	45	56	0.10	3385514
Clay	%	8.8	8.4	13	9.6	16	11	0.10	3385514

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B3G8450
Report Date: 2013/10/31

Minnow Environmental Inc
Client Project #: 2496

RESULTS OF ANALYSES OF SOIL

Maxxam ID		TI3907	TI3908	TI3909	TI3910	TI3911	TI3912		
Sampling Date		2013/09/15	2013/09/15	2013/09/15	2013/09/15	2013/09/15	2013/09/15		
COC Number		na	na	na	na	na	na		
	Units	**UNL3-P1**	**UNL3-P2**	**UNL3-P3**	**UNL3-P4**	**UNL3-P5**	**UNL3-PX**	**RDL**	**QC Batch**
Inorganics									
< -1 Phi (2 mm)	%	100	100	100	100	100	100	0.10	3385514
< 0 Phi (1 mm)	%	100	100	100	100	100	100	0.10	3385514
< +1 Phi (0.5 mm)	%	100	99	95	100	97	99	0.10	3385514
< +2 Phi (0.25 mm)	%	89	95	79	98	82	96	0.10	3385514
< +3 Phi (0.12 mm)	%	69	88	58	95	62	92	0.10	3385514
< +4 Phi (0.062 mm)	%	53	81	43	92	45	88	0.10	3385514
< +5 Phi (0.031 mm)	%	49	81	43	90	43	88	0.10	3385514
< +6 Phi (0.016 mm)	%	41	71	34	76	31	74	0.10	3385514
< +7 Phi (0.0078 mm)	%	21	39	18	50	16	50	0.10	3385514
< +8 Phi (0.0039 mm)	%	16	29	13	42	12	43	0.10	3385514
< +9 Phi (0.0020 mm)	%	15	17	7.7	24	6.3	26	0.10	3385514
Gravel	%	ND	ND	ND	ND	ND	ND	0.10	3385514
Sand	%	47	19	57	7.8	55	12	0.10	3385514
Silt	%	37	52	30	51	33	45	0.10	3385514
Clay	%	16	29	13	42	12	43	0.10	3385514

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF SOIL

Maxxam ID		TI3913	TI3914	TI3915	TI3916	TI3917	TI3918		
Sampling Date		2013/09/12	2013/09/12	2013/09/15	2013/09/15	2013/09/15	2013/09/13		
COC Number		na	na	na	na	na	na		
	Units	**CLAL-P1**	**CLAL-P2**	**CLAL-P3**	**CLAL-P4**	**CLAL-P5**	**MTDL-PZ1**	**RDL**	**QC Batch**
Inorganics									
< -1 Phi (2 mm)	%	100	100	100	100	100	100	0.10	3385514
< 0 Phi (1 mm)	%	98	98	100	100	100	100	0.10	3385514
< +1 Phi (0.5 mm)	%	91	90	100	100	97	99	0.10	3385514
< +2 Phi (0.25 mm)	%	81	70	98	98	93	97	0.10	3385514
< +3 Phi (0.12 mm)	%	71	45	88	91	85	93	0.10	3385514
< +4 Phi (0.062 mm)	%	42	30	48	55	66	90	0.10	3385514
< +5 Phi (0.031 mm)	%	33	27	38	28	57	86	0.10	3385514
< +6 Phi (0.016 mm)	%	23	20	21	17	37	67	0.10	3385514
< +7 Phi (0.0078 mm)	%	11	12	11	9.1	18	43	0.10	3385514
< +8 Phi (0.0039 mm)	%	6.9	9.5	8.9	7.0	13	34	0.10	3385514
< +9 Phi (0.0020 mm)	%	3.1	6.6	4.9	4.9	5.1	23	0.10	3385514
Gravel	%	ND	ND	ND	ND	ND	ND	0.10	3385514
Sand	%	58	70	52	45	34	10	0.10	3385514
Silt	%	35	21	39	48	53	56	0.10	3385514
Clay	%	6.9	9.5	8.9	7.0	13	34	0.10	3385514

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		TI3919		TI3920	TI3921	TI3922	TI3923		
Sampling Date		2013/09/13		2013/09/13	2013/09/13	2013/09/13	2013/09/13		
COC Number		na		na	na	na	na		
	Units	**MTDL-P1**	**QC Batch**	**MTDL-P2**	**MTDL-P3**	**MTDL-P4**	**MTDL-P5**	**RDL**	**QC Batch**
Inorganics									
< -1 Phi (2 mm)	%	100	3385514	100	100	100	100	0.10	3385780
< 0 Phi (1 mm)	%	100	3385514	100	100	100	100	0.10	3385780
< +1 Phi (0.5 mm)	%	100	3385514	99	99	99	100	0.10	3385780
< +2 Phi (0.25 mm)	%	100	3385514	93	95	83	96	0.10	3385780
< +3 Phi (0.12 mm)	%	100	3385514	60	84	33	77	0.10	3385780
< +4 Phi (0.062 mm)	%	100	3385514	9.2	51	3.1	26	0.10	3385780
< +5 Phi (0.031 mm)	%	99	3385514	6.2	44	2.3	18	0.10	3385780
< +6 Phi (0.016 mm)	%	74	3385514	4.0	32	1.4	13	0.10	3385780
< +7 Phi (0.0078 mm)	%	39	3385514	2.4	19	0.86	7.9	0.10	3385780
< +8 Phi (0.0039 mm)	%	27	3385514	1.8	15	0.57	7.2	0.10	3385780
< +9 Phi (0.0020 mm)	%	9.3	3385514	1.3	10	0.47	6.1	0.10	3385780
Gravel	%	ND	3385514	ND	ND	ND	ND	0.10	3385780
Sand	%	ND	3385514	91	49	97	74	0.10	3385780
Silt	%	73	3385514	7.4	36	2.5	19	0.10	3385780
Clay	%	27	3385514	1.8	15	0.57	7.2	0.10	3385780

ND = Not detected
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QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF SOIL

Maxxam ID		TI3924	TI3925	TI3926	TI3927	TI3928	TI3929		
Sampling Date		2013/09/12	2013/09/12	2013/09/12	2013/09/12	2013/09/12	2013/09/12		
COC Number		na	na	na	na	na	na		
	Units	**WEEL-P1Z**	**WEEL-P1**	**WEEL-P2**	**WEEL-P3**	**WEEL-P4**	**WEEL-P5**	**RDL**	**QC Batch**
Inorganics									
< -1 Phi (2 mm)	%	100	100	100	100	99	100	0.10	3385780
< 0 Phi (1 mm)	%	100	100	100	100	99	100	0.10	3385780
< +1 Phi (0.5 mm)	%	100	100	100	100	97	100	0.10	3385780
< +2 Phi (0.25 mm)	%	97	94	100	95	89	96	0.10	3385780
< +3 Phi (0.12 mm)	%	89	78	97	54	56	55	0.10	3385780
< +4 Phi (0.062 mm)	%	78	64	87	23	9.3	9.6	0.10	3385780
< +5 Phi (0.031 mm)	%	72	60	77	21	6.3	3.2	0.10	3385780
< +6 Phi (0.016 mm)	%	53	41	61	14	3.7	1.9	0.10	3385780
< +7 Phi (0.0078 mm)	%	25	21	32	9.3	1.3	0.77	0.10	3385780
< +8 Phi (0.0039 mm)	%	18	16	28	10	1.1	0.58	0.10	3385780
< +9 Phi (0.0020 mm)	%	14	12	24	8.2	0.80	0.45	0.10	3385780
Gravel	%	ND	ND	ND	ND	0.65	ND	0.10	3385780
Sand	%	22	36	13	77	90	90	0.10	3385780
Silt	%	60	48	58	12	8.2	9.0	0.10	3385780
Clay	%	18	16	28	10	1.1	0.58	0.10	3385780

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		TI3930	TI3931	TI3932	TI3933	TI3934	TI3935		
Sampling Date		2013/09/16	2013/09/16	2013/09/16	2013/09/16	2013/09/16	2013/09/12		
COC Number		na	na	na	na	na	na		
	Units	**DELL-P1**	**DELL-P2**	**DELL-P3**	**DELL-P4**	**DELL-P5**	**BAGLS-P1**	**RDL**	**QC Batch**
Inorganics									
< -1 Phi (2 mm)	%	100	100	100	100	100	100	0.10	3385780
< 0 Phi (1 mm)	%	100	100	100	100	100	100	0.10	3385780
< +1 Phi (0.5 mm)	%	99	97	100	98	99	98	0.10	3385780
< +2 Phi (0.25 mm)	%	97	94	100	96	92	94	0.10	3385780
< +3 Phi (0.12 mm)	%	93	91	100	93	77	91	0.10	3385780
< +4 Phi (0.062 mm)	%	89	87	99	89	59	89	0.10	3385780
< +5 Phi (0.031 mm)	%	81	83	100	80	50	86	0.10	3385780
< +6 Phi (0.016 mm)	%	40	51	69	38	22	79	0.10	3385780
< +7 Phi (0.0078 mm)	%	16	24	19	5.8	8.6	66	0.10	3385780
< +8 Phi (0.0039 mm)	%	11	18	12	3.6	5.6	50	0.10	3385780
< +9 Phi (0.0020 mm)	%	7.0	9.1	5.4	2.5	3.2	42	0.10	3385780
Gravel	%	ND	ND	ND	ND	ND	ND	0.10	3385780
Sand	%	11	13	0.86	11	41	11	0.10	3385780
Silt	%	77	69	87	85	54	40	0.10	3385780
Clay	%	11	18	12	3.6	5.6	50	0.10	3385780

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B3G8450
Report Date: 2013/10/31

Minnow Environmental Inc
Client Project #: 2496

RESULTS OF ANALYSES OF SOIL

Maxxam ID		TI3936	TI3937	TI3938	TI3939	TI3940	TI3941		
Sampling Date		2013/09/12	2013/09/12	2013/09/12	2013/09/12	2013/09/14	2013/09/14		
COC Number		na	na	na	na	na	na		
	Units	**BAGLS-P2**	**BAGLS-P3**	**BAGLS-P4**	**BAGLS-P5**	**BAGC-P1Z**	**BAGC-P1**	**RDL**	**QC Batch**
Inorganics									
< -1 Phi (2 mm)	%	100	100	100	100	100	100	0.10	3388853
< 0 Phi (1 mm)	%	99	99	100	100	100	100	0.10	3388853
< +1 Phi (0.5 mm)	%	97	96	100	99	98	99	0.10	3388853
< +2 Phi (0.25 mm)	%	93	91	98	98	76	77	0.10	3388853
< +3 Phi (0.12 mm)	%	90	86	90	96	39	40	0.10	3388853
< +4 Phi (0.062 mm)	%	88	81	78	95	18	19	0.10	3388853
< +5 Phi (0.031 mm)	%	89	78	76	94	18	17	0.10	3388853
< +6 Phi (0.016 mm)	%	82	68	63	87	8.4	8.6	0.10	3388853
< +7 Phi (0.0078 mm)	%	42	47	48	63	3.3	3.9	0.10	3388853
< +8 Phi (0.0039 mm)	%	23	40	42	55	2.6	2.9	0.10	3388853
< +9 Phi (0.0020 mm)	%	11	27	39	46	2.0	2.4	0.10	3388853
Gravel	%	ND	ND	ND	ND	ND	ND	0.10	3388853
Sand	%	12	19	22	5.2	82	81	0.10	3388853
Silt	%	65	41	37	40	16	17	0.10	3388853
Clay	%	23	40	42	55	2.6	2.9	0.10	3388853

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF SOIL

Maxxam ID		TI3942	TI3943	TI3944	TI3945	TI3946	TI3947		
Sampling Date		2013/09/14	2013/09/14	2013/09/14	2013/09/14	2013/09/13	2013/09/13		
COC Number		na	na	na	na	na	na		
	Units	**BAGC-P2**	**BAGC-P3**	**BAGC-P4**	**BAGC-P5**	**SCHL-PD1**	**SCHL-PS1**	**RDL**	**QC Batch**
Inorganics									
< -1 Phi (2 mm)	%	100	100	99	100	98	100	0.10	3388853
< 0 Phi (1 mm)	%	100	100	98	100	96	100	0.10	3388853
< +1 Phi (0.5 mm)	%	99	100	96	100	91	99	0.10	3388853
< +2 Phi (0.25 mm)	%	97	98	90	99	91	97	0.10	3388853
< +3 Phi (0.12 mm)	%	67	74	65	79	88	93	0.10	3388853
< +4 Phi (0.062 mm)	%	39	45	27	54	76	89	0.10	3388853
< +5 Phi (0.031 mm)	%	33	40	23	50	69	87	0.10	3388853
< +6 Phi (0.016 mm)	%	20	22	13	36	54	82	0.10	3388853
< +7 Phi (0.0078 mm)	%	9.8	12	5.3	16	34	56	0.10	3388853
< +8 Phi (0.0039 mm)	%	7.5	7.9	3.6	12	36	46	0.10	3388853
< +9 Phi (0.0020 mm)	%	4.7	5.9	3.7	8.2	39	49	0.10	3388853
Gravel	%	ND	ND	0.75	ND	1.6	ND	0.10	3388853
Sand	%	61	55	72	46	23	11	0.10	3388853
Silt	%	32	37	24	42	40	44	0.10	3388853
Clay	%	7.5	7.9	3.6	12	36	46	0.10	3388853

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		TI3948	TI3949	TI3950	TI3951	TI3952	TI3953		
Sampling Date		2013/09/13	2013/09/13	2013/09/13	2013/09/13	2013/09/13	2013/09/13		
COC Number		na	na	na	na	na	na		
	Units	**SCHL-PD2**	**SCHL-PS2**	**SCHL-PD3**	**SCHL-PS3**	**SCHL-PD4**	**SCHL-PS4**	**RDL**	**QC Batch**

Inorganics									
< -1 Phi (2 mm)	%	100	100	100	100	100	100	0.10	3388853
< 0 Phi (1 mm)	%	100	100	100	100	100	100	0.10	3388853
< +1 Phi (0.5 mm)	%	100	100	100	100	100	99	0.10	3388853
< +2 Phi (0.25 mm)	%	99	99	99	100	99	97	0.10	3388853
< +3 Phi (0.12 mm)	%	95	98	98	99	99	94	0.10	3388853
< +4 Phi (0.062 mm)	%	81	97	96	99	97	84	0.10	3388853
< +5 Phi (0.031 mm)	%	72	93	92	98	93	84	0.10	3388853
< +6 Phi (0.016 mm)	%	61	90	80	95	81	68	0.10	3388853
< +7 Phi (0.0078 mm)	%	39	65	55	75	54	45	0.10	3388853
< +8 Phi (0.0039 mm)	%	34	68	51	66	44	40	0.10	3388853
< +9 Phi (0.0020 mm)	%	31	62	34	62	30	33	0.10	3388853
Gravel	%	ND	ND	ND	ND	ND	ND	0.10	3388853
Sand	%	19	3.0	4.1	1.5	3.0	16	0.10	3388853
Silt	%	47	29	45	33	53	44	0.10	3388853
Clay	%	34	68	51	66	44	40	0.10	3388853

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF SOIL

Maxxam ID		TI3954	TI3955		TI3956	TI3957	TI3958		
Sampling Date		2013/09/13	2013/09/13		2013/09/13	2013/09/13	2013/09/13		
COC Number		na	na		na	na	na		
	Units	**SCHL-PD5**	**SCHL-PS5**	**QC Batch**	**CHEL-P1**	**CHEL-P2**	**CHEL-P3**	**RDL**	**QC Batch**
Inorganics									
< -1 Phi (2 mm)	%	100	100	3388853	100	100	100	0.10	3391548
< 0 Phi (1 mm)	%	100	100	3388853	99	100	100	0.10	3391548
< +1 Phi (0.5 mm)	%	100	100	3388853	98	99	100	0.10	3391548
< +2 Phi (0.25 mm)	%	99	99	3388853	80	93	97	0.10	3391548
< +3 Phi (0.12 mm)	%	97	90	3388853	45	69	86	0.10	3391548
< +4 Phi (0.062 mm)	%	90	74	3388853	27	33	67	0.10	3391548
< +5 Phi (0.031 mm)	%	87	71	3388853	23	30	61	0.10	3391548
< +6 Phi (0.016 mm)	%	80	62	3388853	11	14	31	0.10	3391548
< +7 Phi (0.0078 mm)	%	52	44	3388853	4.6	6.8	13	0.10	3391548
< +8 Phi (0.0039 mm)	%	43	35	3388853	3.9	4.6	9.6	0.10	3391548
< +9 Phi (0.0020 mm)	%	43	33	3388853	3.5	3.9	8.3	0.10	3391548
Gravel	%	ND	ND	3388853	0.19	ND	ND	0.10	3391548
Sand	%	9.9	26	3388853	73	67	33	0.10	3391548
Silt	%	47	39	3388853	23	29	58	0.10	3391548
Clay	%	43	35	3388853	3.9	4.6	9.6	0.10	3391548

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		TI3959	TI3960	TI3961	TI3962	TI3963	TI3964		
Sampling Date		2013/09/13	2013/09/13	2013/09/12	2013/09/12	2013/09/12	2013/09/12		
COC Number		na	na	na	na	na	na		
	Units	**CHEL-P4**	**CHEL-P5**	**UTDL-P1Z**	**UTDL-P1**	**UTDL-P2**	**UTDL-P3**	**RDL**	**QC Batch**
Inorganics									
< -1 Phi (2 mm)	%	100	100	100	100	100	100	0.10	3391548
< 0 Phi (1 mm)	%	100	100	100	99	98	99	0.10	3391548
< +1 Phi (0.5 mm)	%	100	100	97	90	90	92	0.10	3391548
< +2 Phi (0.25 mm)	%	98	94	88	76	79	80	0.10	3391548
< +3 Phi (0.12 mm)	%	92	48	77	60	68	65	0.10	3391548
< +4 Phi (0.062 mm)	%	84	17	57	36	59	53	0.10	3391548
< +5 Phi (0.031 mm)	%	81	15	50	33	55	52	0.10	3391548
< +6 Phi (0.016 mm)	%	43	6.8	33	19	38	36	0.10	3391548
< +7 Phi (0.0078 mm)	%	16	2.8	17	8.0	17	20	0.10	3391548
< +8 Phi (0.0039 mm)	%	12	2.4	13	5.9	11	15	0.10	3391548
< +9 Phi (0.0020 mm)	%	11	1.9	9.7	5.5	5.4	12	0.10	3391548
Gravel	%	ND	ND	ND	ND	ND	ND	0.10	3391548
Sand	%	16	83	43	64	41	47	0.10	3391548
Silt	%	72	15	44	30	48	38	0.10	3391548
Clay	%	12	2.4	13	5.9	11	15	0.10	3391548

ND = Not detected
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QC Batch = Quality Control Batch

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Maxxam Job #: B3G8450
Report Date: 2013/10/31

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Client Project #: 2496

RESULTS OF ANALYSES OF SOIL

Maxxam ID		TI3965	TI3966	TI3967	TI3968	TI3969	TI3970		
Sampling Date		2013/09/12	2013/09/12	2013/09/14	2013/09/14	2013/09/14	2013/09/14		
COC Number		na	na	na	na	na	na		
	Units	**UTDL-P4**	**UTDL-P5**	**BAGLM-P1**	**BAGLM-P2**	**BAGLM-P3**	**BAGLM-P4**	**RDL**	**QC Batch**
Inorganics									
< -1 Phi (2 mm)	%	100	100	100	100	100	100	0.10	3391548
< 0 Phi (1 mm)	%	97	94	100	100	100	100	0.10	3391548
< +1 Phi (0.5 mm)	%	88	83	97	98	98	100	0.10	3391548
< +2 Phi (0.25 mm)	%	77	73	91	92	91	95	0.10	3391548
< +3 Phi (0.12 mm)	%	63	63	84	85	82	75	0.10	3391548
< +4 Phi (0.062 mm)	%	47	53	76	75	74	57	0.10	3391548
< +5 Phi (0.031 mm)	%	50	51	71	68	62	51	0.10	3391548
< +6 Phi (0.016 mm)	%	32	31	51	45	45	35	0.10	3391548
< +7 Phi (0.0078 mm)	%	14	11	23	28	25	20	0.10	3391548
< +8 Phi (0.0039 mm)	%	10	6.1	16	21	21	17	0.10	3391548
< +9 Phi (0.0020 mm)	%	5.2	4.2	9.9	14	20	15	0.10	3391548
Gravel	%	ND	ND	ND	ND	ND	ND	0.10	3391548
Sand	%	53	47	24	25	26	43	0.10	3391548
Silt	%	37	47	59	54	53	39	0.10	3391548
Clay	%	10	6.1	16	21	21	17	0.10	3391548

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF SOIL

Maxxam ID		TI3971	TI3972	TI3973	TI3974	TI3975		
Sampling Date		2013/09/14	2013/09/13	2013/09/13	2013/09/13	2013/09/13		
COC Number		na	na	na	na	na		
	Units	**BAGLM-P5**	**LTDL-P1Z**	**LTDL-P1**	**LTDL-P2**	**LTDL-P3**	**RDL**	**QC Batch**
Inorganics								
< -1 Phi (2 mm)	%	100	100	100	100	100	0.10	3391548
< 0 Phi (1 mm)	%	100	100	100	100	100	0.10	3391548
< +1 Phi (0.5 mm)	%	99	99	98	99	96	0.10	3391548
< +2 Phi (0.25 mm)	%	94	94	94	97	91	0.10	3391548
< +3 Phi (0.12 mm)	%	84	89	90	94	84	0.10	3391548
< +4 Phi (0.062 mm)	%	66	82	86	92	68	0.10	3391548
< +5 Phi (0.031 mm)	%	59	76	80	90	69	0.10	3391548
< +6 Phi (0.016 mm)	%	39	52	59	65	45	0.10	3391548
< +7 Phi (0.0078 mm)	%	22	28	38	40	27	0.10	3391548
< +8 Phi (0.0039 mm)	%	15	10	29	33	20	0.10	3391548
< +9 Phi (0.0020 mm)	%	9.7	15	22	23	15	0.10	3391548
Gravel	%	ND	ND	ND	ND	ND	0.10	3391548
Sand	%	34	18	14	8.2	32	0.10	3391548
Silt	%	51	72	58	59	48	0.10	3391548
Clay	%	15	10	29	33	20	0.10	3391548

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

Maxxam ID		TI3976	TI3977	TI3978	TI3979	TI3980	TI3981		
Sampling Date		2013/09/13	2013/09/13	2013/09/14	2013/09/14	2013/09/14	2013/09/14		
COC Number		na	na	na	na	na	na		
	Units	**LTDL-P4**	**LTDL-P5**	**NEVL-P1**	**NEVL-P2**	**NEVL-P3**	**NEVL-P4**	**RDL**	**QC Batch**
Inorganics									
< -1 Phi (2 mm)	%	100	100	100	100	100	100	0.10	3392125
< 0 Phi (1 mm)	%	98	100	100	100	99	95	0.10	3392125
< +1 Phi (0.5 mm)	%	94	97	100	100	98	90	0.10	3392125
< +2 Phi (0.25 mm)	%	90	89	98	97	95	86	0.10	3392125
< +3 Phi (0.12 mm)	%	86	83	96	93	90	82	0.10	3392125
< +4 Phi (0.062 mm)	%	82	76	92	85	82	76	0.10	3392125
< +5 Phi (0.031 mm)	%	80	72	91	77	82	70	0.10	3392125
< +6 Phi (0.016 mm)	%	52	41	52	36	50	55	0.10	3392125
< +7 Phi (0.0078 mm)	%	28	20	23	8.5	19	6.7	0.10	3392125
< +8 Phi (0.0039 mm)	%	20	16	17	4.8	12	3.9	0.10	3392125
< +9 Phi (0.0020 mm)	%	8.7	8.8	11	3.2	5.5	3.2	0.10	3392125
Gravel	%	0.31	ND	ND	ND	ND	ND	0.10	3392125
Sand	%	17	24	8.4	15	18	24	0.10	3392125
Silt	%	63	60	75	80	70	72	0.10	3392125
Clay	%	20	16	17	4.8	12	3.9	0.10	3392125

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel:902-420-0203 Toll-free:800-565-7227 Fax:902-420-8612 www.maxxamanalytics.com

Maxxam Job #: B3G8450
Report Date: 2013/10/31

Minnow Environmental Inc
Client Project #: 2496

RESULTS OF ANALYSES OF SOIL

Maxxam ID		TI3982	TI3983	TI3984	TI3985	TI3986	TI3987		
Sampling Date		2013/09/14	2013/09/15	2013/09/15	2013/09/15	2013/09/15	2013/09/15		
COC Number		na	na	na	na	na	na		
	Units	**NEVL-P5**	**ERRC-P1Z**	**ERRC-P1**	**ERRC-P2**	**ERRC-P3**	**ERRC-P4**	**RDL**	**QC Batch**
Inorganics									
< -1 Phi (2 mm)	%	100	100	100	100	100	100	0.10	3392125
< 0 Phi (1 mm)	%	97	99	99	100	100	99	0.10	3392125
< +1 Phi (0.5 mm)	%	93	99	99	99	99	98	0.10	3392125
< +2 Phi (0.25 mm)	%	87	94	95	94	97	92	0.10	3392125
< +3 Phi (0.12 mm)	%	82	78	80	38	85	77	0.10	3392125
< +4 Phi (0.062 mm)	%	79	55	58	15	59	58	0.10	3392125
< +5 Phi (0.031 mm)	%	78	52	60	15	58	45	0.10	3392125
< +6 Phi (0.016 mm)	%	59	22	32	9.6	41	17	0.10	3392125
< +7 Phi (0.0078 mm)	%	24	9.0	12	5.6	19	5.6	0.10	3392125
< +8 Phi (0.0039 mm)	%	14	6.7	8.0	5.6	22	3.1	0.10	3392125
< +9 Phi (0.0020 mm)	%	7.8	6.4	7.4	4.8	19	2.8	0.10	3392125
Gravel	%	ND	ND	ND	ND	ND	0.20	0.10	3392125
Sand	%	21	45	42	85	41	42	0.10	3392125
Silt	%	65	49	51	9.1	37	55	0.10	3392125
Clay	%	14	6.7	8.0	5.6	22	3.1	0.10	3392125

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B3G8450
Report Date: 2013/10/31

Minnow Environmental Inc
Client Project #: 2496

RESULTS OF ANALYSES OF SOIL

Maxxam ID		TI3988		TN1031		
Sampling Date		2013/09/15		2013/09/15		
COC Number		na		na		
	Units	**ERRC-P5**	**QC Batch**	**CLAL-P3Z**	**RDL**	**QC Batch**
Inorganics						
< -1 Phi (2 mm)	%	100	3392125	100	0.10	3400734
< 0 Phi (1 mm)	%	100	3392125	100	0.10	3400734
< +1 Phi (0.5 mm)	%	99	3392125	100	0.10	3400734
< +2 Phi (0.25 mm)	%	84	3392125	95	0.10	3400734
< +3 Phi (0.12 mm)	%	33	3392125	79	0.10	3400734
< +4 Phi (0.062 mm)	%	7.9	3392125	38	0.10	3400734
< +5 Phi (0.031 mm)	%	6.3	3392125	19	0.10	3400734
< +6 Phi (0.016 mm)	%	4.0	3392125	8.7	0.10	3400734
< +7 Phi (0.0078 mm)	%	2.3	3392125	2.9	0.10	3400734
< +8 Phi (0.0039 mm)	%	1.9	3392125	2.9	0.10	3400734
< +9 Phi (0.0020 mm)	%	1.9	3392125	2.4	0.10	3400734
Gravel	%	0.21	3392125	ND	0.10	3400734
Sand	%	92	3392125	62	0.10	3400734
Silt	%	6.0	3392125	35	0.10	3400734
Clay	%	1.9	3392125	2.9	0.10	3400734

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Package 1	3.0°C
Package 2	3.3°C
Package 3	2.7°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam

Minnow Environmental Inc
Attention: Kim Connors
Client Project #: 2496
P.O. #:
Site Location:

Quality Assurance Report

Maxxam Job Number: MB3G8450

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3385780	KLA	RPD	Gravel	2013/10/19	11.3		%	35
			Sand	2013/10/19	0.5		%	35
			Silt	2013/10/19	1.4		%	35
			Clay	2013/10/19	13.5		%	35

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Validation Signature Page

Maxxam Job #: B3G8450

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Mike MacGillivray, Scientific Specialist (Inorganics)

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam

Internal Sample Receipt Form

	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Bottles
1	UNL1-PX	9/12/2013	N/A	S	1
2	UNL1-P1				
3	UNL1-P2				
4	UNL1-P3				
5	UNL1-P4				
6	UNL1-P5				
7	UNL2-P1	9/14/2013			
8	UNL2-P2				
9	UNL2-P3				
10	UNL2-P4				
11	UNL2-P5				
12	UNL3-P1	9/15/2013			

3-Oct-13 10:30
Simona Vatamanescu

B3G8450
RDV ENV-766

Received by (Signature & Print):	Date	Time
[signature] AEKA PATEL	2013/10/03	10:30

Cooler ID #	Temperature	Custody seal Present YES	Custody seal Present NO	Custody Seal Intact YES	Custody Seal Intact NO	Ice Present YES	Ice Present NO
1	3/3/3C		✓		✓	✓	
2	3/3/4C		✓		✓	✓	
3	2/2/4C		✓		✓	✓	

Internal Sample Receipt Form

	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Bottles	
1	UNL3-P2	↓	N/A	S	1	
2	UNL3-P3		↓	↓	↓	
3	UNL3-P4					
4	UNL3-P5					
5	UNL3-PX	↓				
6	CLAL-P1	9/12/2013				
7	CLAL-P2	↓				
8	CLAL-P3	9/15/2013				
9	CLAL-P4					
10	CLAL-P5	↓				
11	MTDL-PZ1	9/13/2013				
12	MTDL-P1	↓	↓	↓	↓	

Received by (Signature & Print):	Date	Time	Cooler ID #	Temperature	Custody seal Present YES	Custody seal Present NO	Custody Seal Intact YES	Custody Seal Intact NO	Ice Present YES	Ice Present NO
[illegible] ALKA PATEL	2013/10/03	10:30	1	3/3/3C		✓		✓	✓	
			2	3/3/4C		✓		✓	✓	
			3	2/2/4C		✓		✓	✓	

Internal Sample Receipt Form

	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Bottles	
1	MTDL-P2		N/A	S	1	
2	MTDL-P3					
3	MTDL-P4					
4	MTDL-P5					
5	WEEL-~~PZ1~~ P12 RDY 2013/10/03	9/12/2013				
6	WEEL-P1					
7	WEEL-P2					
8	WEEL-P3					
9	WEEL-P4					
10	WEEL-P5					
11	DELL-P1	9/16/2013				
12	DELL-P2					

Received by (Signature & Print):	Date	Time	Cooler ID #	Temperature	Custody seal Present		Custody Seal Intact		Ice Present	
					YES	NO	YES	NO	YES	NO
[signature] ARKA PATEL	2013/10/03	10:30	1	3/3/3C		✓		✓	✓	
			2	3/3/4C		✓		✓	✓	
			3	2/2/4C		✓		✓	✓	

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Internal Sample Receipt Form

	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Bottles	
1	DELL-P3		N/A	S	1	
2	DELL-P4					
3	DELL-P5					
4	BAGLS-P1	9/~~14~~12/2013 2013/10/03				
5	BAGLS-P2					
6	BAGLS-P3					
7	BAGLS-P4					
8	BAGLS-P5					
9	BAGC-P12	9/14/2013				
10	BAGC-P1					
11	BAGC-P2					
12	BAGC-P3					

Received by (Signature & Print):	Date	Time	Cooler ID #	Temperature	Custody seal Present YES	Custody seal Present NO	Custody Seal Intact YES	Custody Seal Intact NO	Ice Present YES	Ice Present NO
[signature] ALKA PATEL	2013/10/03	10:30	1	3/3/3C		✓		✓	✓	
			2	3/3/4C		✓		✓	✓	
			3	2/2/4C		✓		✓	✓	

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Internal Sample Receipt Form

	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Bottles	
1	BAGC-P4		N/A	S	1	
2	BAGC-P5					
3	SCHL-PD1	9/13/2013				
4	SCHL-PS1					
5	SCHL-PD2					
6	SCHL-PS2					
7	SCHL-PD3					
8	SCHL-PS3					
9	SCHL-PD4					
10	SCHL-PS4					
11	SCHL-PD5					
12	SCHL-PS5					

Received by (Signature & Print):	Date	Time	Cooler ID #	Temperature	Custody seal Present		Custody Seal Intact		Ice Present	
					YES	NO	YES	NO	YES	NO
[signature] ALKA PATEL	2013/10/03	10:30	1	3/3/3C		✓		✓	✓	
			2	3/3/4C		✓		✓	✓	
			3	2/2/4C		✓		✓	✓	

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Internal Sample Receipt Form

	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Bottles	
1	CHEL-P1	9/13/2013	N/A	S	1	
2	CHEL-P2					
3	CHEL-P3					
4	CHEL-P4					
5	CHEL-P5					
6	UTDL-P12	9/12/2013				
7	UTDL-P1					
8	UTDL-P2					
9	UTDL-P3					
10	UTDL-P4					
11	UTDL-P5					
12	BAGLM-P1	9/14/2013				

Received by (Signature & Print):	Date	Time	Cooler ID #	Temperature	Custody seal Present YES	Custody seal Present NO	Custody Seal Intact YES	Custody Seal Intact NO	Ice Present YES	Ice Present NO
[signature] ALKA PATEL	2013/10/03	10:30	1	3/3/3 C		✓		✓	✓	
			2	3/3/4 C		✓		✓	✓	
			3	2/2/4 C		✓		✓	✓	

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Internal Sample Receipt Form

	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Bottles	
1	BAGLM-P2		N/A	S	1	
2	BAGLM-P3					
3	BAGLM-P4					
4	BAGLM-P5					
5	LTDL-P12	9/13/2013				
6	LTDL-P1					
7	LTDL-P2					
8	LTDL-P3					
9	LTDL-P4					
10	LTDL-P5					
11	NEVL-P1	9/14/2013				
12	NEVL-P2					

Received by (Signature & Print):	Date	Time	Cooler ID #	Temperature	Custody seal Present YES	Custody seal Present NO	Custody Seal Intact YES	Custody Seal Intact NO	Ice Present YES	Ice Present NO
ALKA PATEL	2013/10/03	10:30	1	3/3/3C		✓		✓	✓	
			2	3/3/4C		✓		✓	✓	
			3	2/2/4C		✓		✓	✓	

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Internal Sample Receipt Form

	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Bottles	
1	NEVL-P3		N/A	S	1	
2	NEVL-P4					
3	NEVL-P5					
4	ERRC-P12	9/15/2013				
5	ERRC-P1					
6	ERRC-P2					
7	ERRC-P3					
8	ERRC-P4					
9	ERRC-P5					
10						
11						
12						

Received by (Signature & Print):	Date	Time	Cooler ID #	Temperature	Custody seal Present		Custody Seal Intact		Ice Present	
					YES	NO	YES	NO	YES	NO
[signature] ALKA PATEL	2013/10/03	10:30	1	3/3/3C		✓		✓	✓	
			2	3/3/4C		✓		✓	✓	
			3	2/2/4C		✓		✓	✓	

Maxxam 6740 Campobello Road, Mississauga, ON L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: (800) 563-6266

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:	REPORT INFORMATION (if differs from invoice):	PROJECT INFORMATION:	MAXXAM JOB NUMBER:
Company Name: Minnow Environmental	Company Name:	Quotation #:	
Contact Name: Kim Connors	Contact Name:	P.O. #:	
Address: 2 Lamb St	Address:	Project #: 2496	CHAIN OF CUSTODY #:
Georgetown ON L7G 3M9		Site Location:	
Phone: (905)873-3371 ext 28 Fax: (905) 873-6370	Phone: Fax:	Site #: -	
Email: kconnors@minnow-environmental.com	Email:	Sampled By: Kim Connors	

Note: For MOE Regulated Drinking Water samples, please use the Drinking Water COC.

Regulation 153 (2011)	Other Regulations
☐ Table 1 ☐ Res/Park ☐ Med/Fine	☐ CCME ☐ Sanitary Sewer Bylaw
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw
☐ Table 3 ☐ Agri/Other	☐ MISA
☐ Table ___ For RSC ☐ Yes ☐ No	☐ PWQO Municipality:
	☐ Other (Specify):

Include Criteria on Certificate of Analysis (Y/N)? ___

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: ☐
(5-7 working days for most tests)

Rush TAT:
Samples must be received by 3pm to guarantee your TAT
Rush Confirmation #: PN
☐ 1 day ☐ 2 days ☐ 3 days
DATE Req'd:

TAT for certain tests are > 5 days.
Please contact your Project Manager for details.

	Sample Identification	Date Sampled	Time Sampled	Matrix (GW, SW, Soil, etc.)	Grain Size	# of Cont.	COMMENTS / TAT COMMENTS
1	SchLD-P1	13-Sep-13		Sediment	x	1	Grain size according to Minnow standards
2	SchLD-P2	13-Sep-13		Sediment	x	1	
3	SchLD-P3	13-Sep-13		Sediment	x	1	
4	SchLD-P4	13-Sep-13		Sediment	x	1	
5	SchLD-P5	13-Sep-13		Sediment	x	1	
6	SchLS-P1	13-Sep-13		Sediment	x	1	
7	SchLS-P2	13-Sep-13		Sediment	x	1	
8	SchLS-P3	13-Sep-13		Sediment	x	1	
9	SchLS-P4	13-Sep-13		Sediment	x	1	
10	SchLS-P5	13-Sep-13		Sediment	x	1	

RELINQUISHED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:	# JARS USED AND NOT SUBMITTED
			NDV ALKA PATE	2013/10/04	10:30	

Laboratory Use Only	Yes	No	Temperature (°C) on Receipt
Custody Seal			3/3/3 C
Present		✓	3/3/4 C
Intact		✓	2/2/4 C

MANDATORY SECTIONS IN GREY MUST BE FILLED OUT. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS

Maxxam Analytics International Corporation o/a Maxxam Analytics

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CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:	REPORT INFORMATION (if differs from invoice):	PROJECT INFORMATION:	MAXXAM JOB NUMBER:
Company Name: Minnow Environmental	Company Name:	Quotation #:	
Contact Name: Kim Connors	Contact Name:	P.O. #:	
Address: 2 Lamb St	Address:	Project #: 2496	CHAIN OF CUSTODY #:
Georgetown ON L7G 3M9		Site Location:	
Phone: (905)873-3371 ext 28 Fax: (905) 873-6370	Phone: Fax:	Site #:	
Email: kconnors@minnow-environmental.com	Email:	Sampled By: Kim Connors	

Note: For MOE Regulated Drinking Water samples, please use the Drinking Water COC.

Regulation 153 (2011)	Other Regulations
☐ Table 1 ☐ Res/Park ☐ Med/Fine	☐ CCME ☐ Sanitary Sewer Bylaw
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw
☐ Table 3 ☐ Agri/Other	☐ MISA
☐ Table ___ For RSC ☐ Yes ☐ No	☐ PWQO Municipality:
	☐ Other (Specify):

Include Criteria on Certificate of Analysis (Y/N)? ____

ANALYSIS REQUESTED (Please be specific): Grain Size

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: ☐
(5-7 working days for most tests)

Rush TAT:
Samples must be received by 3pm to guarantee your TAT
Rush Confirmation #: PN
☐ 1 day ☐ 2 days ☐ 3 days
DATE Req'd:

TAT for certain tests are > 5 days.
Please contact your Project Manager for details.

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

	Sample Identification	Date Sampled	Time Sampled	Matrix (GW, SW, Soil, etc.)	Grain Size	# of Cont.	COMMENTS / TAT COMMENTS
1	UNL2-P1	14-Sep-13		Sediment	x	1	Grain size according to Minnow standards
2	UNL2-P2	14-Sep-13		Sediment	x	1	
3	UNL2-P3	14-Sep-13		Sediment	x	1	
4	UNL2-P4	14-Sep-13		Sediment	x	1	
5	UNL2-P5	14-Sep-13		Sediment	x	1	
6	CheL-P1	13-Sep-13		Sediment	x	1	
7	CheL-P2	13-Sep-13		Sediment	x	1	
8	CheL-P3	13-Sep-13		Sediment	x	1	
9	CheL-P4	13-Sep-13		Sediment	x	1	
10	CheL-P5	13-Sep-13		Sediment	x	1	

RELINQUISHED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:
			DOL AUCA PATE	2013/10/02	10:30

# JARS USED AND NOT SUBMITTED	Laboratory Use Only	Yes	No	Temperature (°C) on Receipt
	Custody Seal			3/3/3 c
	Present		✓	3/3/4 c
	Intact			2/2/4 c

MANDATORY SECTIONS IN GREY MUST BE FILLED OUT. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS

Maxxam 6740 Campobello Road, Mississauga, ON L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: (800) 563-6266

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:	REPORT INFORMATION (if differs from invoice):	PROJECT INFORMATION:	MAXXAM JOB NUMBER:
Company Name: Minnow Environmental	Company Name:	Quotation #:	
Contact Name: Kim Connors	Contact Name:	P.O. #:	
Address: 2 Lamb St Georgetown ON L7G 3M9	Address:	Project #: 2496	CHAIN OF CUSTODY #:
Phone: (905)873-3371 ext 28 Fax: (905) 873-6370	Phone: Fax:	Site Location:	
		Site #:	
Email: kconnors@minnow-environmental.com	Email:	Sampled By: Kim Connors	

Note: For MOE Regulated Drinking Water samples, please use the Drinking Water COC.

Regulation 153 (2011)

- [ ] Table 1 - [ ] Res/Park - [ ] Med/Fine
- [ ] Table 2 - [ ] Ind/Comm - [ ] Coarse
- [ ] Table 3 - [ ] Agri/Other
- [ ] Table ___

For RSC
- [ ] Yes
- [ ] No

Other Regulations

- [ ] CCME - [ ] Sanitary Sewer Bylaw
- [ ] Reg 558 - [ ] Storm Sewer Bylaw
- [ ] MISA
- [ ] PWQO Municipality:
- [ ] Other (Specify):

Include Criteria on Certificate of Analysis (Y/N)? ____

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: [ ]
(5-7 working days for most tests)

Rush TAT:
Samples must be received by 3pm to guarantee your TAT
Rush Confirmation #: PN
[ ] 1 day [ ] 2 days [ ] 3 days
DATE Req'd:

TAT for certain tests are > 5 days.
Please contact your Project Manager for details.

	Sample Identification	Date Sampled	Time Sampled	Matrix (GW, SW, Soil, etc.)	Grain Size	# of Cont.	COMMENTS / TAT COMMENTS
1	BagC-P1	14-Sep-13		Sediment	x	1	Grain size according to Minnow standards
2	BagC-P1Z	14-Sep-13		Sediment	x	1	
3	BagC-P2	14-Sep-13		Sediment	x	1	
4	BagC-P3	14-Sep-13		Sediment	x	1	
5	BagC-P4	14-Sep-13		Sediment	x	1	
6	BagC-P5	14-Sep-13		Sediment	x	1	
7	UNL3-P1	15-Sep-13		Sediment	x	1	
8	UNL3-P2	15-Sep-13		Sediment	x	1	
9	UNL3-P3	15-Sep-13		Sediment	x	1	
10	UNL3-P4	15-Sep-13		Sediment	x	1	

RELINQUISHED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:
			[illegible]	2013/10/03	10:30

# JARS USED AND NOT SUBMITTED	Laboratory Use Only	Yes	No	Temperature (°C) on Receipt
	Custody Seal			3/3/3 C
	Present		✓	3/3/4 C
	Intact		✓	2/2/4 C

MANDATORY SECTIONS IN GREY MUST BE FILLED OUT. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS

Maxxam 6740 Campobello Road, Mississauga, ON L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: (800) 563-6266

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:	REPORT INFORMATION (if differs from invoice):	PROJECT INFORMATION:	MAXXAM JOB NUMBER:
Company Name: Minnow Environmental	Company Name:	Quotation #:	
Contact Name: Kim Connors	Contact Name:	P.O. #:	
Address: 2 Lamb St	Address:	Project #: 2496	CHAIN OF CUSTODY #:
Georgetown ON L7G 3M9		Site Location:	
Phone: (905)873-3371 ext 28 Fax: (905) 873-6370	Phone: Fax:	Site #:	
Email: kconnors@minnow-environmental.com	Email:	Sampled By: Kim Connors	

Note: For MOE Regulated Drinking Water samples, please use the Drinking Water COC.

Regulation 153 (2011)

- [ ] Table 1 [ ] Res/Park [ ] Med/Fine
- [ ] Table 2 [ ] Ind/Comm [ ] Coarse
- [ ] Table 3 [ ] Agri/Other
- [ ] Table ___

For RSC [ ] Yes [ ] No

Other Regulations

- [ ] CCME [ ] Sanitary Sewer Bylaw
- [ ] Reg 558 [ ] Storm Sewer Bylaw
- [ ] MISA
- [ ] PWQO Municipality:
- [ ] Other (Specify):

Include Criteria on Certificate of Analysis (Y/N)? ____

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: [ ]
(5-7 working days for most tests)

Rush TAT:
Samples must be received by 3pm to guarantee your TAT
Rush Confirmation #: PN
[ ] 1 day [ ] 2 days [ ] 3 days
DATE Req'd:

TAT for certain tests are > 5 days.
Please contact your Project Manager for details.

	Sample Identification	Date Sampled	Time Sampled	Matrix (GW, SW, Soil, etc.)	Grain Size	# of Cont.	COMMENTS / TAT COMMENTS
1	UNL3-P5	15-Sep-13		Sediment	x	1	Grain size according to Minnow standards
2	UNL3-PX	15-Sep-13		Sediment	x	1	
3	BagLM-P1	14-Sep-13		Sediment	x	1	
4	BagLM-P2	14-Sep-13		Sediment	x	1	
5	BagLM-P3	14-Sep-13		Sediment	x	1	
6	BagLM-P4	14-Sep-13		Sediment	x	1	
7	BagLM-P5	14-Sep-13		Sediment	x	1	
8	UNL1-P1	12-Sep-13		Sediment	x	1	
9	UNL1-P2	12-Sep-13		Sediment	x	1	
10	UNL1-P3	12-Sep-13		Sediment	x	1	

RELINQUISHED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:
			[illegible]	2013/10/03	10:30

JARS USED AND NOT SUBMITTED

Laboratory Use Only	Yes	No	Temperature (°C) on Receipt
Custody Seal			3/3/3 C
Present		✓	3/3/4 C
Intact			2/2/4 C

MANDATORY SECTIONS IN GREY MUST BE FILLED OUT. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS

Maxxam 6740 Campobello Road, Mississauga, ON L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: (800) 563-6266

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:	REPORT INFORMATION (if differs from invoice):	PROJECT INFORMATION:	MAXXAM JOB NUMBER:
Company Name: Minnow Environmental	Company Name:	Quotation #:	
Contact Name: Kim Connors	Contact Name:	P.O. #:	
Address: 2 Lamb St, Georgetown ON L7G 3M9	Address:	Project #: 2496	CHAIN OF CUSTODY #:
Phone: (905)873-3371 ext 28 Fax: (905) 873-6370	Phone: Fax:	Site Location:	
Email: kconnors@minnow-environmental.com	Email:	Site #:	
		Sampled By: Kim Connors	

Note: For MOE Regulated Drinking Water samples, please use the Drinking Water COC.

Regulation 153 (2011): Table 1, Table 2, Table 3, Table __; Res/Park, Ind/Comm, Agri/Other; Med/Fine, Coarse; For RSC: Yes / No

Other Regulations: CCME, Reg 558, MISA, PWQO, Other (Specify):; Sanitary Sewer Bylaw, Storm Sewer Bylaw; Municipality:

Include Criteria on Certificate of Analysis (Y/N)? ____

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: ☐
(5-7 working days for most tests)

Rush TAT:
Samples must be received by 3pm to guarantee your TAT
Rush Confirmation #: PN
☐ 1 day ☐ 2 days ☐ 3 days
DATE Req'd:

TAT for certain tests are > 5 days.
Please contact your Project Manager for details.

	Sample Identification	Date Sampled	Time Sampled	Matrix (GW, SW, Soil, etc.)	Grain Size	# of Cont.	COMMENTS / TAT COMMENTS
1	UNL1-P4	12-Sep-13		Sediment	x	1	Grain size according to Minnow standards
2	UNL1-P5	12-Sep-13		Sediment	x	1	
3	UNL1-PX	12-Sep-13		Sediment	x	1	
4	ClaL-P1	12-Sep-13		Sediment	x	1	
5	ClaL-P2	12-Sep-13		Sediment	x	1	
6	ClaL-P3	15-Sep-13		Sediment	x	1	
7	ClaL-P3Z	15-Sep-13		Sediment	x	1	
8	ClaL-P4	15-Sep-13		Sediment	x	1	
9	ClaL-P5	15-Sep-13		Sediment	x	1	
10	WeeL-P1	12-Sep-13		Sediment	x	1	

RELINQUISHED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:	# JARS USED AND NOT SUBMITTED
			Alka Patel	2013/10/03	10:30	

Laboratory Use Only

	Yes	No	Temperature (°C) on Receipt
Custody Seal			3/3/3 C
Present		✓	3/3/4 C
Intact		✓	2/2/4 C

MANDATORY SECTIONS IN GREY MUST BE FILLED OUT. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS

Maxxam

6740 Campobello Road, Mississauga, ON L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: (800) 563-6266

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:	REPORT INFORMATION (if differs from invoice):	PROJECT INFORMATION:	MAXXAM JOB NUMBER:
Company Name: Minnow Environmental	Company Name:	Quotation #:	
Contact Name: Kim Connors	Contact Name:	P.O. #:	
Address: 2 Lamb St	Address:	Project #: 2496	CHAIN OF CUSTODY #:
Georgetown ON L7G 3M9		Site Location:	
Phone: (905)873-3371 ext 28 Fax: (905) 873-6370	Phone: Fax:	Site #:	
Email: kconnors@minnow-environmental.com	Email:	Sampled By: Kim Connors	

Note: For MOE Regulated Drinking Water samples, please use the Drinking Water COC.

Regulation 153 (2011)	Other Regulations
☐ Table 1 ☐ Res/Park ☐ Med/Fine	☐ CCME ☐ Sanitary Sewer Bylaw
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw
☐ Table 3 ☐ Agri/Other	☐ MISA
☐ Table ___ For RSC	☐ PWQO Municipality:
☐ Yes	☐ Other (Specify):
☐ No	

Include Criteria on Certificate of Analysis (Y/N)? ____

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: ☐
(5-7 working days for most tests)

Rush TAT:
Samples must be received by 3pm to guarantee your TAT
Rush Confirmation #: PN
☐ 1 day ☐ 2 days ☐ 3 days
DATE Req'd:

TAT for certain tests are > 5 days.
Please contact your Project Manager for details.

	Sample Identification	Date Sampled	Time Sampled	Matrix (GW, SW, Soil, etc.)	Grain Size	# of Cont.	COMMENTS / TAT COMMENTS
1	WeeL-P1Z	12-Sep-13		Sediment	x	1	Grain size according to Minnow standards
2	WeeL-P2	12-Sep-13		Sediment	x	1	
3	WeeL-P3	12-Sep-13		Sediment	x	1	
4	WeeL-P4	12-Sep-13		Sediment	x	1	
5	WeeL-P5	12-Sep-13		Sediment	x	1	
6	UTDL-P1	12-Sep-13		Sediment	x	1	
7	UTDL-P1Z	12-Sep-13		Sediment	x	1	
8	UTDL-P2	12-Sep-13		Sediment	x	1	
9	UTDL-P3	12-Sep-13		Sediment	x	1	
10	UTDL-P4	12-Sep-13		Sediment	x	1	

RELINQUISHED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:	# JARS USED AND NOT SUBMITTED
			Nabl Alka Patel	2013/10/03	10:30	

Laboratory Use Only	Yes	No	Temperature (°C) on Receipt
Custody Seal			3/3/3 c
Present		✓	3/3/4 c
Intact		✓	2/2/4 c

MANDATORY SECTIONS IN GREY MUST BE FILLED OUT. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS

Maxxam 6740 Campobello Road, Mississauga, ON L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: (800) 563-6266

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:	REPORT INFORMATION (if differs from invoice):	PROJECT INFORMATION:	MAXXAM JOB NUMBER:
Company Name: Minnow Environmental	Company Name:	Quotation #:	
Contact Name: Kim Connors	Contact Name:	P.O. #:	
Address: 2 Lamb St	Address:	Project #: 2496	CHAIN OF CUSTODY #:
Georgetown ON L7G 3M9		Site Location:	
Phone: (905)873-3371 ext 28 Fax: (905) 873-6370	Phone: Fax:	Site #:	
Email: kconnors@minnow-environmental.com	Email:	Sampled By: Kim Connors	

Note: For MOE Regulated Drinking Water samples, please use the Drinking Water COC.

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Med/Fine; ☐ Table 2 ☐ Ind/Comm ☐ Coarse; ☐ Table 3 ☐ Agri/Other; ☐ Table ___; For RSC ☐ Yes ☐ No

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw; ☐ Reg 558 ☐ Storm Sewer Bylaw; ☐ MISA; ☐ PWQO Municipality ____; ☐ Other (Specify): ____

Include Criteria on Certificate of Analysis (Y/N)? ____

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: ☐
(5-7 working days for most tests)

Rush TAT:
Samples must be received by 3pm to guarantee your TAT
Rush Confirmation #: PN
☐ 1 day ☐ 2 days ☐ 3 days
DATE Req'd:

TAT for certain tests are > 5 days.
Please contact your Project Manager for details.

	Sample Identification	Date Sampled	Time Sampled	Matrix (GW, SW, Soil, etc.)	Grain Size	# of Cont.	COMMENTS / TAT COMMENTS
1	UTDL-P5	12-Sep-13		Sediment	x	1	Grain size according to Minnow standards
2	LTDL-P1	13-Sep-13		Sediment	x	1	
3	LTDL-P1Z	13-Sep-13		Sediment	x	1	
4	LTDL-P2	13-Sep-13		Sediment	x	1	
5	LTDL-P3	13-Sep-13		Sediment	x	1	
6	LTDL-P4	13-Sep-13		Sediment	x	1	
7	LTDL-P5	13-Sep-13		Sediment	x	1	
8	MTDL-P1	13-Sep-13		Sediment	x	1	
9	MTDL-P1Z	13-Sep-13		Sediment	x	1	
10	MTDL-P2	13-Sep-13		Sediment	x	1	

RELINQUISHED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:	# JARS USED AND NOT SUBMITTED
			AEKA PARIZ	2013/10/03	10:30	

Laboratory Use Only	Yes	No	Temperature (°C) on Receipt
Custody Seal			3/3/3 C
Present			3/3/4 C
Intact			2/2/4 C

MANDATORY SECTIONS IN GREY MUST BE FILLED OUT. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam 6740 Campobello Road, Mississauga, ON L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: (800) 563-6266

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:	REPORT INFORMATION (if differs from invoice):	PROJECT INFORMATION:	MAXXAM JOB NUMBER:
Company Name: Minnow Environmental	Company Name:	Quotation #:	
Contact Name: Kim Connors	Contact Name:	P.O. #:	
Address: 2 Lamb St	Address:	Project #: 2496	CHAIN OF CUSTODY #:
Georgetown ON L7G 3M9		Site Location:	
Phone: (905)873-3371 ext 28 Fax: (905) 873-6370	Phone: Fax:	Site #:	
Email: kconnors@minnow-environmental.com	Email:	Sampled By: Kim Connors	

Note: For MOE Regulated Drinking Water samples, please use the Drinking Water COC.

Regulation 153 (2011): Table 1, Table 2, Table 3, Table ___ ; Res/Park, Ind/Comm, Agri/Other; Med/Fine, Coarse; For RSC: Yes / No

Other Regulations: CCME, Reg 558, MISA, PWQO, Other (Specify): ___ ; Sanitary Sewer Bylaw, Storm Sewer Bylaw; Municipality: ___

Include Criteria on Certificate of Analysis (Y/N)? ___

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: ☐ (5-7 working days for most tests)

Rush TAT: ***Samples must be received by 3pm to guarantee your TAT***
Rush Confirmation #: PN
☐ 1 day ☐ 2 days ☐ 3 days
DATE Req'd:

TAT for certain tests are > 5 days. Please contact your Project Manager for details.

	Sample Identification	Date Sampled	Time Sampled	Matrix (GW, SW, Soil, etc.)	Grain Size	# of Cont.	COMMENTS / TAT COMMENTS
1	MTDL-P3	13-Sep-13		Sediment	x	1	Grain size according to Minnow standards
2	MTDL-P4	13-Sep-13		Sediment	x	1	
3	MTDL-P5	13-Sep-13		Sediment	x	1	
4	ErrC-P1	15-Sep-13		Sediment	x	1	
5	ErrC-P1Z	15-Sep-13		Sediment	x	1	
6	ErrC-P2	15-Sep-13		Sediment	x	1	
7	ErrC-P3	15-Sep-13		Sediment	x	1	
8	ErrC-P4	15-Sep-13		Sediment	x	1	
9	ErrC-P5	15-Sep-13		Sediment	x	1	
10	BagLS-P1	12-Sep-13		Sediment	x	1	

RELINQUISHED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:
			[signature] · ALKA PATEL	2013/10/03	10:30

\# JARS USED AND NOT SUBMITTED

Laboratory Use Only	Yes	No	Temperature (°C) on Receipt
Custody Seal			3/3/3 C
Present			3/3/4 C
Intact			2/2/4 C

MANDATORY SECTIONS IN GREY MUST BE FILLED OUT. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS

Maxxam 6740 Campobello Road, Mississauga, ON L5N 2L8
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CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:	REPORT INFORMATION (if differs from invoice):	PROJECT INFORMATION:	MAXXAM JOB NUMBER:
Company Name: Minnow Environmental	Company Name:	Quotation #:	
Contact Name: Kim Connors	Contact Name:	P.O. #:	
Address: 2 Lamb St	Address:	Project #: 2496	CHAIN OF CUSTODY #:
Georgetown ON L7G 3M9		Site Location:	
Phone: (905)873-3371 ext 28 Fax: (905) 873-6370	Phone: Fax:	Site #:	
Email: kconnors@minnow-environmental.com	Email:	Sampled By: Kim Connors	

Note: For MOE Regulated Drinking Water samples, please use the Drinking Water COC.

Regulation 153 (2011)	Other Regulations
☐ Table 1 ☐ Res/Park ☐ Med/Fine	☐ CCME ☐ Sanitary Sewer Bylaw
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw
☐ Table 3 ☐ Agri/Other	☐ MISA
☐ Table ___ For RSC	☐ PWQO Municipality:
☐ Yes	☐ Other (Specify):
☐ No	

Include Criteria on Certificate of Analysis (Y/N)? ____

ANALYSIS REQUESTED (Please be specific): Grain Size

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: ☐
(5-7 working days for most tests)

Rush TAT:
Samples must be received by 3pm to guarantee your TAT
Rush Confirmation #: PN
☐ 1 day ☐ 2 days ☐ 3 days
DATE Req'd:

TAT for certain tests are > 5 days.
Please contact your Project Manager for details.

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

	Sample Identification	Date Sampled	Time Sampled	Matrix (GW, SW, Soil, etc.)	Grain Size	# of Cont.	COMMENTS / TAT COMMENTS
1	BagLS-P2	12-Sep-13		Sediment	x	1	Grain size according to Minnow standards
2	BagLS-P3	12-Sep-13		Sediment	x	1	
3	BagLS-P4	12-Sep-13		Sediment	x	1	
4	BagLS-P5	12-Sep-13		Sediment	x	1	
5	DelL-P1	16-Sep-13		Sediment	x	1	
6	DelL-P2	16-Sep-13		Sediment	x	1	
7	DelL-P3	16-Sep-13		Sediment	x	1	
8	DelL-P4	16-Sep-13		Sediment	x	1	
9	DelL-P5	16-Sep-13		Sediment	x	1	
10	NevL-P1	14-Sep-13		Sediment	x	1	

RELINQUISHED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:	# JARS USED AND NOT SUBMITTED
			Robert Allen PANG	2013/10/03	10:30	

Laboratory Use Only	Yes	No	Temperature (°C) on Receipt
Custody Seal			3/3/3°C
Present			3/3/4°C
Intact			2/2/4°C

MANDATORY SECTIONS IN GREY MUST BE FILLED OUT. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam 6740 Campobello Road, Mississauga, ON L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: (800) 563-6266

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:	REPORT INFORMATION (if differs from invoice):	PROJECT INFORMATION:	MAXXAM JOB NUMBER:
Company Name: Minnow Environmental	Company Name:	Quotation #:	
Contact Name: Kim Connors	Contact Name:	P.O. #:	
Address: 2 Lamb St	Address:	Project #: 2496	CHAIN OF CUSTODY #:
Georgetown ON L7G 3M9		Site Location:	
Phone: (905)873-3371 ext 28 Fax: (905) 873-6370	Phone: Fax:	Site #:	
Email: kconnors@minnow-environmental.com	Email:	Sampled By: Kim Connors	

Note: For MOE Regulated Drinking Water samples, please use the Drinking Water COC.

Regulation 153 (2011)	Other Regulations
☐ Table 1 ☐ Res/Park ☐ Med/Fine	☐ CCME ☐ Sanitary Sewer Bylaw
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw
☐ Table 3 ☐ Agri/Other	☐ MISA
☐ Table __ For RSC	☐ PWQO Municipality:
☐ Yes	☐ Other (Specify):
☐ No	

Include Criteria on Certificate of Analysis (Y/N)? ____

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: ☐
(5-7 working days for most tests)

Rush TAT:
Samples must be received by 3pm to guarantee your TAT
Rush Confirmation #: PN
☐ 1 day ☐ 2 days ☐ 3 days
DATE Req'd:

TAT for certain tests are > 5 days.
Please contact your Project Manager for details.

	Sample Identification	Date Sampled	Time Sampled	Matrix (GW, SW, Soil, etc.)	Grain Size	# of Cont.	COMMENTS / TAT COMMENTS
1	NevL-P2	14-Sep-13		Sediment	x	1	Grain size according to Minnow standards
2	NevL-P3	14-Sep-13		Sediment	x	1	
3	NevL-P4	14-Sep-13		Sediment	x	1	
4	NevL-P5	14-Sep-13		Sediment	x	1	
5				Sediment	x	1	
6				Sediment	x	1	
7				Sediment	x	1	
8				Sediment	x	1	
9				Sediment	x	1	
10				Sediment	x	1	

RELINQUISHED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date (YYYY/MM/DD)	Time:	# JARS USED AND NOT SUBMITTED
			[signature] ALKA PATEL	2013/10/03	10:30	

Laboratory Use Only	Yes	No	Temperature (°C) on Receipt
Custody Seal			3/3/3c
Present			3/3/4c
Intact			2/2/4c

MANDATORY SECTIONS IN GREY MUST BE FILLED OUT. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS

SEDIMENT CORING FIELD SHEETS

minnow environmental inc.

Sediment Coring Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimile: (905) 873 - 6370

Client: [redacted] IAMGOLD
Date/Time: June 9/13 10:45
Waterbody: Chester Lake
Lat/Northing: 17T 0429637
Long/Easting: 5263 898

Project Name/Number: 2496- Baseline
Field Crew: KM, LB
Station Identifier: CheL-C1
Map Datum (NAD):
Topographic Map:

PHYSICAL CHARACTERISTICS

Depth at Sample Collection Point (Station): 2.8 m

WATER QUALITY MEASURES

Surface (approximately 30 below) See profile

Temperature (°C):
DO (mg/L):
Conductivity (uS/cm):
Sample Collected (Y/N; type):
pH (pH units):
DO (% sat):
Other:

Bottom (approximately 50 cm above)

Temperature (°C):
DO (mg/L):
Conductivity (uS/cm):
Sample Collected (Y/N; type):
pH (pH units):
DO (% sat):
Other:

CORE COLLECTION

Device:
Core Tube Diameter:
Cores in Composite:
Slice Interval(s):
Analyses (specify):

ph 46
47

Accepted Core Number	Penetration Depth (cm)	Visual Redox Depth (cm)	Number of Core Attempts	Other Observations
1	22	–	1	meal tr
2	18	–	3	
3				
4				
5				

CORE OBSERVATION (APPROXIMATE AVERAGE)

Depth from Surface (cm)	Texture	Colour	Plants or Algae (specify)	Other Observations

SUPPORTING SEDIMENT MEASURES

Sample for Sediment Texture?: Y N
Surficial Redox in Supporting Grab? (insert probe to approximaley 3 cm):

Signature:

minnow environmental inc. Sediment Coring Field Sheet	MINNOW ENVIRONMENTAL INCORPORATED	
	2 Lamb Street	Telephone: (905) 873 - 3371
	Georgetown, Ontario L7G 3M9	Facsimilie: (905) 873 - 6370

Client: [redacted] IAMGOLD

Date/Time: June 9/13 9:00

Waterbody: Clam Lake

Lat/Northing: 17T 0428328

Long/Easting: 5266251

Project Name/Number: 2496-Baseline

Field Crew: KM, LB

Station Identifier: ClaL-C1

Map Datum (NAD):

Topographic Map:

PHYSICAL CHARACTERISTICS

Depth at Sample Collection Point (Station): 9.2 m

WATER QUALITY MEASURES

Surface (approximately 30 below) See profile

Temperature (°C):

pH (pH units):

DO (mg/L):

DO (% sat):

Conductivity (uS/cm):

Other:

Sample Collected (Y/N; type):

Bottom (approximately 50 cm above)

Temperature (°C):

pH (pH units):

DO (mg/L):

DO (% sat):

Conductivity (uS/cm):

Other:

Sample Collected (Y/N; type):

CORE COLLECTION

Device:

Core Tube Diameter:

Cores in Composite:

Slice Interval(s):

Analyses (specify):

	Accepted Core Number	Penetration Depth (cm)	Visual Redox Depth (cm)	Number of Core Attempts	Other Observations
ph 44	1	35	–	1	very loose, floc @ sfc
45	2	38	–	1	top 2cm composited, same as #1
	3				
	4				
	5				

CORE OBSERVATION (APPROXIMATE AVERAGE)

Depth from Surface (cm)	Texture	Colour	Plants or Algae (specify)	Other Observations

SUPPORTING SEDIMENT MEASURES

Sample for Sediment Texture?: Y N

Surficial Redox in Supporting Grab? (insert probe to approximatey 3 cm):

Signature:

minnow environmental inc.

Sediment Coring Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimile: (905) 873 - 6370

Client: ~~Red Lake Gold Mine~~ Iamgold
Date/Time: June 4, 2013 12:07
Waterbody: Wee duck lake
17T Lat/Northing: 0431072
Long/Easting: 5268382

Project Name/Number: 2496
Field Crew: CR, JW, TW
Station Identifier: WeeL
Map Datum (NAD): 83
Topographic Map:

PHYSICAL CHARACTERISTICS

Depth at Sample Collection Point (Station): 8.3 m

WATER QUALITY MEASURES

Surface (approximately 30 below) See Profile

Temperature (°C):
pH (pH units):
DO (mg/L):
DO (% sat):
Conductivity (uS/cm):
Other:
Sample Collected (Y/N; type):

Bottom (approximately 50 cm above)

Temperature (°C):
pH (pH units):
DO (mg/L):
DO (% sat):
Conductivity (uS/cm):
Other:
Sample Collected (Y/N; type):

CORE COLLECTION

Device: Tech OP
Core Tube Diameter: 4"
Cores in Composite: 2 @ 1cm, 1 for 2-5cm
Slice Interval(s): 1 cm (1-5cm)
Analyses (specify):

Accepted Core Number	Penetration Depth (cm)	Visual Redox Depth (cm)	Number of Core Attempts	Other Observations
1	18	none	2	
2	37	none	1	
3				
4				
5				

CORE OBSERVATION (APPROXIMATE AVERAGE)

Depth from Surface (cm)	Texture	Colour	Plants or Algae (specify)	Other Observations
0 - 5	floc / v fine	light brown		
5 - 18	fine	dark brown		

SUPPORTING SEDIMENT MEASURES

Sample for Sediment Texture?: Y N
Surficial Redox in Supporting Grab? (insert probe to approximatey 3 cm): N/D

Signature: [signature]

UTDL

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Sediment Coring Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimile: (905) 873 - 6370

Client: ~~Red Lake Gold Mine~~ Iamgold
Date/Time: June 4, 2013
Waterbody: Upper Three duck Lake
Lat/Northing:
Long/Easting: Same as profile

Project Name/Number: 2496
Field Crew: CR, JW, TW
Station Identifier: UTDL
Map Datum (NAD): 83
Topographic Map:

PHYSICAL CHARACTERISTICS

Depth at Sample Collection Point (Station): 6.0 m

WATER QUALITY MEASURES

See H_2O Profile

Surface (approximately 30 below)

Temperature (°C):
DO (mg/L):
Conductivity (uS/cm):
Sample Collected (Y/N; type):
pH (pH units):
DO (% sat):
Other:

Bottom (approximately 50 cm above)

Temperature (°C):
DO (mg/L):
Conductivity (uS/cm):
Sample Collected (Y/N; type):
pH (pH units):
DO (% sat):
Other:

CORE COLLECTION

Device: Tech ops
Core Tube Diameter: 4"
Cores in Composite: 2 @ 1cm, 1 for 2-5cm
Slice Interval(s): 1 cm (1-5cm)
Analyses (specify):

Accepted Core Number	Penetration Depth (cm)	Visual Redox Depth (cm)	Number of Core Attempts	Other Observations
1	26	none	1	
2	22		1	
3				
4				
5				

CORE OBSERVATION (APPROXIMATE AVERAGE)

Depth from Surface (cm)	Texture	Colour	Plants or Algae (specify)	Other Observations
0-3	v. fine / floc	light brown	no	
3-end	fine	dark brown		

SUPPORTING SEDIMENT MEASURES

Sample for Sediment Texture?: Y N
Surficial Redox in Supporting Grab? (insert probe to approximatey 3 cm): no

Signature:

minnow environmental Inc. **Sediment Coring Field Sheet**	**MINNOW ENVIRONMENTAL INCORPORATED** 2 Lamb Street, Georgetown, Ontario L7G 3M9 · Telephone: (905) 873 - 3371 · Facsimile: (905) 873 - 6370

Client: IAM GOLD ~~Red Lake Gold Mine~~
Date/Time: June 5-2013 / 14:30
Waterbody: Middle Three Duck Lakes
17T Lat/Northing: 431889
Long/Easting: 5265890

Project Name/Number: 2496
Field Crew: CR, JW, TW
Station Identifier: MTDL-C1
Map Datum (NAD): 83
Topographic Map: --

PHYSICAL CHARACTERISTICS

Depth at Sample Collection Point (Station): 7.9 m

WATER QUALITY MEASURES

Surface (approximately 30 below) See profile

Temperature (°C):
DO (mg/L):
Conductivity (uS/cm):
Sample Collected (Y/N; type):
pH (pH units):
DO (% sat):
Other:

Bottom (approximately 50 cm above)

Temperature (°C):
DO (mg/L):
Conductivity (uS/cm):
Sample Collected (Y/N; type):
pH (pH units):
DO (% sat):
Other:

CORE COLLECTION

Device: Teck-ops
Core Tube Diameter: 4"
Cores in Composite: 2
Slice Interval(s): 1 cm (1-5 cm)
Analyses (specify):

Accepted Core Number	Penetration Depth (cm)	Visual Redox Depth (cm)	Number of Core Attempts	Other Observations
1	30 cm	none	1	
2				
3				
4				
5				

CORE OBSERVATION (APPROXIMATE AVERAGE)

Depth from Surface (cm)	Texture	Colour	Plants or Algae (specify)	Other Observations
0-2	very fine	lighter brown	none	
2-20	fine	dark brown	none	Chironomid @ 5cm

SUPPORTING SEDIMENT MEASURES

Sample for Sediment Texture?: Y N
Surficial Redox in Supporting Grab? (insert probe to approximatey 3 cm):

Signature:

* use water to remove sed from core slicer so don't analyze for % moisture.

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Sediment Coring Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimile: (905) 873 - 6370

Client: Iam Gold ~~Red Lake Gold Mine~~
Date/Time: June 9, 2013 12:45
Waterbody: Lower Three Duck Lake
Lat/Northing: Same as profile
Long/Easting:

Project Name/Number: 2496
Field Crew: JW, BB, TW
Station Identifier: LTDL
Map Datum (NAD): 83
Topographic Map:

PHYSICAL CHARACTERISTICS

Depth at Sample Collection Point (Station): ______ m

WATER QUALITY MEASURES

Surface (approximately 30 below)

Temperature (°C):
DO (mg/L):
Conductivity (uS/cm):
pH (pH units):
DO (% sat):
Other:
Sample Collected (Y/N; type):

Bottom (approximately 50 cm above)

Temperature (°C):
DO (mg/L):
Conductivity (uS/cm):
pH (pH units):
DO (% sat):
Other:
Sample Collected (Y/N; type):

CORE COLLECTION

Device:
Core Tube Diameter:
Cores in Composite:
Slice Interval(s):
Analyses (specify):

Accepted Core Number	Penetration Depth (cm)	Visual Redox Depth (cm)	Number of Core Attempts	Other Observations
1	17	None	1	
2	13	None	2	
3				
4				
5				

CORE OBSERVATION (APPROXIMATE AVERAGE)

Depth from Surface (cm)	Texture	Colour	Plants or Algae (specify)	Other Observations
1-7	7cm-fine	light brown-7cm		
1-6	6cm fine	light brown-6cm		

SUPPORTING SEDIMENT MEASURES

Sample for Sediment Texture?: Y N

Surficial Redox in Supporting Grab? (insert probe to approximatey 3 cm):

Signature:

MINNOW environmental inc. — **Sediment Coring Field Sheet**	**MINNOW ENVIRONMENTAL INCORPORATED**	
	2 Lamb Street	Telephone: (905) 873 - 3371
	Georgetown, Ontario L7G 3M9	Facsimile: (905) 873 - 6370

Client: Tam Gold ~~Red Lake Gold Mine~~
Date/Time: June 8, 2013 16:30
Waterbody: Unnamed Lake 3
Lat/Northing: Same as profile
Long/Easting:

Project Name/Number: 2496
Field Crew: JW, BB, TW
Station Identifier: UnL3
Map Datum (NAD): 83
Topographic Map:

PHYSICAL CHARACTERISTICS

Depth at Sample Collection Point (Station): 6.5 m

WATER QUALITY MEASURES

Surface (approximately 30 below) See H2O Profile

Temperature (°C):
pH (pH units):
DO (mg/L):
DO (% sat):
Conductivity (uS/cm):
Other:
Sample Collected (Y/N; type):

Bottom (approximately 50 cm above)

Temperature (°C):
pH (pH units):
DO (mg/L):
DO (% sat):
Conductivity (uS/cm):
Other:
Sample Collected (Y/N; type):

CORE COLLECTION

Device: Tech OPS
Core Tube Diameter: 4"
Cores in Composite: 2@ 1cm, 1@ 2-50cm
Slice Interval(s): 1cm (1-5)
Analyses (specify):

	Accepted Core Number	Penetration Depth (cm)	Visual Redox Depth (cm)	Number of Core Attempts	Other Observations
	1	24	none	1	
	2	28		1	
Duplicate	3	25		1	
Duplicate	4	27		1	
	5				

CORE OBSERVATION (APPROXIMATE AVERAGE)

	Depth from Surface (cm)	Texture	Colour	Plants or Algae (specify)	Other Observations
1	1-8 V.fine	[illegible] fine	1-8 (light) brown		
2	1-9		>8 dark brown		
3	1-7				
4	1-8				

SUPPORTING SEDIMENT MEASURES

Sample for Sediment Texture?: Y N

Surficial Redox in Supporting Grab? (Insert probe to approximatey 3 cm):

Signature:

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Sediment Coring Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimile: (905) 873 - 6370

Client: ~~Red Lake Gold Mine~~ Ian Gold
Date/Time: June 7, 2013 17:35
Waterbody: Delany lake
Same as profile (Lat/Northing:
Long/Easting:

Project Name/Number: 2496
Field Crew: SW, TW, BB
Station Identifier: DelL-C1
Map Datum (NAD): 83
Topographic Map:

PHYSICAL CHARACTERISTICS

Depth at Sample Collection Point (Station): 2.0 m

WATER QUALITY MEASURES

See H_2O Profile

Surface (approximately 30 below)

Temperature (°C):		pH (pH units):	
DO (mg/L):		DO (% sat):	
Conductivity (uS/cm):		Other:	
Sample Collected (Y/N; type):			

Bottom (approximately 50 cm above)

Temperature (°C):		pH (pH units):	
DO (mg/L):		DO (% sat):	
Conductivity (uS/cm):		Other:	
Sample Collected (Y/N; type):			

CORE COLLECTION

Device: Tech OPS
Core Tube Diameter: 4"
Cores in Composite: 2 @ 1cm, 1 @ 2-5cm
Slice Interval(s): 1cm (1-5cm)
Analyses (specify):

Accepted Core Number	Penetration Depth (cm)	Visual Redox Depth (cm)	Number of Core Attempts	Other Observations
1	22	none	1	
2	15.5	none	1	
duplicate C1·x [3	22	none	1	
4	18.5	none	1	
5				

CORE OBSERVATION (APPROXIMATE AVERAGE)

Depth from Surface (cm)	Texture	Colour	Plants or Algae (specify)	Other Observations
0-5cm	V. fine / flocs	light brown	–	
5-22cm	fine, sticky	dark brown	–	
			Green matt	See pic

SUPPORTING SEDIMENT MEASURES

Sample for Sediment Texture?: Y N

Surficial Redox in Supporting Grab? (insert probe to approximatey 3 cm):

Signature: [signature]

take picture of each core!

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Sediment Coring Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimile: (905) 873 - 6370

Client: [redacted] IAM GOLD
Date/Time: June 4/13 13:00
Waterbody: Bossvead Lake - South Arm
Lat/Northing: 17T 0430117
Long/Easting: 5268774

Project Name/Number: 2496 - Baseline
Field Crew: KM, LB
Station Identifier: BagL - C1
Map Datum (NAD):
Topographic Map:

PHYSICAL CHARACTERISTICS

Depth at Sample Collection Point (Station): 5.[illegible]6 m

WATER QUALITY MEASURES See profile

Surface (approximately 30 below)

Temperature (°C):
pH (pH units):
DO (mg/L):
DO (% sat):
Conductivity (uS/cm):
Other:
Sample Collected (Y/N; type):

Bottom (approximately 50 cm above)

Temperature (°C):
pH (pH units):
DO (mg/L):
DO (% sat):
Conductivity (uS/cm):
Other:
Sample Collected (Y/N; type):

CORE COLLECTION

Device: tech ops
Core Tube Diameter: 4"
Cores in Composite:
Slice Interval(s): 1cm
Analyses (specify):

Very Soupy at top

Accepted Core Number	Penetration Depth (cm)	Visual Redox Depth (cm)	Number of Core Attempts	Other Observations
photo 007 1	48.5	–	1	very soft through whole depth
008 2	51	–	1	"
3				
4				
5				

→ top 2 slices from second core used for composites (small volume in 1st).

CORE OBSERVATION (APPROXIMATE AVERAGE)

Depth from Surface (cm)	Texture	Colour	Plants or Algae (specify)	Other Observations

SUPPORTING SEDIMENT MEASURES

Sample for Sediment Texture?: Y N
Surficial Redox in Supporting Grab? (Insert probe to approximaley 3 cm):

Signature:

minnow environmental inc. — Sediment Coring Field Sheet	MINNOW ENVIRONMENTAL INCORPORATED	
	2 Lamb Street	Telephone: (905) 873 - 3371
	Georgetown, Ontario L7G 3M9	Facsimile: (905) 873 - 6370

Client: [redacted] IAM GOLD

Date/Time: June 4/13 1500

Waterbody: Bagsverd Lake

Lat/Northing: 17T 0429849

Long/Easting: 5270200

Project Name/Number: 2496- Baseline

Field Crew: KM, LB

Station Identifier: BagL-C2

Map Datum (NAD):

Topographic Map:

PHYSICAL CHARACTERISTICS

Depth at Sample Collection Point (Station): 7.6 m

WATER QUALITY MEASURES

Surface (approximately 30 below) See Profile

Temperature (°C):

pH (pH units):

DO (mg/L):

DO (% sat):

Conductivity (uS/cm):

Other:

Sample Collected (Y/N; type):

Bottom (approximately 50 cm above)

Temperature (°C):

pH (pH units):

DO (mg/L):

DO (% sat):

Conductivity (uS/cm):

Other:

Sample Collected (Y/N; type):

CORE COLLECTION

Device: tech ops

Core Tube Diameter: 4"

Cores in Composite:

Slice Interval(s):

Analyses (specify):

Photo 009 010

Accepted Core Number	Penetration Depth (cm)	Visual Redox Depth (cm)	Number of Core Attempts	Other Observations
1	42.5	—	1	Similar to C1
2	12	—	2	bottom slid out
3				
4				
5				

Very soupy at top

CORE OBSERVATION (APPROXIMATE AVERAGE)

Depth from Surface (cm)	Texture	Colour	Plants or Algae (specify)	Other Observations

SUPPORTING SEDIMENT MEASURES

Sample for Sediment Texture?: Y N

Surficial Redox in Supporting Grab? (Insert probe to approximatey 3 cm):

Signature:

minnow environmental Inc. **Sediment Coring Field Sheet**	**MINNOW ENVIRONMENTAL INCORPORATED** 2 Lamb Street — Telephone: (905) 873 - 3371 Georgetown, Ontario L7G 3M9 — Facsimile: (905) 873 - 6370

Client: ~~Red Lake Gold Mine~~ IAMGOLD
Project Name/Number: 2496-Baseline
Date/Time: June 6/13 13:00
Field Crew: KM, LB
Waterbody: Unnamed Lake #2
Station Identifier: UN/L2
Lat/Northing: 17T 0427027
Map Datum (NAD):
Long/Easting: 5272920
Topographic Map:

PHYSICAL CHARACTERISTICS

Depth at Sample Collection Point (Station): 11 m

WATER QUALITY MEASURES

Surface (approximately 30 below) See Profile

Temperature (°C):		pH (pH units):	
DO (mg/L):		DO (% sat):	
Conductivity (uS/cm):		Other:	
Sample Collected (Y/N; type):			

Bottom (approximately 50 cm above)

Temperature (°C):		pH (pH units):	
DO (mg/L):		DO (% sat):	
Conductivity (uS/cm):		Other:	
Sample Collected (Y/N; type):			

CORE COLLECTION

Device: teck ops
Core Tube Diameter: 4"
Cores in Composite:
Slice Interval(s): 1
Analyses (specify):

	Accepted Core Number	Penetration Depth (cm)	Visual Redox Depth (cm)	Number of Core Attempts	Other Observations
photo 27	1	25	—	1	Slightly lighter brown @ ~23cm
28	2	26	—	1	
29	3	36	—	1	duplicate
30	4	28	—	1	water plug on bottom, top clouded up when extracting, duplicate for cm 1
	5				

* Duplicate core

CORE OBSERVATION (APPROXIMATE AVERAGE)

Depth from Surface (cm)	Texture	Colour	Plants or Algae (specify)	Other Observations

SUPPORTING SEDIMENT MEASURES

Sample for Sediment Texture?: Y N

Surficial Redox in Supporting Grab? (insert probe to approximatey 3 cm):

Signature:

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Sediment Coring Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: [redacted] IAMGOLD
Date/Time: June 5/13 15:30
Waterbody: Neville Lake
Lat/Northing: 17T 0431 441
Long/Easting: 5277 446

Project Name/Number: 2496 - Baseline
Field Crew: KM, LB
Station Identifier: NevL-C1
Map Datum (NAD):
Topographic Map:

PHYSICAL CHARACTERISTICS

Depth at Sample Collection Point (Station): 11 m

WATER QUALITY MEASURES

Surface (approximately 30 below) See profile

Temperature (°C):
DO (mg/L):
Conductivity (uS/cm):
pH (pH units):
DO (% sat):
Other:
Sample Collected (Y/N; type):

Bottom (approximately 50 cm above)

Temperature (°C):
DO (mg/L):
Conductivity (uS/cm):
pH (pH units):
DO (% sat):
Other:
Sample Collected (Y/N; type):

CORE COLLECTION

Device: Tech ops
Core Tube Diameter: 4"
Cores in Composite:
Slice Interval(s): 1 cm
Analyses (specify):

	Accepted Core Number	Penetration Depth (cm)	Visual Redox Depth (cm)	Number of Core Attempts	Other Observations
photo 14	1	30	–	3	added 5kg weight, was falling over
photo 15	2	38	–	1	
	3				
	4				
	5				

CORE OBSERVATION (APPROXIMATE AVERAGE)

Depth from Surface (cm)	Texture	Colour	Plants or Algae (specify)	Other Observations

SUPPORTING SEDIMENT MEASURES

Sample for Sediment Texture?: Y N
Surficial Redox in Supporting Grab? (insert probe to approximatey 3 cm):

Signature:

minnow environmental inc.

Sediment Coring Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimile: (905) 873 - 6370

Client: ~~Red Lake Gold Mine~~ IAM GOLD
Date/Time: June 8/13 10:00
Waterbody: Mesomekenda LK
Lat/Northing: 17 T 0433961
Long/Easting: 5279119

Project Name/Number: 2496 - Baseline
Field Crew: KM, LB
Station Identifier: MesL-C1
Map Datum (NAD):
Topographic Map:

PHYSICAL CHARACTERISTICS

Depth at Sample Collection Point (Station): 4.8 m

WATER QUALITY MEASURES

Surface (approximately 30 below)

Temperature (°C):
pH (pH units):
DO (mg/L):
DO (% sat):
Conductivity (uS/cm):
Other:
Sample Collected (Y/N; type):

Bottom (approximately 50 cm above)

Temperature (°C):
pH (pH units):
DO (mg/L):
DO (% sat):
Conductivity (uS/cm):
Other:
Sample Collected (Y/N; type):

CORE COLLECTION

Device:
Core Tube Diameter:
Cores in Composite:
Slice Interval(s):
Analyses (specify):

	Accepted Core Number	Penetration Depth (cm)	Visual Redox Depth (cm)	Number of Core Attempts	Other Observations
ph. 33	1	48		1	to 11cm more floc like, 11-28 darker, 28+ lighter
ph 34	2	38		3	7 " 28 " "
	3				
	4				
	5				

CORE OBSERVATION (APPROXIMATE AVERAGE)

Depth from Surface (cm)	Texture	Colour	Plants or Algae (specify)	Other Observations

SUPPORTING SEDIMENT MEASURES

Sample for Sediment Texture?: Y N
Surficial Redox in Supporting Grab? (Insert probe to approximatey 3 cm):

Signature:

minnow environmental inc. **Sediment Coring Field Sheet**	**MINNOW ENVIRONMENTAL INCORPORATED** 2 Lamb Street — Telephone: (905) 873 - 3371 Georgetown, Ontario L7G 3M9 — Facsimilie: (905) 873 - 6370

Client: [redacted] IAM GOLD
Project Name/Number: 2496- Baseline
Date/Time: June 8/13 12:00
Field Crew: KM, LB
Waterbody: Mesomikenda Lake
Station Identifier: MesL-C2
Lat/Northing: 17T 0434009
Map Datum (NAD):
Long/Easting: 5276393
Topographic Map:

PHYSICAL CHARACTERISTICS

Depth at Sample Collection Point (Station): 17.8 m

WATER QUALITY MEASURES

Surface (approximately 30 below) See profile.

Temperature (°C): ______ pH (pH units): ______
DO (mg/L): ______ DO (% sat): ______
Conductivity (uS/cm): ______ Other: ______
Sample Collected (Y/N; type): ______

Bottom (approximately 50 cm above)

Temperature (°C): ______ pH (pH units): ______
DO (mg/L): ______ DO (% sat): ______
Conductivity (uS/cm): ______ Other: ______
Sample Collected (Y/N; type): ______

CORE COLLECTION

Device: ______ Core Tube Diameter: 4 in Cores in Composite: ______
Slice Interval(s): 1 cm
Analyses (specify): ______

	Accepted Core Number	Penetration Depth (cm)	Visual Redox Depth (cm)	Number of Core Attempts	Other Observations
ph 35	1	44		1	layer @ 7, slight orange, floc
36	2	43			" 6, floc
	3				
	4				
	5				

Solid plug for both.

CORE OBSERVATION (APPROXIMATE AVERAGE)

Depth from Surface (cm)	Texture	Colour	Plants or Algae (specify)	Other Observations

SUPPORTING SEDIMENT MEASURES

Sample for Sediment Texture?: Y N
Surficial Redox in Supporting Grab? (insert probe to approximatey 3 cm): ______

Signature: ______

minnow environmental Inc. Sediment Coring Field Sheet	MINNOW ENVIRONMENTAL INCORPORATED	
	2 Lamb Street	Telephone: (905) 873 - 3371
	Georgetown, Ontario L7G 3M9	Facsimile: (905) 873 - 6370

Client: [redacted] IAM GOLD
Date/Time: June 8/13 13:30
Waterbody: Mesomekinda Lake
Lat/Northing: 17T 0433432
Long/Easting: 5274070

Project Name/Number: 2496-Baseline
Field Crew: KM, LB
Station Identifier: MesL-C3
Map Datum (NAD):
Topographic Map:

PHYSICAL CHARACTERISTICS

Depth at Sample Collection Point (Station): 60 m

WATER QUALITY MEASURES

Surface (approximately 30 below) See profile

Temperature (°C):
pH (pH units):
DO (mg/L):
DO (% sat):
Conductivity (uS/cm):
Other:
Sample Collected (Y/N; type):

Bottom (approximately 50 cm above)

Temperature (°C):
pH (pH units):
DO (mg/L):
DO (% sat):
Conductivity (uS/cm):
Other:
Sample Collected (Y/N; type):

CORE COLLECTION

Device:
Core Tube Diameter:
Cores in Composite:
Slice Interval(s):
Analyses (specify):

	Accepted Core Number	Penetration Depth (cm)	Visual Redox Depth (cm)	Number of Core Attempts	Other Observations
ph. 37	1	55	–	1	lighter br @ 10cm
38	2	35	–	2	
	3				
	4				
	5				

very sticky plg

CORE OBSERVATION (APPROXIMATE AVERAGE)

Depth from Surface (cm)	Texture	Colour	Plants or Algae (specify)	Other Observations

SUPPORTING SEDIMENT MEASURES

Sample for Sediment Texture?: Y N
Surficial Redox in Supporting Grab? (Insert probe to approximatey 3 cm):

Signature:

minnow environmental inc. **Sediment Coring Field Sheet**	**MINNOW ENVIRONMENTAL INCORPORATED** 2 Lamb Street Telephone: (905) 873 - 3371 Georgetown, Ontario L7G 3M9 Facsimille: (905) 873 - 6370

Client: ~~Red Lake Gold Mine~~ IAM GOLD
Date/Time: June 8/13 1500
Waterbody: Mesome Kinda
Lat/Northing: 17T ~~[illegible]~~ 6433692
Long/Easting: 527110

Project Name/Number: 2496-Baseline
Field Crew: KM, CB
Station Identifier: MesL-C4
Map Datum (NAD):
Topographic Map:

PHYSICAL CHARACTERISTICS

Depth at Sample Collection Point (Station): 36 m

WATER QUALITY MEASURES

Surface (approximately 30 below) See profile.

Temperature (°C):
DO (mg/L):
Conductivity (uS/cm):
pH (pH units):
DO (% sat):
Other:
Sample Collected (Y/N; type):

Bottom (approximately 50 cm above)

Temperature (°C):
DO (mg/L):
Conductivity (uS/cm):
pH (pH units):
DO (% sat):
Other:
Sample Collected (Y/N; type):

CORE COLLECTION

Device:
Core Tube Diameter:
Cores in Composite:
Slice Interval(s):
Analyses (specify):

ph 39
40+41

Accepted Core Number	Penetration Depth (cm)	Visual Redox Depth (cm)	Number of Core Attempts	Other Observations
1	42	-	2	light br @ 3-4 cm
2	50		1	layer@7cm, crust@top, orange (photo)
3				
4				
5				

CORE OBSERVATION (APPROXIMATE AVERAGE)

Depth from Surface (cm)	Texture	Colour	Plants or Algae (specify)	Other Observations

SUPPORTING SEDIMENT MEASURES

Sample for Sediment Texture?: Y N
Surficial Redox in Supporting Grab? (insert probe to approximatey 3 cm):

Signature:

minnow
environmental inc.

Sediment Coring Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimile: (905) 873 - 6370

Client: [redacted] IAMGOLD
Date/Time: June 8/13 16:00
Waterbody: Mesomikenda Lake
Lat/Northing: 17T 0433552
Long/Easting: 5274493

Project Name/Number: 2496- Baseline
Field Crew: KM, LB
Station Identifier: MesL-C5
Map Datum (NAD):
Topographic Map:

PHYSICAL CHARACTERISTICS

Depth at Sample Collection Point (Station): 30 m

WATER QUALITY MEASURES

Surface (approximately 30 below) Secchi

Temperature (°C): 17.16
DO (mg/L): 10.02
SP Conductivity (uS/cm): 85
Sample Collected (Y/N; type):
pH (pH units): 7.31
DO (% sat): 103.7
Other:

Bottom (approximately 50 cm above)

	@29	@28		@29	@28
Temperature (°C):	4.95	5.00	pH (pH units):	6.60	6.59
DO (mg/L):	0.68	10.79	DO (% sat):	5.4	84.8
SP Conductivity (uS/cm):	145	118	Other:		
Sample Collected (Y/N; type):					

CORE COLLECTION

Device: Core Tube Diameter: Cores in Composite:
Slice Interval(s):
Analyses (specify):

	Accepted Core Number	Penetration Depth (cm)	Visual Redox Depth (cm)	Number of Core Attempts	Other Observations
pl 42	1	57	–	1	layering @ 10cm
43	2	47		1	10, 15, 27
	3				(darker
	4				floc
	5				

CORE OBSERVATION (APPROXIMATE AVERAGE)

Depth from Surface (cm)	Texture	Colour	Plants or Algae (specify)	Other Observations

SUPPORTING SEDIMENT MEASURES

Sample for Sediment Texture?: Y N
Surficial Redox in Supporting Grab? (insert probe to approximatey 3 cm):

Signature:

minnow environmental inc.

Sediment Coring Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: Red Lake Gold Mine
Date/Time: 16-Sept-13
Waterbody: Mesomikenda
Lat/Northing:
Long/Easting:
Same as Profile

Project Name/Number: 2496
Field Crew: JT, BB, TW
Station Identifier: MesL-CF
Map Datum (NAD):
Topographic Map:

PHYSICAL CHARACTERISTICS

Depth at Sample Collection Point (Station): 45 m

WATER QUALITY MEASURES

See Profile

Surface (approximately 30 below)

Temperature (°C):
DO (mg/L):
Conductivity (uS/cm):
pH (pH units):
DO (% sat):
Other:
Sample Collected (Y/N; type):

Bottom (approximately 50 cm above)

Temperature (°C):
DO (mg/L):
Conductivity (uS/cm):
pH (pH units):
DO (% sat):
Other:
Sample Collected (Y/N; type):

CORE COLLECTION

Device: tech ops
Core Tube Diameter: 4"
Cores in Composite: 2 @ 1cm
Slice Interval(s): 1cm
Analyses (specify):

Accepted Core Number	Penetration Depth (cm)	Visual Redox Depth (cm)	Number of Core Attempts	Other Observations
1	Whole Tube	~40 cm	1	
2	~40 cm	?	1	
3				
4				
5				

CORE OBSERVATION (APPROXIMATE AVERAGE)

Depth from Surface (cm)	Texture	Colour	Plants or Algae (specify)	Other Observations
90+				wooly / soft on top
40				consolidated deeper down

SUPPORTING SEDIMENT MEASURES

Sample for Sediment Texture?: Y N
Surficial Redox in Supporting Grab? (insert probe to approximatey 3 cm):

Signature: [signature]

APPENDIX E

BENTHIC INVERTEBRATE COMMUNITY DATA

Table E.1: Water quality at benthic sampling stations in lakes, Côté Gold Baseline Study, 2013.

Watershed	Waterbody Area	Benthic Station	Date Sampled	Station Depth	UTM	
					Northing	Easting
Mollie River Watershed	Chester Lake	1	13-Sep-13	1.9	5264218	429487
		2		1.9	5264367	429385
		3		1.9	5264551	429274
		4		1.6	5264895	429387
		5		1.4	5265070	429460
	Clam Lake	1	11-Sep-13	4.4	5267140	428360
		2		4.0	5267082	428063
		3	15-Sep-13	4.0	5266662	428288
		4		3.9	5266094	428067
		5		4.4	5266358	427912
	Weeduck Lake	1	12-Sep-13	4.0	5268562	431268
		2		4.0	5268485	431000
		3		3.7	5268150	431169
		4		3.6	5268159	431416
		5		4.1	5268288	431472
	Upper Three Duck Lake	1	12-Sep-13	3.1	5267715	431087
		2		3.6	5267413	431083
		3		3.1	5267482	431529
		4		3.4	5267701	431546
		5		3.4	5267762	431296
	Middle Three Duck Lake	1	13-Sep-13	3.9	5266645	431475
		2		4.0	5266495	431689
		3		4.0	5266172	431863
		4		4.0	5265852	431727
		5		4.1	5265776	431900
	Lower Three Duck Lake	1	13-Sep-13	4.1	5265098	432015
		2		4.2	5264741	432231
		3		4.0	5264492	432376
		4		4.3	5264137	432671
		5		4.1	5263833	432766
	Unnamed Lake #3	1	15-Sep-13	4.3	5263382	431763
		2		4.3	5263499	431781
		3		3.9	5263589	431751
		4		4.0	5263627	431628
		5		3.8	5263503	431650
	Delaney Lake	1	16-Sep-13	1.9	5262464	431309
		2		2.1	5262904	430906
		3		2.1	5262810	431039
		4		1.7	5262361	431383
		5		1.8	5262218	431505
Neville Lake Watershed	Schist Lake (Deep)	1	13-Sep-13	4.6	5270546	426294
		2		4.6	5270503	426329
		3		4.5	5270639	426089
		4		3.5	5270630	426018
		5		4.6	5270466	426344
	Schist Lake (Shallow)	1	13-Sep-13	1.5	5271358	424675
		2		1.6	5271133	424645
		3		1.7	5270409	424751
		4		1.5	5270490	424921
		5		2.0	5270490	424944
	Bagsverd Lake (South Arm)	1	12-Sep-13	1.8	5268588	429910
		2		1.8	5268546	429491
		3		1.8	5268554	429916
		4		1.8	5268525	429247
		5		1.4	5268665	429342
	Bagsverd Lake (Main Basin)	1	14-Sep-13	3.7	5269960	429295
		2		4.5	5269990	429373
		3		4.5	5269887	429328
		4		3.5	5269827	429302
		5		3.7	5269982	429262
	Unnamed Lake #2	1	14-Sep-13	3.7	5273132	427463
		2		4.0	5273146	427062
		3		4.5	5273100	427037
		4		4.0	5272851	426933
		5		4.5	5273086	427437
	Unnamed Lake #1	1	12-Sep-13	1.8	5273642	429169
		2		1.5	5273718	429270
		3		1.8	5273658	429334
		4		1.5	5273741	429540
		5		1.6	5273800	429649
	Neville Lake	1	14-Sep-13	4.1	5277493	431359
		2		4.0	5277554	431472
		3		4.1	5277702	431453
		4		3.9	5277884	431246
		5		3.9	5278164	431314

* If the water column depth was less than 2m, water quality was measured only at mid-depth.

Table E.2: Water quality at benthic sampling stations in creeks, Côté Gold Baseline Study, 2013.

Waterbody Area	Benthic Station	Date	Station Depth	UTM	
				Northing	Easting
Bagsverd Creek	1	14-Sep-13	1.7	5274282	430068
	2		1.5	5274421	430093
	3		1.4	5274483	430058
	4		1.1	5274557	430065
	5		1.4	5274595	429980
Errington Creek	1	15-Sep-13	1.2	5270304	435533
	2		1.2	5270303	435644
	3		1.1	5270361	435672
	4		1.3	5270304	435523
	5		1.3	5270313	435592

Table E.3: Water quality at benthic sampling stations in lakes, Côté Gold Baseline Study, 2013.

Watershed	Waterbody	Date Sampled	Benthic Station	Station Depth	Surface Water (25 cm below water surface) Temperature (°C)	pH	Dissolved Oxygen (% sat)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	Bottom (25 cm above substrate)* Temperature (°C)	pH	Dissolved Oxygen (% sat)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)
Mollie River Watershed	Chester Lake	13-Sep-13	1	1.9	-	-	-	-	-	14.94	7.74	88.3	8.88	39
			2	1.9	-	-	-	-	-	15.13	7.63	87.4	8.76	39
			3	1.9	-	-	-	-	-	15.13	7.56	88.4	8.87	39
			4	1.6	-	-	-	-	-	14.50	7.49	86.6	8.82	39
			5	1.4	-	-	-	-	-	14.64	7.26	86.0	8.73	39
	Clam Lake[a]	11-Sep-13	1	4.4	17.55	7.91	109.8	10.48	52	17.00	7.87	101.0	9.77	52
			2	4.0	17.59	7.90	111.2	10.62	52	16.81	7.93	96.6	9.37	53
		15-Sep-13	3	4.0	15.52	6.95	98.6	9.83	38	15.48	6.99	95.0	9.61	39
			4	3.9	15.34	7.09	99.4	9.96	39	15.35	7.08	96.8	9.68	38
			5	4.4	15.34	6.95	95.4	9.55	39	15.37	6.97	94.2	9.44	38
	Weeduck Lake	12-Sep-13	1	4.0	17.27	6.68	98.0	9.40	34	16.90	6.77	90.3	8.75	34
			2	4.0	16.90	6.90	94.9	9.13	32	16.60	6.80	86.3	8.49	34
			3	3.7	17.20	6.88	95.9	9.22	34	17.17	6.94	93.6	9.04	IC
			4	3.6	17.32	7.01	102.3	9.88	33	17.27	7.03	99.2	9.54	33
			5	4.1	17.38	7.01	98.9	9.49	34	17.21	6.97	95.7	9.22	34
	Upper Three Duck Lake	12-Sep-13	1	3.1	17.06	6.90	96.8	9.39	39	17.05	6.98	94.0	9.11	39
			2	3.6	17.02	6.97	94.4	9.10	39	17.01	6.98	93.4	9.00	38
			3	3.1	17.33	6.99	99.1	9.53	39	17.31	7.01	97.5	9.38	39
			4	3.4	17.07	7.02	97.2	9.38	39	17.09	6.98	95.2	9.19	38
			5	3.4	17.10	6.99	99.6	9.61	38	17.14	7.03	97.8	9.45	39
	Middle Three Duck Lake	13-Sep-13	1	3.9	15.64	6.91	93.2	9.27	38	15.58	6.87	91.7	9.12	37
			2	4.0	15.54	6.93	94.4	9.48	38	15.55	6.91	91.9	9.14	37
			3	4.0	15.56	6.97	95.8	9.55	38	15.50	6.97	92.6	9.22	37
			4	4.0	15.50	7.01	96.5	9.63	37	15.41	7.03	93.2	9.35	38
			5	4.1	15.42	7.02	97.0	9.68	37	14.90	6.97	96.4	9.75	37
	Lower Three Duck Lake	13-Sep-13	1	4.1	15.13	6.90	94.6	9.45	36	15.04	6.86	88.5	8.92	36
			2	4.2	15.49	6.95	91.6	9.12	29	15.32	6.91	89.8	9.00	36
			3	4.0	15.54	6.85	93.4	9.31	35	15.37	6.83	90.5	9.06	36
			4	4.3	15.73	6.95	91.0	9.02	35	15.62	6.94	86.5	8.61	36
			5	4.1	16.16	7.00	98.0	9.62	35	15.78	6.97	93.5	9.27	35
	Unnamed Lake #3	15-Sep-13	1	4.3	14.78	7.96	104.7	10.61	43	13.62	7.69	75.3	7.82	44
			2	4.3	14.84	7.62	103.5	10.46	43	12.84	7.33	22.1	2.97	47
			3	3.9	14.76	7.32	103.3	10.47	43	11.83	6.98	15.6	1.60	52
			4	4.0	14.75	7.03	103.8	10.53	43	12.71	7.01	51.9	5.45	46
			5	3.8	14.74	7.06	106.7	10.84	43	12.71	6.92	64.4	6.72	46
	Delaney Lake	16-Sep-13	1	1.9	12.96	8.08	118.0	12.36	47	12.85	8.09	68.7	6.44	47
			2	2.1	13.11	7.80	110.6	11.62	46	12.73	7.69	105.5	11.17	46
			3	2.1	13.21	7.70	107.5	11.24	46	13.06	7.72	103.9	10.90	47
			4	1.7	13.12	7.47	108.9	11.45	47	12.81	7.52	107.1	-	47
			5	1.8	13.12	7.39	108.4	11.40	47	13.03	7.41	99.7	10.46	49
Neville Lake Watershed	Schist Lake (Deep)	13-Sep-13	1	4.6	15.72	8.69	120.4	11.96	65	15.67	8.56	18.9	1.85	65
			2	4.6	15.73	8.63	121.4	12.05	65	15.71	8.25	59.7	5.65	84
			3	4.5	15.56	8.27	121.6	12.11	64	15.70	8.03	22.9	2.39	84
			4	3.5	15.13	8.04	123.6	12.14	64	14.59	8.07	122.1	12.46	64
			5	4.6	16.26	8.18	122.1	11.98	65	15.97	7.96	116.8	11.58	64
	Schist Lake (Shallow)	13-Sep-13	1	1.5	15.02	7.85	128.0	12.89	63	15.03	7.98	126.8	12.78	63
			2	1.6	15.05	8.06	128.1	12.90	63	15.05	8.11	127.0	12.79	63
			3	1.7	15.38	8.04	132.6	13.27	62	15.08	8.23	131.1	13.20	63
			4	1.5	14.97	8.11	119.3	12.02	63	15.23	8.20	95.9	9.41	71
			5	2.0	14.72	8.10	119.1	12.09	64	14.68	8.18	117.9	11.98	64
	Bagsverd Lake (South Arm)	12-Sep-13	1	1.8	-	-	-	-	-	17.61	7.60	88.3	8.43	53
			2	1.8	-	-	-	-	-	17.88	7.66	88.1	8.36	52
			3	1.8	-	-	-	-	-	17.68	7.58	89.8	8.56	56
			4	1.8	-	-	-	-	-	17.88	7.61	90.1	8.54	54
			5	1.4	-	-	-	-	-	18.19	7.46	91.4	8.62	52
	Bagsverd Lake (Main Basin)	14-Sep-13	1	3.7	15.98	7.61	109.2	10.79	64	15.45	7.76	34.5	3.19	85
			2	4.5	16.07	7.68	109.2	10.76	64	14.53	7.71	56.7	5.02	74
			3	4.5	16.23	7.68	125.8	12.36	64	14.82	7.79	122.1	12.37	64
			4	3.5	16.06	7.90	124.5	12.28	64	15.25	7.92	30.9	2.89	77
			5	3.7	16.17	7.99	121.2	11.94	64	15.05	8.07	116.4	11.73	65
	Unnamed Lake #2	14-Sep-13	1	3.7	14.72	8.57	120.1	11.12	47	14.40	8.49	108.2	11.06	47
			2	4.0	14.80	8.18	105.7	10.70	47	14.65	8.02	97.0	9.81	48
			3	4.5	14.83	7.64	108.4	10.95	47	14.66	7.71	105.4	10.72	47
			4	4.0	14.89	7.46	108.1	10.91	47	14.45	7.54	89.2	9.20	48
			5	4.5	15.07	7.47	113.8	11.48	47	14.83	7.43	112.1	11.34	47
	Unnamed Lake #1	12-Sep-13	1	1.8	16.89	7.90	86.5	8.37	50	16.87	7.90	84.0	8.13	50
			2	1.5	16.86	7.94	98.3	9.54	50	16.86	7.94	97.4	9.44	50
			3	1.8	16.86	7.90	100.4	9.74	51	16.81	7.91	98.6	9.56	51
			4	1.5	17.12	7.66	99.7	9.61	52	17.12	7.71	100.3	9.61	52
			5	1.6	17.21	7.69	100.6	9.71	52	17.16	7.69	94.2	9.06	53
	Neville Lake	14-Sep-13	1	4.1	14.98	7.29	77.2	7.73	43	14.22	6.86	73.9	7.55	43
			2	4.0	15.11	6.98	78.8	7.91	43	14.74	6.91	76.4	7.73	43
			3	4.1	15.03	7.01	82.3	8.20	43	14.54	6.94	75.5	7.69	43
			4	3.9	15.09	6.95	82.7	8.24	43	14.72	6.80	77.7	7.88	42
			5	3.9	15.14	6.88	79.4	7.98	43	14.67	6.82	79.8	8.10	42

* If the water column depth was less than 2 m, water quality was measured only at mid-depth.

[a] Issues with pH calibration.

IC - Value recorded incorrectly on field sheet

Table E.4: Water quality at benthic sampling stations in streams, Côté Gold Baseline Study, 2013.

Waterbody Area	Benthic Station	Date	Station Depth	Velocity (m/s)*	Surface Water (25 cm below water surface)					Bottom (25 cm above substrate)				
					Temperature (°C)	pH	Dissolved Oxygen		Specific Conductance (µS/cm)	Temperature (°C)	pH	Dissolved Oxygen		Specific Conductance (µS/cm)
							(% sat)	(mg/L)				(% sat)	(mg/L)	
Bagsverd Creek	1	14-Sep-13	1.7	0.08	10.87	6.32	72.6	8.04	40	10.87	6.40	70.9	7.84	40
	2		1.5	0.06	11.09	6.36	72.5	7.99	40	11.09	6.32	72.2	7.93	40
	3		1.4	0.04	11.34	6.34	74.8	8.80	40	11.31	6.27	74.0	8.10	40
	4		1.1	0.03	11.73	6.45	79.8	8.69	40	11.73	6.29	78.7	8.54	40
	5		1.4	0.01	12.05	6.46	77.3	8.32	40	12.03	6.41	77.2	8.33	40
Errington Creek	1	15-Sep-13	1.2	-	12.96	6.12	52.0	5.54	44	12.94	6.14	50.0	5.29	44
	2		1.2	0.01	13.35	6.19	56.5	5.93	39	13.33	6.25	54.7	5.73	40
	3		1.1	0.00	13.41	6.27	59.8	6.26	39	13.39	6.23	58.3	6.09	39
	4		1.3	0.01	13.05	6.21	59.0	6.21	49	13.02	6.19	55.4	5.82	49
	5		1.3	0.01	13.20	6.14	55.1	5.78	42	13.19	6.13	54.2	5.69	40

Table E.5: Number of benthic invertebrates per m², Côté Gold Baseline Study, September 2013.

Station	BagC					BagLM					BagLS				
Replicate	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
FLATWORMS															
P. Platyhelminthes															
Cl. Turbellaria	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Tricladida	-	-	-	-	-	-	-	-	-	-	58	-	-	-	-
ROUNDWORMS															
P. Nemata	116	116	-	232	-	-	-	-	-	-	-	-	-	-	29
ANNELIDS															
P. Annelida															
WORMS															
Cl. Oligochaeta															
F. Naididae															
S.F. Naidinae															
Chaetogaster diaphanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dero digitata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nais variabilis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ripistes parasita	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specaria josinae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vejdovskyella comata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tubificinae															
Aulodrilus americanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aulodrilus limnobius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aulodrilus pigueti	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ilyodrilus templetoni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limnodrilus hoffmeisteri	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limnodrilus udekemianus	116	928	-	232	-	-	-	-	-	-	-	-	-	-	-
immatures with hair chaetae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immatures without hair chaetae	-	348	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lumbriculidae															
Lumbriculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEECHES															
Cl. Hirudinea															
F. Erpobdellidae															
immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossiphoniidae															
Gloiobdella elongata	-	-	-	-	-	-	-	-	-	-	-	29	-	29	-
Helobdella stagnalis	-	-	-	-	-	-	-	-	-	-	58	-	-	-	-
ARTHROPODS															
P. Arthropoda															
MITES															
Cl. Arachnida															
Subcl. Acari	-	-	-	-	232	29	14	-	43	-	58	58	29	-	43
HARPACTICOIDS															
O. Harpacticoida	-	-	-	-	-	101	406	406	58	1087	58	-	-	-	-
SEED SHRIMPS															
Cl. Ostracoda	116	232	-	1159	-	-	-	-	-	-	-	-	-	-	-
WATER SCUDS															
O. Amphipoda															
F. Hyalellidae															
Hyalella	1623	464	1159	928	696	-	-	-	-	-	-	72	-	-	406
INSECTS															
Cl. Insecta															
BEETLES															
O. Coleoptera															
F. Chrysomelidae															
Donacia	-	-	-	-	464	-	-	-	-	-	-	-	-	-	-
F. Elmidae															
Dubiraphia larvae	-	116	-	-	-	-	-	-	-	-	-	-	-	-	-
MAYFLIES															
O. Ephemeroptera															
F. Baetidae															
Callibaetis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Caenidae															
Caenis	116	232	1391	464	464	43	14	43	43	116	-	14	29	87	43
F. Ephemeridae															
Hexagenia	14	29	-	-	-	-	14	-	-	14	-	-	-	-	-
F. Ephemerellidae															
Eurylophella	232	-	-	-	232	-	-	-	-	-	-	-	-	-	-
F. Heptageniidae															

Table E.5: Number of benthic invertebrates per m², Côté Gold Baseline Study, September 2013.

Station	BagC					BagLM					BagLS				
Replicate	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Stenacron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptophlebiidae															
Leptophlebia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immature	928	232	1623	696	1159	-	-	-	-	-	-	-	-	-	-
ALDERFLIES															
F. Sialidae															
Sialis	-	-	-	-	-	-	14	29	-	-	-	-	-	-	-
O. Odonata															
DAMSELFLIES															
F. Coenagrionidae															
Ischnura	116	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DRAGONFLIES															
F. Corduliidae															
Epitheca	-	-	-	-	-	-	14	-	-	-	-	-	-	-	-
CADDISFLIES															
O. Trichoptera															
F. Dipseudopsidae															
Phylocentropus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydroptilidae															
Oxyethira	116	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae															
Ceraclea	116	-	-	-	232	-	-	-	-	-	-	-	-	-	-
Oecetis	-	232	-	-	-	-	-	-	-	-	58	-	-	-	58
Triaenodes	116	116	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Molannidae															
Molanna	116	-	-	-	232	-	-	-	-	-	-	-	-	-	-
F. Phryganeidae															
Phryganea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immature	116	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Polycentropodidae															
Polycentropus	-	-	-	-	-	-	-	-	-	-	58	-	-	-	-
TRUE FLIES															
O. Diptera															
BITING-MIDGE															
F. Ceratopogonidae															
Bezzia	348	-	464	928	464	-	-	-	-	-	-	-	-	-	-
Dasyhelea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mallochohelea	232	348	-	-	-	29	14	-	29	43	-	-	-	-	-
Serromyia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sphaeromias	-	-	-	-	-	-	29	58	43	-	116	-	43	29	-
PHANTOM MIDGE															
F. Chaoboridae															
Chaoborus albatus	-	-	-	-	-	58	29	-	130	87	232	246	116	232	203
Chaoborus flavicans	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chaoborus punctipennis	-	-	-	-	-	43	159	159	14	145	-	87	-	667	145
immature	-	-	-	-	-	-	-	-	**72**	**14**	**58**	**43**	**29**	-	-
MIDGES															
F. Chironomidae															
chironomid pupae	-	-	-	-	-	-	-	-	-	-	-	-	**14**	-	**43**
S.F. Chironominae															
Chironomus	-	-	-	-	-	29	14	58	14	29	-	-	14	-	43
Cladopelma	116	-	-	-	-	-	-	-	-	-	-	-	-	58	145
Cladotanytarsus	-	-	-	-	-	-	-	-	-	-	-	-	-	58	101
Cryptochironomus	-	116	-	-	-	-	-	-	14	14	58	-	14	-	-
Dicrotendipes	-	-	-	-	-	-	-	-	-	-	58	-	-	-	-
Einfeldia	-	-	-	-	-	14	43	130	29	14	-	-	-	-	-
Glyptotendipes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lauterborniella	-	-	-	-	-	-	-	-	-	-	-	43	-	-	290
Micropsectra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microtendipes	348	-	232	464	464	-	-	-	-	-	-	-	-	-	-
Pagastiella	-	116	232	232	-	-	-	-	-	-	-	-	-	-	-
Paralauterborniella	116	116	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum halterale	232	-	232	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum nubeculosum	-	-	-	-	-	-	29	-	-	-	-	14	14	29	159
Polypedilum trigonus	-	-	464	928	-	-	-	-	-	-	-	-	-	-	-
Polypedilum	464	232	-	2319	1391	-	-	-	-	-	-	-	-	-	-
Pseudochironomus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stenochironomus	-	-	-	-	232	-	-	-	-	-	-	-	-	-	-
Tanytarsus	232	-	232	-	-	-	43	-	-	-	-	101	14	116	1304
Tribelos	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xenochironomus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zavreliella	-	-	-	-	-	14	-	-	-	14	116	-	-	-	43
S.F. Orthocladiinae															
Cricotopus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table E.5: Number of benthic invertebrates per m^2, Côté Gold Baseline Study, September 2013.

Station	BagC					BagLM					BagLS				
Replicate	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Epoicocladius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Psectrocladius (Monopsectrocladius)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zalutschia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae															
Ablabesmyia	116	232	-	232	696	-	14	-	-	14	-	-	-	-	-
Clinotanypus	348	-	696	232	232	-	-	-	-	-	-	-	-	-	-
Guttipelopia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius	464	116	232	1159	928	101	130	159	203	43	116	43	29	174	203
Tanypus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thienemannimyia complex	-	116	-	-	696	-	-	-	-	-	-	-	-	-	-
F. Tabanidae															
Chrysops	116	116	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tipulidae															
Rhabdomastix	-	-	-	-	232	-	-	-	-	-	-	-	-	-	-
MOLLUSCS															
P. Mollusca															
SNAILS															
Cl. Gastropoda															
F. Ancylidae															
Ferrissia	-	232	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola	-	-	-	-	232	14	-	-	-	14	986	-	14	-	29
F. Physidae															
Physella	-	-	-	232	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus	1043	-	-	-	-	-	-	-	-	-	174	-	-	-	-
immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata tricarinata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
Valvata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CLAMS															
Cl. Bivalvia															
F. Sphaeriidae															
Cyclocalyx	-	-	232	232	232	-	14	-	-	14	-	29	-	174	319
Sphaerium (Amesoda) simile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sphaerium (Musculium) partumeium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sphaerium (Musculium) immature	-	-	-	-	232	-	-	-	-	-	58	-	-	-	14
F. Unionidae															
Pyganodon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS	8,130	4,783	7,188	10,667	9,739	478	1,000	1,043	696	1,667	2,319	783	362	1,652	3,638
TOTAL NUMBER OF TAXA [a]	27	21	12	16	20	11	17	8	11	14	15	11	10	11	19

[a] Bold entries excluded from taxa count

Table E.5: Number of benthic invertebrates per m², Côté Gold Baseline Study, September 2013.

Station	CheL					ClaL					DelL				
Replicate	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
FLATWORMS															
P. Platyhelminthes															
Cl. Turbellaria	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Tricladida	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROUNDWORMS															
P. Nemata	-	-	-	-	58	87	58	58	-	-	-	14	-	-	-
<u>ANNELIDS</u>															
P. Annelida															
WORMS															
Cl. Oligochaeta															
F. Naididae															
S.F. Naidinae															
Chaetogaster diaphanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dero digitata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nais variabilis	-	-	-	-	-	-	-	-	58	-	-	-	-	-	-
Ripistes parasita	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata	-	-	-	-	-	-	116	174	58	-	-	-	-	-	-
Specaria josinae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vejdovskyella comata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tubificinae															
Aulodrilus americanus	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aulodrilus limnobius	-	-	-	-	-	-	-	-	-	-	-	43	14	-	-
Aulodrilus pigueti	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ilyodrilus templetoni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limnodrilus hoffmeisteri	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limnodrilus udekemianus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immatures with hair chaetae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immatures without hair chaetae	116	-	-	-	-	-	29	58	58	29	-	-	-	-	-
F. Lumbriculidae															
Lumbriculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEECHES															
Cl. Hirudinea															
F. Erpobdellidae															
immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossiphoniidae															
Gloiobdella elongata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helobdella stagnalis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<u>ARTHROPODS</u>															
P. Arthropoda															
MITES															
Cl. Arachnida															
Subcl. Acari	-	-	-	-	58	14	-	-	-	14	-	14	-	-	-
HARPACTICOIDS															
O. Harpacticoida	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEED SHRIMPS															
Cl. Ostracoda	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WATER SCUDS															
O. Amphipoda															
F. Hyalellidae															
Hyalella	-	-	58	-	-	116	580	174	174	29	-	-	-	-	-
<u>INSECTS</u>															
Cl. Insecta															
BEETLES															
O. Coleoptera															
F. Chrysomelidae															
Donacia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Elmidae															
Dubiraphia larvae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAYFLIES															
O. Ephemeroptera															
F. Baetidae															
Callibaetis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Caenidae															
Caenis	-	-	-	-	58	14	-	-	58	-	-	-	-	-	-
F. Ephemeridae															
Hexagenia	551	623	116	275	275	14	-	-	58	29	-	29	29	14	-
F. Ephemerellidae															
Eurylophella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Heptageniidae															

Table E.5: Number of benthic invertebrates per m^2, Côté Gold Baseline Study, September 2013.

Station	CheL					ClaL					DelL				
Replicate	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Stenacron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptophlebiidae															
Leptophlebia	-	-	-	-	-	-	-	-	58	-	-	-	-	-	-
immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ALDERFLIES															
F. Sialidae															
Sialis	29	-	-	-	-	14	29	58	58	43	14	-	-	-	-
O. Odonata															
DAMSELFLIES															
F. Coenagrionidae															
Ischnura	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DRAGONFLIES															
F. Corduliidae															
Epitheca	-	-	-	-	-	-	-	-	14	-	-	-	-	-	-
CADDISFLIES															
O. Trichoptera															
F. Dipseudopsidae															
Phylocentropus	58	29	14	-	72	-	-	-	14	14	-	-	-	-	-
F. Hydroptilidae															
Oxyethira	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae															
Ceraclea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oecetis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triaenodes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Molannidae															
Molanna	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Phryganeidae															
Phryganea	-	-	-	-	-	-	29	-	-	-	-	-	-	-	-
immature	-	-	-	-	-	-	-	58	-	-	-	-	-	-	-
F. Polycentropodidae															
Polycentropus	-	-	-	-	-	14	-	-	-	-	-	-	-	-	-
TRUE FLIES															
O. Diptera															
BITING-MIDGE															
F. Ceratopogonidae															
Bezzia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dasyhelea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mallochohelea	-	116	348	116	348	-	-	290	232	29	-	29	-	-	14
Serromyia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sphaeromias	-	-	-	-	-	29	-	-	-	-	-	-	14	-	-
PHANTOM MIDGE															
F. Chaoboridae															
Chaoborus albatus	87	116	174	58	928	-	-	-	-	-	-	-	14	14	-
Chaoborus flavicans	-	-	-	-	-	43	-	-	-	-	-	-	-	-	-
Chaoborus punctipennis	14	87	-	174	58	-	29	-	-	145	638	275	1058	565	188
immature	-	**116**	-	-	**116**	-	-	-	-	-	**29**	**29**	-	**43**	**14**
MIDGES															
F. Chironomidae															
chironomid pupae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Chironominae															
Chironomus	-	-	-	-	-	-	-	1217	-	-	-	-	-	-	-
Cladopelma	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cladotanytarsus	-	-	-	-	116	-	-	116	-	-	-	-	-	-	-
Cryptochironomus	-	-	-	-	-	-	-	-	-	-	14	14	-	29	14
Dicrotendipes	-	-	58	-	-	-	29	116	116	-	-	-	-	-	-
Einfeldia	-	-	-	-	-	14	-	-	-	-	-	-	14	-	-
Glyptotendipes	58	29	-	-	-	14	58	290	116	-	-	-	-	-	-
Lauterborniella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Micropsectra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
Microtendipes	-	-	-	-	-	29	-	2261	812	101	-	-	-	-	-
Pagastiella	-	-	-	-	696	-	-	-	-	-	-	-	-	-	-
Paralauterborniella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum halterale	-	29	-	-	-	14	-	-	-	-	-	-	-	-	-
Polypedilum nubeculosum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum trigonus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pseudochironomus	-	-	-	-	-	14	-	58	-	-	-	-	-	-	-
Stenochironomus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus	-	-	-	-	174	-	-	116	522	-	43	-	-	-	-
Tribelos	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xenochironomus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zavreliella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladiinae															
Cricotopus	-	-	-	-	-	29	-	-	-	-	-	-	-	-	-

Table E.5: Number of benthic invertebrates per m^2, Côté Gold Baseline Study, September 2013.

Station	CheL					ClaL					DelL				
Replicate	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Epoicocladius	-	-	58	-	58	-	-	-	-	-	-	-	-	-	-
Psectrocladius (Monopsectrocladius)	-	-	-	-	-	-	-	116	-	-	-	-	-	-	-
Zalutschia	-	-	-	-	-	14	261	406	58	29	261	275	72	116	101
S.F. Tanypodinae															
Ablabesmyia	-	-	58	-	-	-	-	-	-	-	-	-	-	-	-
Clinotanypus	-	58	58	58	58	14	-	-	-	-	-	-	-	-	14
Guttipelopia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius	58	58	116	58	116	174	290	348	406	87	72	-	43	29	14
Tanypus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thienemannimyia complex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tabanidae															
Chrysops	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tipulidae															
Rhabdomastix	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOLLUSCS															
P. Mollusca															
SNAILS															
Cl. Gastropoda															
F. Ancylidae															
Ferrissia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola	-	-	-	58	-	-	29	-	-	-	-	-	-	-	14
F. Physidae															
Physella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immature	-	-	-	-	-	-	-	174	-	-	-	-	-	-	-
F. Valvatidae															
Valvata tricarinata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Valvata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CLAMS															
Cl. Bivalvia															
F. Sphaeriidae															
Cyclocalyx	58	29	58	-	-	623	870	348	116	14	348	493	493	551	14
Sphaerium (Amesoda) simile	-	-	-	58	14	-	-	-	-	-	-	-	-	-	-
Sphaerium (Musculium) partumeium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sphaerium (Musculium) immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Unionidae															
Pyganodon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS	1,087	1,290	1,116	855	3,203	1,290	2,406	6,435	2,986	565	1,420	1,217	1,754	1,362	406
TOTAL NUMBER OF TAXA [a]	10	10	11	8	15	19	13	19	18	12	7	9	9	7	9

[a] Bold entries excluded from taxa count

Table E.5: Number of benthic invertebrates per m^2, Côté Gold Baseline Study, September 2013.

Station	ErrC					LTDL					MTDL				
Replicate	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
FLATWORMS															
P. Platyhelminthes															
Cl. Turbellaria	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Tricladida	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROUNDWORMS															
P. Nemata	-	-	-	464	-	-	-	29	43	-	-	-	14	-	29
ANNELIDS															
P. Annelida															
WORMS															
Cl. Oligochaeta															
F. Naididae															
S.F. Naidinae															
Chaetogaster diaphanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dero digitata	-	-	-	-	-	-	-	-	29	-	14	-	29	-	-
Nais variabilis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ripistes parasita	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
Slavina appendiculata	-	-	-	-	-	-	-	-	14	-	-	-	-	-	-
Specaria josinae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vejdovskyella comata	-	-	-	-	-	-	-	-	14	-	-	-	-	-	-
S.F. Tubificinae															
Aulodrilus americanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aulodrilus limnobius	-	-	-	-	-	-	-	-	217	2	-	-	-	-	-
Aulodrilus pigueti	-	-	-	-	-	-	-	14	-	-	-	-	-	-	-
Ilyodrilus templetoni	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-
Limnodrilus hoffmeisteri	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-
Limnodrilus udekemianus	-	-	-	232	-	-	-	-	-	-	-	-	-	-	-
immatures with hair chaetae	-	-	-	232	-	-	-	-	-	14	43	-	29	-	-
immatures without hair chaetae	-	-	-	464	-	-	-	14	14	-	-	-	-	-	-
F. Lumbriculidae															
Lumbriculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEECHES															
Cl. Hirudinea															
F. Erpobdellidae															
immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossiphoniidae															
Gloiobdella elongata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helobdella stagnalis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ARTHROPODS															
P. Arthropoda															
MITES															
Cl. Arachnida															
Subcl. Acari	232	-	464	-	232	-	-	-	-	-	14	43	-	29	29
HARPACTICOIDS															
O. Harpacticoida	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEED SHRIMPS															
Cl. Ostracoda	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-
WATER SCUDS															
O. Amphipoda															
F. Hyalellidae															
Hyalella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INSECTS															
Cl. Insecta															
BEETLES															
O. Coleoptera															
F. Chrysomelidae															
Donacia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Elmidae															
Dubiraphia larvae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAYFLIES															
O. Ephemeroptera															
F. Baetidae															
Callibaetis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Caenidae															
Caenis	-	-	232	-	-	-	-	-	-	-	-	-	-	-	-
F. Ephemeridae															
Hexagenia	-	-	-	-	-	14	14	43	-	-	14	159	14	14	116
F. Ephemerellidae															
Eurylophella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Heptageniidae															

Table E.5: Number of benthic invertebrates per m^2, Côté Gold Baseline Study, September 2013.

Station	ErrC					LTDL					MTDL				
Replicate	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Stenacron	-	-	-	-	-	-	-	14	-	-	-	-	-	-	-
F. Leptophlebiidae															
Leptophlebia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ALDERFLIES															
F. Sialidae															
Sialis	-	-	-	-	-	-	-	-	-	-	-	43	-	-	-
O. Odonata															
DAMSELFLIES															
F. Coenagrionidae															
Ischnura	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DRAGONFLIES															
F. Corduliidae															
Epitheca	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CADDISFLIES															
O. Trichoptera															
F. Dipseudopsidae															
Phylocentropus	-	-	-	-	-	-	-	-	-	-	-	-	-	58	14
F. Hydroptilidae															
Oxyethira	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae															
Ceraclea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oecetis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triaenodes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Molannidae															
Molanna	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Phryganeidae															
Phryganea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Polycentropodidae															
Polycentropus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRUE FLIES															
O. Diptera															
BITING-MIDGE															
F. Ceratopogonidae															
Bezzia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dasyhelea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mallochohelea	-	-	-	-	-	-	14	-	14	-	58	-	-	-	-
Serromyia	116	-	-	232	-	-	-	-	-	-	-	-	-	-	-
Sphaeromias	-	-	-	-	-	101	14	-	-	-	-	-	-	-	-
PHANTOM MIDGE															
F. Chaoboridae															
Chaoborus albatus	580	-	-	232	232	58	29	-	-	-	-	-	-	43	-
Chaoborus flavicans	-	-	-	-	-	29	14	14	43	72	43	29	43	43	-
Chaoborus punctipennis	2203	696	-	464	928	1188	899	768	1014	957	2174	1261	565	1130	116
immature	**232**	**464**	-	-	-	**43**	**130**	**43**	**72**	**188**	**43**	**174**	**43**	**29**	**14**
MIDGES															
F. Chironomidae															
chironomid pupae	-	-	-	-	-	-	**14**	-	**14**	**14**	-	-	-	**14**	**14**
S.F. Chironominae															
Chironomus	232	-	1391	464	-	87	29	29	14	-	101	-	14	-	14
Cladopelma	-	-	232	464	-	-	-	-	-	-	-	-	-	-	-
Cladotanytarsus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptochironomus	-	-	-	-	-	-	14	-	-	-	-	-	-	-	-
Dicrotendipes	-	-	-	-	232	-	-	-	-	-	-	-	-	-	14
Einfeldia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Glyptotendipes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lauterborniella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Micropsectra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microtendipes	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-
Pagastiella	-	-	232	-	-	-	-	-	-	-	-	-	-	-	-
Paralauterborniella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum halterale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum nubeculosum	-	-	-	-	-	-	-	-	14	-	-	-	-	-	-
Polypedilum trigonus	116	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pseudochironomus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stenochironomus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus	116	232	1855	1159	1159	-	-	29	14	-	58	174	43	-	130
Tribelos	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-
Xenochironomus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zavreliella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladiinae															
Cricotopus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table E.5: Number of benthic invertebrates per m², Côté Gold Baseline Study, September 2013.

Station	ErrC					LTDL					MTDL				
Replicate	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Epoicocladius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Psectrocladius (Monopsectrocladius)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zalutschia	-	-	-	-	-	957	2072	536	2899	2058	754	681	1551	406	348
S.F. Tanypodinae															
Ablabesmyia	-	-	-	-	-	-	-	14	-	-	14	-	14	-	14
Clinotanypus	-	-	-	-	-	-	-	-	-	-	-	14	-	-	101
Guttipelopia	-	-	-	-	232	-	-	-	-	-	-	-	-	-	-
Procladius	232	928	3478	2087	696	-	-	29	-	-	14	87	43	72	174
Tanypus	928	-	-	-	464	-	-	-	-	-	-	-	-	-	-
Thienemannimyia complex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tabanidae															
Chrysops	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tipulidae															
Rhabdomastix	-	-	-	232	-	-	-	-	-	-	-	-	-	-	-
MOLLUSCS															
P. Mollusca															
SNAILS															
Cl. Gastropoda															
F. Ancylidae															
Ferrissia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola	580	-	232	928	2087	-	-	-	-	-	-	14	-	-	-
F. Physidae															
Physella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata tricarinata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Valvata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CLAMS															
Cl. Bivalvia															
F. Sphaeriidae															
Cyclocalyx	-	-	-	232	696	29	116	101	174	72	145	232	43	101	304
Sphaerium (Amesoda) simile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sphaerium (Musculium) partumeium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sphaerium (Musculium) immature	-	232	-	-	-	-	-	-	-	-	-	-	-	29	-
F. Unionidae															
Pyganodon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
TOTAL NUMBER OF ORGANISMS	5,565	2,551	8,116	7,884	6,957	2,507	3,362	1,681	4,609	3,379	3,536	2,928	2,449	1,986	1,464
TOTAL NUMBER OF TAXA [a]	10	4	8	14	10	8	10	13	14	6	16	12	12	11	15

[a] Bold entries excluded from taxa count

Table E.5: Number of benthic invertebrates per m^2, Côté Gold Baseline Study, September 2013.

Station	NevL					SchLD					SchLS				
Replicate	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
FLATWORMS															
P. Platyhelminthes															
Cl. Turbellaria	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Tricladida	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROUNDWORMS															
P. Nemata	-	-	14	-	-	-	-	14	-	29	58	-	-	-	-
ANNELIDS															
P. Annelida															
WORMS															
Cl. Oligochaeta															
F. Naididae															
S.F. Naidinae															
Chaetogaster diaphanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dero digitata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nais variabilis	-	-	-	-	-	-	-	-	-	-	58	58	-	-	-
Ripistes parasita	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specaria josinae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vejdovskyella comata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tubificinae															
Aulodrilus americanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aulodrilus limnobius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aulodrilus pigueti	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ilyodrilus templetoni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limnodrilus hoffmeisteri	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limnodrilus udekemianus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immatures with hair chaetae	-	-	-	-	-	43	14	-	-	-	-	-	-	-	-
immatures without hair chaetae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lumbriculidae															
Lumbriculus	-	-	-	-	-	-	-	-	-	-	-	29	-	29	-
LEECHES															
Cl. Hirudinea															
F. Erpobdellidae															
immature	-	-	-	-	-	-	-	-	-	-	-	29	-	-	-
F. Glossiphoniidae															
Gloiobdella elongata	-	-	-	-	-	29	-	14	29	58	58	-	-	-	-
Helobdella stagnalis	-	-	-	-	-	-	-	14	-	14	-	-	14	-	29
ARTHROPODS															
P. Arthropoda															
MITES															
Cl. Arachnida															
Subcl. Acari	-	14	14	43	14	-	29	-	14	14	290	29	174	145	58
HARPACTICOIDS															
O. Harpacticoida	-	-	-	-	-	-	-	-	-	-	58	29	-	29	29
SEED SHRIMPS															
Cl. Ostracoda	-	-	-	-	-	43	72	-	-	14	58	-	-	-	-
WATER SCUDS															
O. Amphipoda															
F. Hyalellidae															
Hyalella	-	-	-	-	-	-	-	348	681	29	1275	812	1797	1333	1217
INSECTS															
Cl. Insecta															
BEETLES															
O. Coleoptera															
F. Chrysomelidae															
Donacia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Elmidae															
Dubiraphia larvae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAYFLIES															
O. Ephemeroptera															
F. Baetidae															
Callibaetis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Caenidae															
Caenis	-	-	-	-	-	29	-	217	232	58	-	-	174	58	116
F. Ephemeridae															
Hexagenia	72	72	58	87	29	-	-	-	-	14	-	-	-	-	-
F. Ephemerellidae															
Eurylophella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Heptageniidae															

Table E.5: Number of benthic invertebrates per m^2, Côté Gold Baseline Study, September 2013.

Station	NevL					SchLD					SchLS				
Replicate	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Stenacron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptophlebiidae															
Leptophlebia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immature	-	-	14	-	-	-	-	-	-	-	-	-	116	-	-
ALDERFLIES															
F. Sialidae															
Sialis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Odonata															
DAMSELFLIES															
F. Coenagrionidae															
Ischnura	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DRAGONFLIES															
F. Corduliidae															
Epitheca	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CADDISFLIES															
O. Trichoptera															
F. Dipseudopsidae															
Phylocentropus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydroptilidae															
Oxyethira	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae															
Ceraclea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oecetis	-	-	-	-	-	-	-	-	-	-	58	58	-	87	87
Triaenodes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Molannidae															
Molanna	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Phryganeidae															
Phryganea	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-
immature	-	-	-	-	-	-	-	-	-	-	-	-	**58**	-	-
F. Polycentropodidae															
Polycentropus	-	-	-	-	-	-	-	-	-	-	-	87	-	-	-
TRUE FLIES															
O. Diptera															
BITING-MIDGE															
F. Ceratopogonidae															
Bezzia	-	-	14	-	-	-	-	14	14	-	58	29	116	348	58
Dasyhelea	-	-	-	-	-	-	-	-	-	-	-	29	58	-	-
Mallochohelea	-	-	-	29	-	-	-	-	-	-	-	-	-	-	-
Serromyia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sphaeromias	58	-	-	-	-	29	14	-	-	-	-	29	-	-	-
PHANTOM MIDGE															
F. Chaoboridae															
Chaoborus albatus	-	-	-	-	-	87	116	159	101	58	290	-	58	145	203
Chaoborus flavicans	-	-	-	14	-	-	-	1	-	-	-	-	-	-	-
Chaoborus punctipennis	1014	130	217	101	72	87	130	319	275	145	-	29	-	87	116
immature	-	-	-	**29**	**14**	**29**	**14**	**43**	**14**	**101**	-	**87**	**58**	**29**	**29**
MIDGES															
F. Chironomidae															
chironomid pupae	-	-	-	-	-	-	-	-	**14**	-	-	**29**	-	-	-
S.F. Chironominae															
Chironomus	-	-	-	-	14	435	72	-	-	43	-	-	-	-	-
Cladopelma	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cladotanytarsus	-	-	-	-	-	-	-	-	-	-	-	29	348	-	-
Cryptochironomus	-	-	-	-	-	-	14	-	-	-	-	-	116	-	-
Dicrotendipes	-	-	-	-	-	-	-	377	87	14	-	87	116	-	29
Einfeldia	-	-	14	-	-	-	-	29	-	14	-	-	-	-	-
Glyptotendipes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lauterborniella	-	-	-	-	-	-	-	58	-	-	-	58	290	493	667
Micropsectra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microtendipes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pagastiella	-	-	-	-	-	-	-	-	-	-	-	116	290	-	-
Paralauterborniella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum halterale	-	-	-	-	-	-	-	159	159	-	3826	2812	406	203	145
Polypedilum nubeculosum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum trigonus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pseudochironomus	-	-	-	-	-	-	-	-	-	-	-	145	-	174	-
Stenochironomus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus	-	-	-	-	-	14	87	580	768	14	1739	1304	8290	1507	1536
Tribelos	-	-	-	-	-	-	-	87	87	-	-	-	-	-	58
Xenochironomus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zavreliella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladiinae															
Cricotopus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table E.5: Number of benthic invertebrates per m^2, Côté Gold Baseline Study, September 2013.

Station	NevL					SchLD					SchLS				
Replicate	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Epoicocladius	-	-	14	-	-	-	-	-	-	-	-	-	-	-	-
Psectrocladius (Monopsectrocladius)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zalutschia	58	29	29	130	43	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae															
Ablabesmyia	29	14	-	29	14	-	-	-	-	-	-	-	-	-	-
Clinotanypus	-	29	14	29	14	-	-	-	-	-	-	-	-	-	-
Guttipelopia	-	-	-	-	-	-	-	-	-	-	406	232	116	29	29
Procladius	116	-	14	-	43	145	72	319	174	145	116	58	348	232	232
Tanypus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thienemannimyia complex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tabanidae															
Chrysops	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tipulidae															
Rhabdomastix	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOLLUSCS															
P. Mollusca															
SNAILS															
Cl. Gastropoda															
F. Ancylidae															
Ferrissia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola	-	-	-	-	-	-	-	319	652	-	580	174	-	-	174
F. Physidae															
Physella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata tricarinata	-	-	-	-	-	14	-	-	-	-	58	145	-	116	58
Valvata	-	-	-	-	14	-	-	14	14	-	-	-	58	**29**	-
CLAMS															
Cl. Bivalvia															
F. Sphaeriidae															
Cyclocalyx	29	217	377	174	435	-	87	420	232	145	696	261	348	377	203
Sphaerium (Amesoda) simile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sphaerium (Musculium) partumeium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sphaerium (Musculium) immature	-	58	-	72	-	-	-	-	-	-	-	-	-	-	-
F. Unionidae															
Pyganodon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS	1,377	565	797	739	710	986	725	3,508	3,551	913	9,681	6,783	13,362	5,449	5,072
TOTAL NUMBER OF TAXA [a]	7	8	12	10	10	11	11	19	15	16	17	24	20	17	19

[a] Bold entries excluded from taxa count

Table E.5: Number of benthic invertebrates per m^2, Côté Gold Baseline Study, September 2013.

Station	UnL1					UnL2					UnL3				
Replicate	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
FLATWORMS															
P. Platyhelminthes															
Cl. Turbellaria	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Tricladida	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROUNDWORMS															
P. Nemata	43	43	29	145	58	-	-	-	-	-	-	14	-	-	14
ANNELIDS															
P. Annelida															
WORMS															
Cl. Oligochaeta															
F. Naididae															
S.F. Naidinae															
Chaetogaster diaphanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dero digitata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nais variabilis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ripistes parasita	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specaria josinae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vejdovskyella comata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tubificinae															
Aulodrilus americanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aulodrilus limnobius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aulodrilus pigueti	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ilyodrilus templetoni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limnodrilus hoffmeisteri	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limnodrilus udekemianus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immatures with hair chaetae	-	-	-	-	-	-	-	-	58	-	-	-	-	-	-
immatures without hair chaetae	14	-	-	-	-	-	14	14	-	14	-	101	43	-	-
F. Lumbriculidae															
Lumbriculus	-	14	-	-	-	-	-	-	-	-	-	-	-	-	-
LEECHES															
Cl. Hirudinea															
F. Erpobdellidae															
immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossiphoniidae															
Gloiobdella elongata	-	14	-	-	-	-	-	-	-	-	-	-	-	-	-
Helobdella stagnalis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ARTHROPODS															
P. Arthropoda															
MITES															
Cl. Arachnida															
Subcl. Acari	58	-	-	-	58	-	14	-	-	14	-	-	-	-	-
HARPACTICOIDS															
O. Harpacticoida	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEED SHRIMPS															
Cl. Ostracoda	29	-	29	58	29	-	-	-	-	-	-	-	-	-	-
WATER SCUDS															
O. Amphipoda															
F. Hyalellidae															
Hyalella	14	-	-	232	725	14	-	-	-	-	-	-	-	-	-
INSECTS															
Cl. Insecta															
BEETLES															
O. Coleoptera															
F. Chrysomelidae															
Donacia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Elmidae															
Dubiraphia larvae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAYFLIES															
O. Ephemeroptera															
F. Baetidae															
Callibaetis	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Caenidae															
Caenis	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ephemeridae															
Hexagenia	-	14	304	-	29	-	29	-	130	58	-	-	-	-	-
F. Ephemerellidae															
Eurylophella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Heptageniidae															

Table E.5: Number of benthic invertebrates per m^2, Côté Gold Baseline Study, September 2013.

Station	UnL1					UnL2					UnL3				
Replicate	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Stenacron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptophlebiidae															
Leptophlebia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immature	14	-	-	-	58	-	-	-	-	-	-	-	-	-	-
ALDERFLIES															
F. Sialidae															
Sialis	-	-	-	-	-	43	14	14	-	29	-	-	-	-	-
O. Odonata															
DAMSELFLIES															
F. Coenagrionidae															
Ischnura	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
immature	-	14	-	29	29	-	-	-	-	-	-	-	-	-	-
DRAGONFLIES															
F. Corduliidae															
Epitheca	-	14	14	14	-	-	-	-	-	-	-	-	-	-	-
CADDISFLIES															
O. Trichoptera															
F. Dipseudopsidae															
Phylocentropus	-	43	29	87	29	14	-	-	-	-	-	-	-	-	-
F. Hydroptilidae															
Oxyethira	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae															
Ceraclea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oecetis	-	-	-	-	29	-	-	-	-	-	-	-	-	-	-
Triaenodes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Molannidae															
Molanna	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Phryganeidae															
Phryganea	-	-	14	-	-	-	-	-	-	-	-	-	-	-	-
immature	-	14	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Polycentropodidae															
Polycentropus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRUE FLIES															
O. Diptera															
BITING-MIDGE															
F. Ceratopogonidae															
Bezzia	-	72	43	87	-	14	-	-	-	-	-	-	-	-	-
Dasyhelea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mallochohelea	14	14	43	58	58	29	-	-	-	-	-	-	-	-	-
Serromyia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sphaeromias	-	-	-	-	-	-	29	58	-	-	-	-	-	-	-
PHANTOM MIDGE															
F. Chaoboridae															
Chaoborus albatus	14	14	14	-	29	-	-	-	-	-	-	-	14	-	-
Chaoborus flavicans	-	-	-	-	-	29	-	1406	-	14	261	275	681	507	957
Chaoborus punctipennis	29	-	43	-	-	449	72	174	174	101	464	478	580	435	362
immature	-	**29**	-	-	-	-	-	**14**	**58**	**14**	-	-	-	-	-
MIDGES															
F. Chironomidae															
chironomid pupae	-	-	-	-	**58**	-	-	-	-	-	-	-	-	-	-
S.F. Chironominae															
Chironomus	-	-	-	-	-	14	-	-	-	14	-	72	72	290	43
Cladopelma	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cladotanytarsus	-	14	-	-	87	-	-	-	-	-	-	-	-	-	-
Cryptochironomus	29	-	29	58	87	-	-	14	-	-	-	-	-	-	-
Dicrotendipes	-	-	-	29	145	-	-	-	-	-	-	-	-	-	-
Einfeldia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Glyptotendipes	14	43	14	29	145	14	-	-	-	-	-	-	-	-	-
Lauterborniella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Micropsectra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microtendipes	-	14	14	261	290	-	-	-	-	-	-	-	-	-	-
Pagastiella	-	-	29	87	232	-	-	-	-	-	-	-	-	-	-
Paralauterborniella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum halterale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum nubeculosum	-	87	-	1797	203	-	-	-	-	-	-	-	-	-	-
Polypedilum trigonus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pseudochironomus	58	87	14	145	261	-	-	-	-	-	-	-	-	-	-
Stenochironomus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus	-	-	14	116	203	-	-	-	-	-	-	-	-	-	-
Tribelos	-	-	-	-	29	-	-	-	-	-	-	-	-	-	-
Xenochironomus	-	-	-	-	29	-	-	-	-	-	-	-	-	-	-
Zavreliella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladiinae															
Cricotopus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table E.5: Number of benthic invertebrates per m^2, Côté Gold Baseline Study, September 2013.

Station	UnL1					UnL2					UnL3				
Replicate	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Epoicocladius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Psectrocladius (Monopsectrocladius)	-	14	-	-	29	-	-	-	-	-	-	-	-	-	-
Zalutschia	-	-	-	-	-	14	377	348	290	130	3652	2014	1029	2449	768
S.F. Tanypodinae															
Ablabesmyia	-	-	-	-	-	-	-	-	-	14	-	-	-	-	-
Clinotanypus	29	87	58	174	145	-	-	-	-	-	-	-	-	-	-
Guttipelopia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius	87	14	246	87	174	130	58	29	58	87	29	-	-	14	-
Tanypus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thienemannimyia complex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tabanidae															
Chrysops	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tipulidae															
Rhabdomastix	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOLLUSCS															
P. Mollusca															
SNAILS															
Cl. Gastropoda															
F. Ancylidae															
Ferrissia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola	232	14	14	261	203	-	-	-	-	-	-	-	-	-	-
F. Physidae															
Physella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus	-	145	-	-	116	-	-	-	-	-	-	-	-	-	-
immature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata tricarinata	-	-	-	29	-	-	-	-	-	-	-	-	-	-	-
Valvata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CLAMS															
Cl. Bivalvia															
F. Sphaeriidae															
Cyclocalyx	29	58	14	348	203	217	-	-	58	72	-	-	-	-	-
Sphaerium (Amesoda) simile	-	-	43	-	-	-	-	-	-	-	-	-	-	-	-
Sphaerium (Musculium) partumeium	-	-	14	-	-	-	-	-	-	-	-	-	-	-	-
Sphaerium (Musculium) immature	14	-	**116**	145	145	-	-	-	-	-	-	-	-	-	-
F. Unionidae															
Pyganodon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS	754	884	1,188	4,275	3,913	986	609	2,072	826	565	4,406	2,957	2,420	3,696	2,145
TOTAL NUMBER OF TAXA [a]	19	22	22	22	29	12	8	8	6	11	4	6	6	5	5

[a] Bold entries excluded from taxa count

Table E.5: Number of benthic invertebrates per m^2, Côté Gold Baseline Study, September 2013.

Station	UTDL					WeeL				
Replicate	1	2	3	4	5	1	2	3	4	5
FLATWORMS										
P. Platyhelminthes										
Cl. Turbellaria	14	-	-	-	-	-	-	-	-	-
O. Tricladida	-	-	-	-	-	-	-	-	-	-
ROUNDWORMS										
P. Nemata	43	-	58	-	-	29	14	14	-	29
ANNELIDS										
P. Annelida										
WORMS										
Cl. Oligochaeta										
F. Naididae										
S.F. Naidinae										
Chaetogaster diaphanus	-	-	-	-	-	-	14	-	-	-
Dero digitata	-	87	-	-	-	116	101	145	-	14
Nais variabilis	-	-	-	-	-	-	-	-	-	-
Ripistes parasita	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata	-	-	-	-	-	-	-	43	-	-
Specaria josinae	14	-	-	-	-	-	-	-	-	-
Vejdovskyella comata	-	-	-	-	-	-	-	-	-	-
S.F. Tubificinae										
Aulodrilus americanus	-	-	14	-	-	-	-	-	-	14
Aulodrilus limnobius	-	-	-	-	-	-	-	87	-	-
Aulodrilus pigueti	-	-	-	-	-	-	-	-	-	-
Ilyodrilus templetoni	-	-	-	-	-	-	-	-	-	-
Limnodrilus hoffmeisteri	-	-	-	-	-	-	-	-	-	-
Limnodrilus udekemianus	-	-	-	-	-	-	-	-	-	-
immatures with hair chaetae	-	-	43	29	72	29	72	101	-	-
immatures without hair chaetae	29	319	58	87	58	-	-	-	-	14
F. Lumbriculidae										
Lumbriculus	-	-	-	-	-	-	-	-	-	-
LEECHES										
Cl. Hirudinea										
F. Erpobdellidae										
immature	-	-	-	-	-	-	-	-	-	-
F. Glossiphoniidae										
Gloiobdella elongata	-	-	-	-	-	-	-	-	-	-
Helobdella stagnalis	-	-	-	-	-	-	-	-	-	-
ARTHROPODS										
P. Arthropoda										
MITES										
Cl. Arachnida										
Subcl. Acari	58	29	43	29	14	-	130	-	-	29
HARPACTICOIDS										
O. Harpacticoida	-	-	-	-	-	-	-	-	-	-
SEED SHRIMPS										
Cl. Ostracoda	-	-	-	-	-	-	-	-	-	-
WATER SCUDS										
O. Amphipoda										
F. Hyalellidae										
Hyalella	-	-	-	-	-	-	-	-	-	-
INSECTS										
Cl. Insecta										
BEETLES										
O. Coleoptera										
F. Chrysomelidae										
Donacia	-	-	-	-	-	-	-	-	-	-
F. Elmidae										
Dubiraphia larvae	-	-	-	-	-	-	-	-	-	-
MAYFLIES										
O. Ephemeroptera										
F. Baetidae										
Callibaetis	-	-	-	-	-	-	-	-	-	-
F. Caenidae										
Caenis	-	-	14	-	-	-	-	130	174	-
F. Ephemeridae										
Hexagenia	14	-	29	72	58	-	-	-	-	-
F. Ephemerellidae										
Eurylophella	-	-	-	-	-	-	-	-	-	-
F. Heptageniidae										

Table E.5: Number of benthic invertebrates per m^2, Côté Gold Baseline Study, September 2013.

Station	UTDL					WeeL				
Replicate	1	2	3	4	5	1	2	3	4	5
Stenacron	-	-	-	-	-	-	-	-	-	-
F. Leptophlebiidae										
Leptophlebia	-	-	-	-	-	-	-	-	-	-
immature	-	-	-	-	-	-	-	-	-	-
ALDERFLIES										
F. Sialidae										
Sialis	-	-	43	-	-	-	-	-	130	-
O. Odonata										
DAMSELFLIES										
F. Coenagrionidae										
Ischnura	-	-	-	-	-	-	-	-	-	-
immature	-	-	-	-	-	-	-	-	-	-
DRAGONFLIES										
F. Corduliidae										
Epitheca	-	-	-	-	14	-	-	-	-	14
CADDISFLIES										
O. Trichoptera										
F. Dipseudopsidae										
Phylocentropus	-	-	29	-	-	-	-	-	72	-
F. Hydroptilidae										
Oxyethira	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae										
Ceraclea	-	-	-	-	-	-	-	-	-	-
Oecetis	-	-	-	-	-	-	-	-	-	-
Triaenodes	-	-	-	-	-	-	-	-	-	-
F. Molannidae										
Molanna	-	-	-	-	-	-	-	-	58	-
F. Phryganeidae										
Phryganea	-	-	14	-	-	-	-	-	-	-
immature	-	-	-	-	-	-	-	-	-	-
F. Polycentropodidae										
Polycentropus	-	-	-	-	-	-	-	-	-	-
TRUE FLIES										
O. Diptera										
BITING-MIDGE										
F. Ceratopogonidae										
Bezzia	-	-	-	-	-	-	-	-	-	-
Dasyhelea	-	-	-	-	-	-	-	-	-	-
Mallochohelea	-	-	14	14	-	-	-	-	348	-
Serromyia	-	-	-	-	-	-	-	-	-	-
Sphaeromias	-	145	14	14	-	-	-	-	116	-
PHANTOM MIDGE										
F. Chaoboridae										
Chaoborus albatus	14	43	14	-	-	-	-	-	58	14
Chaoborus flavicans	29	14	-	14	14	-	43	-	-	145
Chaoborus punctipennis	797	1174	275	174	594	58	203	116	116	217
immature	**29**	**130**	-	-	**14**	**29**	**14**	**29**	-	**29**
MIDGES										
F. Chironomidae										
chironomid pupae	-	-	-	**14**	-	-	-	-	-	**14**
S.F. Chironominae										
Chironomus	29	-	14	14	14	-	58	29	14	-
Cladopelma	-	-	-	-	-	-	-	-	-	-
Cladotanytarsus	14	-	-	-	-	-	29	-	116	-
Cryptochironomus	14	-	14	14	-	-	-	-	-	29
Dicrotendipes	-	-	14	-	-	-	-	29	58	-
Einfeldia	-	-	-	-	-	-	101	72	-	-
Glyptotendipes	14	-	-	-	-	-	-	-	-	-
Lauterborniella	-	-	-	-	-	-	-	-	-	-
Micropsectra	-	-	-	-	-	-	-	-	-	-
Microtendipes	-	-	29	-	-	-	-	43	116	-
Pagastiella	-	-	-	-	-	-	-	-	-	-
Paralauterborniella	-	-	-	-	-	-	-	-	-	-
Polypedilum halterale	-	-	-	-	-	-	-	-	-	-
Polypedilum nubeculosum	-	-	-	-	-	58	-	188	116	-
Polypedilum trigonus	-	-	-	-	-	-	-	-	-	-
Polypedilum	-	-	-	-	-	-	-	-	-	-
Pseudochironomus	-	-	-	-	-	-	14	-	232	-
Stenochironomus	-	-	-	-	-	-	-	-	-	-
Tanytarsus	130	14	72	43	-	29	-	145	290	217
Tribelos	14	-	-	14	-	-	-	-	174	-
Xenochironomus	-	-	-	-	-	-	-	-	-	-
Zavreliella	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladiinae										
Cricotopus	-	-	-	-	-	-	-	-	-	-

Table E.5: Number of benthic invertebrates per m², Côté Gold Baseline Study, September 2013.

Station	UTDL					WeeL				
Replicate	1	2	3	4	5	1	2	3	4	5
Epoicocladius	-	-	-	14	-	-	-	-	-	-
Psectrocladius (Monopsectrocladius)	-	-	-	-	-	-	-	-	-	-
Zalutschia	159	580	188	145	116	-	-	14	-	-
S.F. Tanypodinae										
Ablabesmyia	-	-	-	14	-	-	-	-	58	-
Clinotanypus	72	-	72	58	-	-	-	-	-	14
Guttipelopia	-	-	-	-	-	-	-	-	-	-
Procladius	420	-	203	159	-	290	145	217	1565	290
Tanypus	-	-	-	-	-	-	-	-	-	-
Thienemannimyia complex	-	-	-	-	-	-	-	-	-	-
F. Tabanidae										
Chrysops	-	-	-	-	-	-	-	-	-	-
F. Tipulidae										
Rhabdomastix	-	-	-	-	-	-	-	-	-	-
<u>MOLLUSCS</u>										
P. Mollusca										
SNAILS										
Cl. Gastropoda										
F. Ancylidae										
Ferrissia	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae										
Amnicola	-	-	-	-	-	-	43	-	-	-
F. Physidae										
Physella	-	-	-	-	-	-	-	-	-	-
F. Planorbidae										
Gyraulus	-	-	-	-	-	-	14	-	-	-
immature	-	-	-	-	-	-	-	-	-	-
F. Valvatidae										
Valvata tricarinata	29	-	29	-	-	-	-	58	-	14
Valvata	-	-	-	-	-	-	-	-	-	-
CLAMS										
Cl. Bivalvia										
F. Sphaeriidae										
Cyclocalyx	812	87	536	275	116	58	58	464	116	217
Sphaerium (Amesoda) simile	-	-	-	-	-	-	-	-	-	-
Sphaerium (Musculium) partumeium	-	-	-	-	-	-	-	-	-	-
Sphaerium (Musculium) immature	43	-	188	58	-	58	-	-	-	14
F. Unionidae										
Pyganodon	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS	2,797	2,623	2,029	1,261	1,087	754	1,058	1,928	3,928	1,333
TOTAL NUMBER OF TAXA [a]	21	10	25	19	10	9	15	17	19	16

[a] Bold entries excluded from taxa count

Table E.6: Benthic metrics for deep benthic sampling stations, Côté Gold, 2013.

Lake	Station	Density (#/m^2)	Richness (# taxa)	Evenness (Simpson's)	Oligocheata (#/m^2)	Chironomidae (#/m^2)	Chaoboridae (#/m^2)	Diptera* (#/m^2)	Ephemeroptera (#/m^2)	Trichoptera (#/m^2)	Gastropoda (#/m^2)	Bivalvia (#/m^2)	Hirudinea (#/m^2)	Hyalella (#/m^2)	Sialis (#/m^2)	Hydrachinidia (#/m^2)	Harpacticoida (#/m^2)	Ostracoda (#/m^2)	Nemata (#/m^2)
Clam Lake (ClaL)	1	1,290	19	0.1962	0.0	318.8	43.5	29.0	29.0	14.5	0.0	623.2	0.0	115.9	14.5	14.5	0.0	0.0	87.0
	2	2,406	13	0.3507	144.9	637.7	29.0	0.0	0.0	29.0	29.0	869.6	0.0	579.7	29.0	0.0	0.0	0.0	58.0
	3	6,435	18	0.3138	231.9	5,043.5	0.0	289.9	0.0	58.0	173.9	347.8	0.0	173.9	58.0	0.0	0.0	0.0	58.0
	4	2,986	18	0.3970	173.9	2,029.0	0.0	231.9	173.9	14.5	0.0	115.9	0.0	173.9	58.0	0.0	0.0	0.0	0.0
	5	565	12	0.5841	29.0	217.4	144.9	29.0	29.0	14.5	0.0	14.5	0.0	29.0	43.5	14.5	0.0	0.0	0.0
Weeduck Lake (WeeL)	1	754	9	0.5523	144.9	376.8	87.0	0.0	0.0	0.0	0.0	115.9	0.0	0.0	0.0	0.0	0.0	0.0	29.0
	2	1,058	15	0.6355	188.4	347.8	260.9	0.0	0.0	0.0	58.0	58.0	0.0	0.0	0.0	130.4	0.0	0.0	14.5
	3	1,928	16	0.5755	376.8	739.1	144.9	0.0	130.4	0.0	58.0	463.8	0.0	0.0	0.0	0.0	0.0	0.0	14.5
	4	3,928	19	0.2813	0.0	2,739.1	173.9	463.8	173.9	130.4	0.0	115.9	0.0	0.0	130.4	0.0	0.0	0.0	0.0
	5	1,333	15	0.4702	43.5	565.2	405.8	0.0	0.0	0.0	14.5	231.9	0.0	0.0	0.0	29.0	0.0	0.0	29.0
Upper Three Duck Lake (UTDL)	1	2,797	21	0.2433	43.5	869.6	869.6	0.0	14.5	0.0	29.0	855.1	0.0	0.0	0.0	58.0	0.0	0.0	43.5
	2	2,623	10	0.3676	405.8	594.2	1,362.3	144.9	0.0	0.0	0.0	87.0	0.0	0.0	0.0	29.0	0.0	0.0	0.0
	3	2,029	23	0.3554	115.9	608.7	289.9	29.0	43.5	43.5	29.0	724.6	0.0	0.0	43.5	43.5	0.0	0.0	58.0
	4	1,261	18	0.4976	115.9	492.8	188.4	29.0	72.5	0.0	0.0	333.3	0.0	0.0	0.0	29.0	0.0	0.0	0.0
	5	1,087	9	0.3340	130.4	130.4	623.2	0.0	58.0	0.0	0.0	115.9	0.0	0.0	0.0	14.5	0.0	0.0	0.0
Middle Three Duck Lake (MTDL)	1	3,536	15	0.1561	72.5	956.5	2,260.9	58.0	14.5	0.0	0.0	144.9	0.0	0.0	0.0	14.5	0.0	14.5	0.0
	2	2,928	12	0.3237	0.0	971.0	1,463.8	0.0	159.4	0.0	14.5	231.9	0.0	0.0	43.5	43.5	0.0	0.0	0.0
	3	2,449	12	0.1827	58.0	1,666.7	652.2	0.0	14.5	0.0	0.0	43.5	0.0	0.0	0.0	0.0	0.0	0.0	14.5
	4	1,986	11	0.2441	14.5	492.8	1,246.4	0.0	14.5	58.0	0.0	130.4	0.0	0.0	0.0	29.0	0.0	0.0	0.0
	5	1,464	15	0.4739	14.5	811.6	130.4	0.0	115.9	14.5	0.0	318.8	0.0	0.0	0.0	29.0	0.0	0.0	29.0
Lower Three Duck Lake (LTDL)	1	2,507	8	0.3341	0.0	1,043.5	1,318.8	101.4	14.5	0.0	0.0	29.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2	3,362	10	0.2201	0.0	2,130.4	1,072.5	29.0	14.5	0.0	0.0	115.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3	1,681	12	0.2629	29.0	637.7	826.1	0.0	58.0	0.0	0.0	101.4	0.0	0.0	0.0	0.0	0.0	0.0	29.0
	4	4,609	13	0.1716	289.9	2,956.5	1,130.4	14.5	0.0	0.0	0.0	173.9	0.0	0.0	0.0	0.0	0.0	0.0	43.5
	5	3,379	5	0.4394	16.5	2,072.5	1,217.4	0.0	0.0	0.0	0.0	72.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unnamed Lake #3 (UnL3)	1	4,406	4	0.3562	0.0	3,681.2	724.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2	2,957	4	0.4991	101.4	2,087.0	753.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.5
	3	2,420	6	0.5231	43.5	1,101.4	1,275.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	4	3,696	5	0.4183	0.0	2,753.6	942.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	5	2,145	5	0.5616	0.0	811.6	1,318.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.5
Schist Lake Deep Station (SchLD)	1	986	11	0.3794	43.5	594.2	202.9	29.0	29.0	0.0	14.5	0.0	29.0	0.0	0.0	0.0	0.0	43.5	0.0
	2	725	11	0.7576	14.5	246.4	260.9	14.5	0.0	0.0	0.0	87.0	0.0	0.0	0.0	29.0	0.0	72.5	0.0
	3	3,508	19	0.5428	0.0	1,608.7	522.7	14.5	217.4	0.0	333.3	420.3	29.0	347.8	0.0	0.0	0.0	0.0	14.5
	4	3,551	15	0.4815	0.0	1,289.9	391.3	14.5	231.9	0.0	666.7	231.9	29.0	681.2	0.0	14.5	0.0	0.0	0.0
	5	913	16	0.5892	0.0	231.9	304.3	0.0	72.5	0.0	0.0	144.9	72.5	29.0	0.0	14.5	0.0	14.5	29.0
Basgverd Lake Main Basin (BagLM)	1	478	11	0.6735	0.0	159.4	101.4	29.0	43.5	0.0	14.5	0.0	0.0	0.0	0.0	29.0	101.4	0.0	0.0
	2	1,000	17	0.2732	0.0	275.4	188.4	43.5	29.0	0.0	0.0	14.5	0.0	0.0	14.5	14.5	405.8	0.0	0.0
	3	1,043	8	0.5625	0.0	347.8	159.4	58.0	43.5	0.0	0.0	0.0	0.0	0.0	29.0	0.0	405.8	0.0	0.0
	4	696	11	0.5884	0.0	260.9	217.4	72.5	43.5	0.0	0.0	0.0	0.0	0.0	0.0	43.5	58.0	0.0	0.0
	5	1,667	14	0.1613	0.0	130.4	246.4	43.5	130.4	0.0	14.5	14.5	0.0	0.0	0.0	0.0	1,087.0	0.0	0.0
Unnamed Lake #2 (UnL2)	1	986	11	0.3259	0.0	173.9	478.3	43.5	0.0	14.5	0.0	217.4	0.0	14.5	43.5	0.0	0.0	0.0	0.0
	2	609	8	0.3029	14.5	434.8	72.5	29.0	29.0	0.0	0.0	0.0	0.0	0.0	14.5	14.5	0.0	0.0	0.0
	3	2,072	8	0.2518	14.5	391.3	1,594.2	58.0	0.0	0.0	0.0	0.0	0.0	0.0	14.5	0.0	0.0	0.0	0.0
	4	826	6	0.7859	58.0	347.8	231.9	0.0	130.4	0.0	0.0	58.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	5	565	11	0.6372	14.5	246.4	130.4	0.0	58.0	0.0	0.0	72.5	0.0	0.0	29.0	14.5	0.0	0.0	0.0
Neville Lake (NevL)	1	1,377	7	0.2564	0.0	202.9	1,014.5	58.0	72.5	0.0	0.0	29.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2	565	8	0.5326	0.0	72.5	130.4	0.0	72.5	0.0	0.0	275.4	0.0	0.0	0.0	14.5	0.0	0.0	0.0
	3	797	12	0.2713	0.0	87.0	217.4	14.5	72.5	0.0	0.0	376.8	0.0	0.0	0.0	14.5	0.0	0.0	14.5
	4	739	10	0.7205	0.0	188.4	144.9	29.0	87.0	0.0	0.0	246.4	0.0	0.0	0.0	43.5	0.0	0.0	0.0
	5	710	10	0.2519	0.0	130.4	87.0	0.0	29.0	0.0	14.5	434.8	0.0	0.0	0.0	14.5	0.0	0.0	0.0

* Diptera excludes Chironomidae and Chaoboridae.

Table E.7: Benthic metrics for shallow benthic sampling stations, Côté Gold, 2013.

Lake	Station	Density (#/m²)	Richness (# taxa)	Evenness (Simpson's)	Oligocheata (#/m²)	Chironomidae (#/m²)	Chaoboridae (#/m²)	Diptera* (#/m²)	Ephemeroptera (#/m²)	Trichoptera (#/m²)	Gastropoda (#/m²)	Bivalvia (#/m²)	Hirudinea (#/m²)	Hyalella (#/m²)	Sialis (#/m²)	Hydrachinidia (#/m²)	Harpacticoida (#/m²)	Ostracoda (#/m²)	Nemata (#/m²)
Chester Lake (CheL)	1	1,087	9	0.3837	173.9	115.9	101.4	0.0	550.7	58.0	0.0	58.0	0.0	0.0	29.0	0.0	0.0	0.0	0.0
	2	1,290	10	0.3728	0.0	173.9	318.8	115.9	623.2	29.0	0.0	29.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3	1,116	11	0.5704	0.0	347.8	173.9	347.8	115.9	14.5	0.0	58.0	0.0	58.0	0.0	0.0	0.0	0.0	0.0
	4	855	7	0.7662	0.0	115.9	231.9	115.9	275.4	0.0	58.0	58.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	5	3,203	15	0.4177	0.0	1,217.4	1,101.4	347.8	333.3	72.5	0.0	14.5	0.0	0.0	0.0	58.0	0.0	0.0	58.0
Delaney Lake (DelL)	1	1,420	7	0.4771	0.0	391.3	666.7	0.0	0.0	0.0	0.0	347.8	0.0	0.0	14.5	0.0	0.0	0.0	0.0
	2	1,217	9	0.4122	43.5	289.9	304.3	29.0	29.0	0.0	0.0	492.8	0.0	0.0	0.0	14.5	0.0	0.0	14.5
	3	1,754	8	0.2804	14.5	130.4	1,072.5	14.5	29.0	0.0	0.0	492.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	4	1,362	7	0.4141	0.0	173.9	623.2	0.0	14.5	0.0	0.0	550.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	5	406	9	0.3854	0.0	159.4	202.9	14.5	0.0	0.0	14.5	14.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Schist Lake Shallow Station (SchLS)	1	9,681	17	0.2692	58.0	6,087.0	289.9	58.0	0.0	58.0	637.7	695.7	58.0	1,275.4	0.0	289.9	58.0	58.0	58.0
	2	6,783	24	0.1823	87.0	4,869.6	115.9	87.0	0.0	144.9	318.8	260.9	29.0	811.6	0.0	29.0	29.0	0.0	0.0
	3	13,362	20	0.1226	0.0	10,318.8	115.9	173.9	289.9	72.5	58.0	347.8	14.5	1,797.1	0.0	173.9	0.0	0.0	0.0
	4	5,449	17	0.3671	29.0	2,637.7	260.9	347.8	58.0	87.0	144.9	376.8	0.0	1,333.3	0.0	144.9	29.0	0.0	0.0
	5	5,072	19	0.2992	0.0	2,695.7	347.8	58.0	115.9	87.0	231.9	202.9	29.0	1,217.4	0.0	58.0	29.0	0.0	0.0
Bagsverd Lake South Arm (BagLS)	1	2,319	15	0.3175	0.0	347.8	289.9	115.9	0.0	115.9	1,159.4	58.0	58.0	0.0	0.0	58.0	58.0	0.0	0.0
	2	783	11	0.5865	0.0	202.9	376.8	0.0	14.5	0.0	0.0	29.0	29.0	72.5	0.0	58.0	0.0	0.0	0.0
	3	362	10	0.6579	0.0	101.4	144.9	43.5	29.0	0.0	14.5	0.0	0.0	0.0	0.0	29.0	0.0	0.0	0.0
	4	1,652	10	0.4635	0.0	434.8	898.6	29.0	87.0	0.0	0.0	173.9	29.0	0.0	0.0	0.0	0.0	0.0	0.0
	5	3,638	18	0.3302	0.0	2,333.3	347.8	0.0	43.5	58.0	43.5	333.3	0.0	405.8	0.0	43.5	0.0	0.0	29.0
Unnamed Lake #1 (UnL1)	1	754	19	0.3931	14.5	217.4	43.5	14.5	43.5	0.0	231.9	43.5	0.0	14.5	0.0	58.0	0.0	29.0	43.5
	2	884	22	0.5773	14.5	362.3	43.5	87.0	14.5	58.0	159.4	58.0	14.5	0.0	0.0	0.0	0.0	0.0	43.5
	3	1,188	23	0.3337	0.0	420.3	58.0	87.0	304.3	43.5	14.5	188.4	0.0	0.0	0.0	0.0	0.0	29.0	29.0
	4	4,275	22	0.2251	0.0	2,782.6	0.0	144.9	0.0	87.0	289.9	492.8	0.0	231.9	0.0	0.0	0.0	58.0	144.9
	5	3,913	29	0.4968	0.0	2,115.9	29.0	58.0	87.0	58.0	318.8	347.8	0.0	724.6	0.0	58.0	0.0	29.0	58.0

* Diptera excludes Chironomidae and Chaoboridae.

Table E.8: Benthic metrics for creek benthic sampling stations, Côté Gold, 2013.

Creek	Station ID	Station	Density (#/m^{2})	Richness (# taxa)	Evenness (Simpson's)	Oligocheata (#/m^2)	Chironomidae (#/m^2)	Chaoboridae (#/m^2)	Diptera* (#/m^2)	Ephemeroptera (#/m^2)	Trichoptera (#/m^2)	Gastropoda (#/m^2)	Bivalvia (#/m^2)	Hyalella (#/m^2)	Hydrachinidia (#/m^2)	Ostracoda (#/m^2)	Nemata (#/m^2)
Bagsverd Creek	BagC-1	1	8,130	26	0.4398	115.9	2,434.8	0.0	695.7	1,289.9	579.7	1,043.5	0.0	1,623.2	0.0	115.9	115.9
	BagC-2	2	4,783	20	0.6299	1,275.4	1,043.5	0.0	463.8	492.8	347.8	231.9	0.0	463.8	0.0	231.9	115.9
	BagC-3	3	7,188	12	0.6021	0.0	2,318.8	0.0	463.8	3,014.5	0.0	0.0	231.9	1,159.4	0.0	0.0	0.0
	BagC-4	4	10,667	15	0.6354	231.9	5,565.2	0.0	927.5	1,159.4	0.0	231.9	231.9	927.5	0.0	1,159.4	231.9
	BagC-5	5	9,739	20	0.6785	0.0	4,637.7	0.0	695.7	1,855.1	463.8	231.9	463.8	695.7	231.9	0.0	0.0
Errington Creek	ErrC-1	1	5,565	10	0.4664	0.0	1,623.2	2,782.6	115.9	0.0	0.0	579.7	0.0	0.0	231.9	0.0	0.0
	ErrC-2	2	2,551	4	0.9758	0.0	1,159.4	695.7	0.0	0.0	0.0	0.0	231.9	0.0	0.0	0.0	0.0
	ErrC-3	3	8,116	8	0.4598	0.0	7,188.4	0.0	0.0	231.9	0.0	231.9	0.0	0.0	463.8	0.0	0.0
	ErrC-4	4	7,884	12	0.6509	927.5	4,173.9	695.7	463.8	0.0	0.0	927.5	231.9	0.0	0.0	0.0	463.8
	ErrC-5	5	6,957	10	0.6081	0.0	2,782.6	1,159.4	0.0	0.0	0.0	2,087.0	695.7	0.0	231.9	0.0	0.0

* Diptera excludes Chironomidae and Chaoboridae.

Table E.9: Descriptive statistics of benthic metrics for deep sampling areas, Côté Gold, 2013.

Metric	Lake ID	n	Median	Mean	Standard Deviation	Standard Error	95% Confidence Interval for Mean		Minimum	Maximum
							Lower Bound	Upper Bound		
Density (#/m^2)	ClaL	5	2,405.8	2,736.2	2,272.4	1,016.3	-85.4	5,557.8	565.2	6,434.8
	WeeL	5	1,333.3	1,800.0	1,265.5	565.9	228.7	3,371.3	753.6	3,927.5
	UTDL	5	2,029.0	1,959.4	774.0	346.1	998.4	2,920.5	1,087.0	2,797.1
	MTDL	5	2,449.3	2,472.5	805.3	360.1	1,472.6	3,472.3	1,463.8	3,536.2
	LTDL	5	2,449.3	3,107.6	1,093.9	489.2	1,749.3	4,466.0	1,681.2	4,608.7
	UnL3	5	2,956.5	3,124.6	928.9	415.4	1,971.2	4,278.1	2,144.9	4,405.8
	SchLD	5	985.5	1,936.4	1,457.4	651.8	126.8	3,746.1	724.6	3,550.7
	BagLM	5	1,000.0	976.8	449.6	201.1	418.6	1,535.0	478.3	1,666.7
	UnL2	5	826.1	1,011.6	616.9	275.9	245.6	1,777.5	565.2	2,072.5
	NevL	5	739.1	837.7	313.3	140.1	448.7	1,226.6	565.2	1,376.8
Richness (# of taxa)	ClaL	5	18.0	16.0	3.2	1.4	12.0	20.0	12.0	19.0
	WeeL	5	15.0	14.8	3.6	1.6	10.3	19.3	9.0	19.0
	UTDL	5	18.0	16.2	6.4	2.9	8.3	24.1	9.0	23.0
	MTDL	5	12.0	13.0	1.9	0.8	10.7	15.3	11.0	15.0
	LTDL	5	12.0	9.6	3.2	1.4	5.6	13.6	5.0	13.0
	UnL3	5	5.0	4.8	0.8	0.4	3.8	5.8	4.0	6.0
	SchLD	5	15.0	14.4	3.4	1.5	10.1	18.7	11.0	19.0
	BagLM	5	11.0	12.2	3.4	1.5	8.0	16.4	8.0	17.0
	UnL2	5	8.0	8.8	2.2	1.0	6.1	11.5	6.0	11.0
	NevL	5	10.0	9.4	1.9	0.9	7.0	11.8	7.0	12.0
Evenness (Simpson's)	ClaL	5	0.4	0.4	0.1	0.1	0.2	0.5	0.2	0.6
	WeeL	5	0.6	0.5	0.1	0.1	0.3	0.7	0.3	0.6
	UTDL	5	0.4	0.4	0.1	0.0	0.2	0.5	0.2	0.5
	MTDL	5	0.2	0.3	0.1	0.1	0.1	0.4	0.2	0.5
	LTDL	5	0.2	0.3	0.1	0.0	0.2	0.4	0.2	0.4
	UnL3	5	0.5	0.5	0.1	0.0	0.4	0.6	0.4	0.6
	SchLD	5	0.5	0.6	0.1	0.1	0.4	0.7	0.4	0.8
	BagLM	5	0.6	0.5	0.2	0.1	0.2	0.7	0.2	0.7
	UnL2	5	0.3	0.5	0.2	0.1	0.2	0.8	0.3	0.8
	NevL	5	0.3	0.4	0.2	0.1	0.1	0.7	0.3	0.7
Oligocheata (#/m^2)	ClaL	5	144.9	115.9	98.3	44.0	-6.1	238.0	0.0	231.9
	WeeL	5	144.9	150.7	147.3	65.9	-32.2	333.6	0.0	376.8
	UTDL	5	115.9	162.3	140.3	62.7	-11.9	336.5	43.5	405.8
	MTDL	5	14.5	31.9	31.4	14.1	-7.1	70.9	0.0	72.5
	LTDL	5	14.5	67.1	125.1	56.0	-88.3	222.4	0.0	289.9
	UnL3	5	0.0	29.0	44.7	20.0	-26.5	84.5	0.0	101.4
	SchLD	5	0.0	11.6	18.9	8.5	-11.9	35.1	0.0	43.5
	BagLM	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UnL2	5	14.5	20.3	22.0	9.8	-7.0	47.6	0.0	58.0
	NevL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chironomidae (#/m^2)	ClaL	5	637.7	1,649.3	2,031.5	908.5	-873.2	4,171.8	217.4	5,043.5
	WeeL	5	565.2	953.6	1,010.5	451.9	-301.1	2,208.3	347.8	2,739.1
	UTDL	5	594.2	539.1	267.5	119.6	207.0	871.3	130.4	869.6
	MTDL	5	956.5	979.7	429.5	192.1	446.4	1,513.0	492.8	1,666.7
	LTDL	5	956.5	1,768.1	927.3	414.7	616.8	2,919.5	637.7	2,956.5
	UnL3	5	2,087.0	2,087.0	1,181.5	528.4	619.9	3,554.0	811.6	3,681.2
	SchLD	5	594.2	794.2	625.6	279.8	17.4	1,571.0	231.9	1,608.7
	BagLM	5	260.9	234.8	89.0	39.8	124.3	345.3	130.4	347.8
	UnL2	5	347.8	318.8	107.0	47.8	186.0	451.7	173.9	434.8
	NevL	5	130.4	136.2	58.5	26.2	63.6	208.9	72.5	202.9
Chaoboridae (#/m^2)	ClaL	5	29.0	43.5	59.8	26.7	-30.7	117.7	0.0	144.9
	WeeL	5	173.9	214.5	124.0	55.5	60.5	368.5	87.0	405.8
	UTDL	5	623.2	666.7	473.7	211.9	78.4	1,254.9	188.4	1,362.3
	MTDL	5	1,246.4	1,150.7	810.7	362.6	144.1	2,157.4	130.4	2,260.9
	LTDL	5	1,246.4	1,113.0	185.4	82.9	882.8	1,343.3	826.1	1,318.8
	UnL3	5	942.0	1,002.9	281.7	126.0	653.2	1,352.6	724.6	1,318.8
	SchLD	5	304.3	336.4	124.8	55.8	181.5	491.4	202.9	522.7
	BagLM	5	188.4	182.6	55.8	24.9	113.4	251.8	101.4	246.4
	UnL2	5	231.9	501.4	630.3	281.9	-281.1	1,284.0	72.5	1,594.2
	NevL	5	144.9	318.8	391.7	175.2	-167.5	805.2	87.0	1,014.5
Diptera* (#/m^2)	ClaL	5	29.0	115.9	134.4	60.1	-50.9	282.8	0.0	289.9
	WeeL	5	0.0	92.8	207.4	92.8	-164.8	350.3	0.0	463.8
	UTDL	5	29.0	40.6	60.1	26.9	-34.1	115.2	0.0	144.9
	MTDL	5	0.0	11.6	25.9	11.6	-20.6	43.8	0.0	58.0
	LTDL	5	0.0	29.0	42.3	18.9	-23.5	81.4	0.0	101.4
	UnL3	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SchLD	5	14.5	14.5	10.2	4.6	1.8	27.2	0.0	29.0
	BagLM	5	43.5	49.3	16.5	7.4	28.8	69.8	29.0	72.5
	UnL2	5	29.0	26.1	25.9	11.6	-6.1	58.3	0.0	58.0
	NevL	5	14.5	20.3	24.3	10.8	-9.8	50.4	0.0	58.0
Ephemeroptera (#/m^2)	ClaL	5	29.0	46.4	72.8	32.5	-44.0	136.7	0.0	173.9
	WeeL	5	0.0	60.9	84.8	37.9	-44.4	166.1	0.0	173.9
	UTDL	5	43.5	37.7	30.1	13.4	0.4	75.0	0.0	72.5
	MTDL	5	14.5	63.8	69.2	30.9	-22.2	149.7	14.5	159.4
	LTDL	5	14.5	17.4	23.8	10.6	-12.2	47.0	0.0	58.0
	UnL3	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SchLD	5	72.5	110.1	107.8	48.2	-23.7	244.0	0.0	231.9
	BagLM	5	43.5	58.0	41.0	18.3	7.1	108.9	29.0	130.4
	UnL2	5	29.0	43.5	54.2	24.3	-23.9	110.8	0.0	130.4
	NevL	5	72.5	66.7	22.0	9.8	39.4	94.0	29.0	87.0
Trichoptera (#/m^2)	ClaL	5	14.5	26.1	18.9	8.5	2.6	49.5	14.5	58.0
	WeeL	5	0.0	26.1	58.3	26.1	-46.3	98.5	0.0	130.4
	UTDL	5	0.0	8.7	19.4	8.7	-15.4	32.8	0.0	43.5
	MTDL	5	0.0	14.5	25.1	11.2	-16.7	45.7	0.0	58.0
	LTDL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UnL3	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SchLD	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	BagLM	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UnL2	5	0.0	2.9	6.5	2.9	-5.1	10.9	0.0	14.5
	NevL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table E.9: Descriptive statistics of benthic metrics for deep sampling areas, Côté Gold, 2013.

Metric	Lake ID	n	Median	Mean	Standard Deviation	Standard Error	95% Confidence Interval for Mean		Minimum	Maximum
							Lower Bound	Upper Bound		
Gastropoda (#/m^2)	ClaL	5	0.0	40.6	75.6	33.8	-53.3	134.4	0.0	173.9
	WeeL	5	14.5	26.1	29.7	13.3	-10.8	63.0	0.0	58.0
	UTDL	5	0.0	11.6	15.9	7.1	-8.1	31.3	0.0	29.0
	MTDL	5	0.0	2.9	6.5	2.9	-5.1	10.9	0.0	14.5
	LTDL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UnL3	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SchLD	5	14.5	202.9	295.8	132.3	-164.4	570.1	0.0	666.7
	BagLM	5	0.0	5.8	7.9	3.5	-4.1	15.7	0.0	14.5
	UnL2	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NevL	5	0.0	2.9	6.5	2.9	-5.1	10.9	0.0	14.5
Bivalvia (#/m^2)	ClaL	5	347.8	394.2	354.3	158.5	-45.7	834.1	14.5	869.6
	WeeL	5	115.9	197.1	161.9	72.4	-3.9	398.1	58.0	463.8
	UTDL	5	333.3	423.2	351.0	157.0	-12.7	859.1	87.0	855.1
	MTDL	5	144.9	173.9	105.0	47.0	43.5	304.3	43.5	318.8
	LTDL	5	144.9	98.6	53.6	24.0	31.9	165.2	29.0	173.9
	UnL3	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SchLD	5	144.9	176.8	160.2	71.6	-22.1	375.7	0.0	420.3
	BagLM	5	0.0	5.8	7.9	3.5	-4.1	15.7	0.0	14.5
	UnL2	5	58.0	69.6	89.0	39.8	-40.9	180.1	0.0	217.4
	NevL	5	275.4	272.5	155.9	69.7	78.9	466.0	29.0	434.8
Hirudinea (#/m^2)	ClaL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	WeeL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UTDL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MTDL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LTDL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UnL3	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SchLD	5	29.0	31.9	25.9	11.6	-0.3	64.1	0.0	72.5
	BagLM	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UnL2	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NevL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hyalella (#/m^2)	ClaL	5	173.9	214.5	212.6	95.1	-49.5	478.5	29.0	579.7
	WeeL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UTDL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MTDL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LTDL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UnL3	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SchLD	5	29.0	211.6	300.8	134.5	-161.9	585.1	0.0	681.2
	BagLM	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UnL2	5	0.0	2.9	6.5	2.9	-5.1	10.9	0.0	14.5
	NevL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sialis (#/m^2)	ClaL	5	43.5	40.6	18.9	8.5	17.1	64.0	14.5	58.0
	WeeL	5	0.0	26.1	58.3	26.1	-46.3	98.5	0.0	130.4
	UTDL	5	0.0	8.7	19.4	8.7	-15.4	32.8	0.0	43.5
	MTDL	5	0.0	8.7	19.4	8.7	-15.4	32.8	0.0	43.5
	LTDL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UnL3	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SchLD	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	BagLM	5	0.0	8.7	13.0	5.8	-7.4	24.8	0.0	29.0
	UnL2	5	14.5	20.3	16.5	7.4	-0.2	40.8	0.0	43.5
	NevL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydrachinidia (#/m^2)	ClaL	5	0.0	5.8	7.9	3.5	-4.1	15.7	0.0	14.5
	WeeL	5	0.0	31.9	56.5	25.3	-38.3	102.0	0.0	130.4
	UTDL	5	29.0	34.8	16.5	7.4	14.3	55.3	14.5	58.0
	MTDL	5	29.0	23.2	16.5	7.4	2.7	43.7	0.0	43.5
	LTDL	5	29.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UnL3	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SchLD	5	14.5	11.6	12.1	5.4	-3.5	26.7	0.0	29.0
	BagLM	5	14.5	17.4	18.9	8.5	-6.1	40.9	0.0	43.5
	UnL2	5	0.0	5.8	7.9	3.5	-4.1	15.7	0.0	14.5
	NevL	5	14.5	17.4	15.9	7.1	-2.3	37.1	0.0	43.5
Harpacticoida (#/m^2)	ClaL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	WeeL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UTDL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MTDL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LTDL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UnL3	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SchLD	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	BagLM	5	405.8	411.6	411.5	184.0	-99.4	922.6	58.0	1,087.0
	UnL2	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NevL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ostracoda (#/m^2)	ClaL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	WeeL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UTDL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MTDL	5	0.0	2.9	6.5	2.9	-5.1	10.9	0.0	14.5
	LTDL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UnL3	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SchLD	5	14.5	26.1	31.4	14.1	-12.9	65.1	0.0	72.5
	BagLM	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UnL2	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NevL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nemata (#/m^2)	ClaL	5	58.0	40.6	38.9	17.4	-7.7	88.9	0.0	87.0
	WeeL	5	14.5	17.4	12.1	5.4	2.3	32.4	0.0	29.0
	UTDL	5	0.0	20.3	28.3	12.6	-14.8	55.4	0.0	58.0
	MTDL	5	0.0	8.7	13.0	5.8	-7.4	24.8	0.0	29.0
	LTDL	5	0.0	14.5	20.5	9.2	-11.0	39.9	0.0	43.5
	UnL3	5	0.0	5.8	7.9	3.5	-4.1	15.7	0.0	14.5
	SchLD	5	0.0	8.7	13.0	5.8	-7.4	24.8	0.0	29.0
	BagLM	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UnL2	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	NevL	5	0.0	2.9	6.5	2.9	-5.1	10.9	0.0	14.5

* Diptera excludes Chironomidae and Chaoboridae.

Table E.10: Descriptive statistics of benthic metrics for shallow sampling areas, Côté Gold, 2013.

Metric	Lake ID	n	Median	Mean	Standard Deviation	Standard Error	95% Confidence Interval for Mean		Minimum	Maximum
							Lower Bound	Upper Bound		
Density (#/m^2)	CheL	5	1,115.9	1,510.1	958.8	428.8	319.6	2,700.7	855.1	3,202.9
	DelL	5	1,362.3	1,231.9	501.8	224.4	608.8	1,855.0	405.8	1,753.6
	SchLS	5	6,782.6	8,069.6	3,468.3	1,551.1	3,763.2	12,376.0	5,072.5	13,362.3
	BagLS	5	1,652.2	1,750.7	1,299.8	581.3	136.8	3,364.6	362.3	3,637.7
	UnL1	5	1,188.4	2,202.9	1,738.4	777.5	44.3	4,361.5	753.6	4,275.4
Richness (# of taxa)	CheL	5	10.0	10.4	3.0	1.3	6.7	14.1	7.0	15.0
	DelL	5	8.0	8.0	1.0	0.4	6.8	9.2	7.0	9.0
	SchLS	5	19.0	19.4	2.9	1.3	15.8	23.0	17.0	24.0
	BagLS	5	11.0	12.8	3.6	1.6	8.4	17.2	10.0	18.0
	UnL1	5	22.0	23.0	3.7	1.6	18.4	27.6	19.0	29.0
Evenness (Simpson's)	CheL	5	0.4	0.5	0.2	0.1	0.3	0.7	0.4	0.8
	DelL	5	0.4	0.4	0.1	0.0	0.3	0.5	0.3	0.5
	SchLS	5	0.3	0.2	0.1	0.0	0.1	0.4	0.1	0.4
	BagLS	5	0.5	0.5	0.2	0.1	0.3	0.7	0.3	0.7
	UnL1	5	0.4	0.4	0.1	0.1	0.2	0.6	0.2	0.6
Oligocheata (#/m^2)	CheL	5	0.0	34.8	77.8	34.8	-61.8	131.4	0.0	173.9
	DelL	5	0.0	11.6	18.9	8.5	-11.9	35.1	0.0	43.5
	SchLS	5	29.0	34.8	37.8	16.9	-12.1	81.7	0.0	87.0
	BagLS	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UnL1	5	0.0	5.8	7.9	3.5	-4.1	15.7	0.0	14.5
Chironomidae (#/m^2)	CheL	5	173.9	394.2	469.9	210.1	-189.2	977.6	115.9	1,217.4
	DelL	5	173.9	229.0	109.1	48.8	93.5	364.5	130.4	391.3
	SchLS	5	4,869.6	5,321.7	3,156.8	1,411.8	1,402.1	9,241.4	2,637.7	10,318.8
	BagLS	5	347.8	684.1	930.9	416.3	-471.8	1,839.9	101.4	2,333.3
	UnL1	5	420.3	1,179.7	1,185.0	529.9	-291.6	2,651.1	217.4	2,782.6
Chaoboridae (#/m^2)	CheL	5	231.9	385.5	408.1	182.5	-121.2	892.2	101.4	1,101.4
	DelL	5	623.2	573.9	342.7	153.3	148.3	999.5	202.9	1,072.5
	SchLS	5	260.9	226.1	105.3	47.1	95.3	356.8	115.9	347.8
	BagLS	5	347.8	411.6	286.5	128.1	55.9	767.3	144.9	898.6
	UnL1	5	43.5	34.8	22.0	9.8	7.5	62.1	0.0	58.0
Diptera* (#/m^2)	CheL	5	115.9	185.5	155.6	69.6	-7.6	378.7	0.0	347.8
	DelL	5	14.5	11.6	12.1	5.4	-3.5	26.7	0.0	29.0
	SchLS	5	87.0	144.9	123.0	55.0	-7.8	297.6	58.0	347.8
	BagLS	5	29.0	37.7	47.6	21.3	-21.5	96.8	0.0	115.9
	UnL1	5	87.0	78.3	47.6	21.3	19.1	137.4	14.5	144.9
Ephemeroptera (#/m^2)	CheL	5	333.3	379.7	206.8	92.5	122.9	636.5	115.9	623.2
	DelL	5	14.5	14.5	14.5	6.5	-3.5	32.5	0.0	29.0
	SchLS	5	58.0	92.8	120.2	53.8	-56.5	242.0	0.0	289.9
	BagLS	5	29.0	34.8	33.4	14.9	-6.6	76.2	0.0	87.0
	UnL1	5	43.5	89.9	124.4	55.6	-64.6	244.3	0.0	304.3
Trichoptera (#/m^2)	CheL	5	29.0	34.8	30.1	13.4	-2.5	72.1	0.0	72.5
	DelL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SchLS	5	87.0	89.9	33.0	14.8	48.8	130.9	58.0	144.9
	BagLS	5	0.0	34.8	51.9	23.2	-29.6	99.2	0.0	115.9
	UnL1	5	58.0	49.3	31.8	14.2	9.9	88.7	0.0	87.0
Gastopoda (#/m^2)	CheL	5	0.0	11.6	25.9	11.6	-20.6	43.8	0.0	58.0
	DelL	5	0.0	2.9	6.5	2.9	-5.1	10.9	0.0	14.5
	SchLS	5	231.9	278.3	223.2	99.8	1.1	555.4	58.0	637.7
	BagLS	5	14.5	243.5	512.3	229.1	-392.7	879.6	0.0	1,159.4
	UnL1	5	231.9	202.9	121.7	54.4	51.8	354.0	14.5	318.8
Bivalvia (#/m^2)	CheL	5	58.0	43.5	20.5	9.2	18.0	68.9	14.5	58.0
	DelL	5	492.8	379.7	217.5	97.3	109.7	649.8	14.5	550.7
	SchLS	5	347.8	376.8	191.2	85.5	139.4	614.2	202.9	695.7
	BagLS	5	58.0	118.8	136.9	61.2	-51.1	288.8	0.0	333.3
	UnL1	5	188.4	226.1	193.0	86.3	-13.5	465.7	43.5	492.8
Hirudinea (#/m^2)	CheL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	DelL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SchLS	5	29.0	26.1	21.5	9.6	-0.6	52.8	0.0	58.0
	BagLS	5	29.0	23.2	24.3	10.8	-6.9	53.3	0.0	58.0
	UnL1	5	0.0	2.9	6.5	2.9	-5.1	10.9	0.0	14.5
Hyalella (#/m^2)	CheL	5	0.0	11.6	25.9	11.6	-20.6	43.8	0.0	58.0
	DelL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SchLS	5	1,275.4	1,287.0	351.2	157.1	850.9	1,723.0	811.6	1,797.1
	BagLS	5	0.0	95.7	176.2	78.8	-123.1	314.4	0.0	405.8
	UnL1	5	14.5	194.2	312.5	139.7	-193.8	582.2	0.0	724.6
Sialis (#/m^2)	CheL	5	0.0	5.8	13.0	5.8	-10.3	21.9	0.0	29.0
	DelL	5	0.0	2.9	6.5	2.9	-5.1	10.9	0.0	14.5
	SchLS	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	BagLS	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UnL1	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydrachinidia (#/m^2)	CheL	5	0.0	11.6	25.9	11.6	-20.6	43.8	0.0	58.0
	DelL	5	0.0	2.9	6.5	2.9	-5.1	10.9	0.0	14.5
	SchLS	5	144.9	139.1	103.3	46.2	10.9	267.4	29.0	289.9
	BagLS	5	43.5	37.7	24.3	10.8	7.6	67.8	0.0	58.0
	UnL1	5	0.0	23.2	31.8	14.2	-16.2	62.6	0.0	58.0
Harpacticoida (#/m^2)	CheL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	DelL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SchLS	5	29.0	29.0	20.5	9.2	3.5	54.4	0.0	58.0
	BagLS	5	0.0	11.6	25.9	11.6	-20.6	43.8	0.0	58.0
	UnL1	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ostracoda (#/m^2)	CheL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	DelL	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SchLS	5	0.0	11.6	25.9	11.6	-20.6	43.8	0.0	58.0
	BagLS	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UnL1	5	29.0	29.0	20.5	9.2	3.5	54.4	0.0	58.0
Nemata (#/m^2)	CheL	5	0.0	11.6	25.9	11.6	-20.6	43.8	0.0	58.0
	DelL	5	0.0	2.9	6.5	2.9	-5.1	10.9	0.0	14.5
	SchLS	5	0.0	11.6	25.9	11.6	-20.6	43.8	0.0	58.0
	BagLS	5	0.0	5.8	13.0	5.8	-10.3	21.9	0.0	29.0
	UnL1	5	43.5	63.8	46.5	20.8	6.0	121.5	29.0	144.9

* Diptera excludes Chironomidae and Chaoboridae.

Table E.11: Descriptive statistics of benthic metrics for creek sampling areas, Côté Gold, 2013.

Metric	Creek ID	n	Median	Mean	Standard Deviation	Standard Error	95% Confidence Interval for Mean		Minimum	Maximum
							Lower Bound	Upper Bound		
Density (#/m^2)	BagC	5	8,130.4	8,101.4	2,297.4	1,027.4	5,248.9	10,954.0	4,782.6	10,666.7
	ErrC	5	6,956.5	6,214.5	2,280.3	1,019.8	3,383.2	9,045.8	2,550.7	8,115.9
Richness (# of taxa)	BagC	5	20.0	18.6	5.4	2.4	11.9	25.3	12.0	26.0
	ErrC	5	10.0	8.8	3.0	1.4	5.0	12.6	4.0	12.0
Evenness (Simpson's)	BagC	5	0.6	0.6	0.1	0.0	0.4828	0.7	0.4	0.7
	ErrC	5	0.6	0.6	0.2	0.1	0.3716	0.9	0.5	1.0
Oligocheata (#/m^2)	BagC	5	115.9	324.6	540.1	241.5	-346.0	995.3	0.0	1,275.4
	ErrC	5	0.0	185.5	414.8	185.5	-329.5	700.6	0.0	927.5
Chironomidae (#/m^2)	BagC	5	2,434.8	3,200.0	1,848.9	826.9	904.3	5,495.7	1,043.5	5,565.2
	ErrC	5	2,782.6	3,385.5	2,424.3	1,084.2	375.4	6,395.6	1,159.4	7,188.4
Chaoboridae (#/m^2)	BagC	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ErrC	5	695.7	1,066.7	1,044.8	467.2	-230.6	2,363.9	0.0	2,782.6
Diptera* (#/m^2)	BagC	5	695.7	649.3	194.0	86.8	408.4	890.2	463.8	927.5
	ErrC	5	0.0	115.9	200.8	89.8	-133.4	365.3	0.0	463.8
Ephemeroptera (#/m^2)	BagC	5	1,289.9	1,562.3	945.4	422.8	388.5	2,736.2	492.8	3,014.5
	ErrC	5	0.0	46.4	103.7	46.4	-82.4	175.1	0.0	231.9
Trichoptera (#/m^2)	BagC	5	347.8	278.3	266.9	119.4	-53.2	609.7	0.0	579.7
	ErrC	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gastropoda (#/m^2)	BagC	5	231.9	347.8	401.6	179.6	-150.9	846.5	0.0	1,043.5
	ErrC	5	579.7	765.2	818.2	365.9	-250.7	1,781.1	0.0	2,087.0
Bivalvia (#/m^2)	BagC	5	231.9	185.5	194.0	86.8	-55.4	426.4	0.0	463.8
	ErrC	5	231.9	231.9	284.0	127.0	-120.7	584.5	0.0	695.7
Hyalella (#/m^2)	BagC	5	927.5	973.9	446.0	199.5	420.1	1,527.7	463.8	1,623.2
	ErrC	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydrachinidia (#/m^2)	BagC	5	0.0	46.4	103.7	46.4	-82.4	175.1	0.0	231.9
	ErrC	5	231.9	185.5	194.0	86.8	-55.4	426.4	0.0	463.8
Ostracoda (#/m^2)	BagC	5	115.9	301.4	489.2	218.8	-305.9	908.8	0.0	1,159.4
	ErrC	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nemata (#/m^2)	BagC	5	115.9	92.8	97.0	43.4	-27.7	213.2	0.0	231.9
	ErrC	5	0.0	92.8	207.4	92.8	-164.8	350.3	0.0	463.8

* Diptera excludes Chironomidae and Chaoboridae.

Table E.12: ANOVA of deep lake stations for metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

		Overall 10-group ANOVA		
Metric	Number of Groups with Normally Distributed Data	Significant Difference Among Areas?	p-value	Power
Density	9 of 10	Yes	0.000	1.000
Richness	10 of 10	Yes	0.000	1.000
Simpson's Evenness	10 of 10	Yes	0.000	1.000
Oligocheata	3of 10	Yes	0.000	0.999
Chironomidae	9 of 10	Yes	0.000	1.000
Chaoboridae	8 of 10	Yes	0.000	1.000
Diptera*	6 of 10	Yes	0.051	0.895
Ephemeroptera	4 of 10	Yes	0.000	0.999
Trichoptera	0 of 5	No	0.110	0.828
Gastropoda	2 of 7	Yes	0.030	0.928
Bivalvia	9 of 10	Yes	0.000	1.000
Hirudinea	1 of 1	Yes	0.000	1.000
Hyalella	2 of 3	Yes	0.003	0.988
Sialis	1 of 6	Yes	0.007	0.977
Hydrachnidia	5 of 8	Yes	0.001	0.995
Harpacticoida	1 of 1	Yes	0.000	1.000
Ostracoda	1 of 2	Yes	0.003	0.988
Nemata	2 of 8	Yes	0.001	0.997

* Diptera excludes Chironomidae and Chaoboridae.

statistically significant at p-value < 0.10.

Table E.13: ANOVA of shallow lake stations for metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	Number of Groups with Normally Distributed Data	Overall 5-group ANOVA: Significant Difference Among Areas?	p-value	Power
Density	4 of 5	Yes	0.000	1.000
Richness	5 of 5	Yes	0.000	1.000
Simpson's Evenness	5 of 5	Yes	0.000	1.000
Oligocheata	1 of 4	No	0.196	0.600
Chironomidae	3 of 5	Yes	0.000	1.000
Chaoboridae	4 of 5	Yes	0.000	1.000
Diptera*	5 of 5	Yes	0.001	0.997
Ephemeroptera	5 of 5	Yes	0.000	1.000
Trichoptera	3 of 4	Yes	0.000	1.000
Gastropoda	2 of 5	Yes	0.050	0.816
Bivalvia	4 of 5	Yes	0.000	1.000
Hirudinea	2 of 3	Yes	0.002	0.987
Hyalella	1 of 4	Yes	0.000	1.000
Sialis	0 of 2	No	0.443	0.415
Hydrachnidia	2 of 5	Yes	0.000	0.999
Harpacticoida	1 of 2	Yes	0.007	0.959
Ostracoda	1 of 2	Yes	0.007	0.959
Nemata	0 of 5	Yes	0.002	0.990

* Diptera excludes Chironomidae and Chaoboridae.

[shaded] statistically significant at p-value < 0.10.

Table E.14: ANOVA of creek stations for metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	Number of Groups with Normally Distributed Data	Overall 2-group ANOVA			
		Significant Difference Among Areas?	p-value	Power	Mean Difference (BagC - ErrC)
Density	2 of 2	Yes	0.000	1.000	1,886.957
Richness	2 of 2	Yes	0.000	1.000	9.800
Simpson's Evenness	2 of 2	Yes	0.000	1.000	-0.035
Oligocheata	0 of 2	No	0.278	0.364	139.130
Chironomidae	2 of 2	Yes	0.004	0.984	-185.507
Chaoboridae	1 of 1	Yes	0.036	0.800	533.333
Diptera*	1 of 2	Yes	0.000	1.000	533.333
Ephemeroptera	1 of 2	Yes	0.003	0.993	1,515.942
Trichoptera	1 of 1	Yes	0.032	0.815	278.261
Gastropoda	1 of 2	Yes	0.055	0.722	-417.391
Bivalvia	2 of 2	Yes	0.072	0.670	-46.377
Hyalella	1 of 1	Yes	0.000	1.000	973.913
Hydrachnidia	1 of 2	Yes	0.070	0.675	-139.130
Ostracoda	0 of 1	No	0.211	0.428	301.449
Nemata	1 of 2	No	0.253	0.386	0

* Diptera excludes Chironomidae and Chaoboridae.

statistically significant at p-value < 0.10.

Table E.15: Post-hoc comparison of deep lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Density (Individuals/m^2)	No	Tamhane	SchLD	ClaL	No	1.000	-799.8
				WeeL	No	1.000	136.4
				UTDL	No	1.000	-23.0
				MTDL	No	1.000	-536.0
				LTDL	No	1.000	-1,171.2
				UnL3	No	1.000	-1,188.2
				BagLM	No	1.000	959.6
				UnL2	No	1.000	924.8
				NevL	No	1.000	1,098.8
			ClaL	WeeL	No	1.000	936.2
				UTDL	No	1.000	776.8
				MTDL	No	1.000	263.8
				LTDL	No	1.000	-371.4
				UnL3	No	1.000	-388.4
				BagLM	No	1.000	1,759.4
				UnL2	No	1.000	1,724.6
				NevL	No	0.999	1,898.6
			WeeL	UTDL	No	1.000	-159.4
				MTDL	No	1.000	-672.5
				LTDL	No	0.997	-1,307.6
				UnL3	No	0.991	-1,324.6
				BagLM	No	1.000	823.2
				UnL2	No	1.000	788.4
				NevL	No	1.000	962.3
			UTDL	MTDL	No	1.000	-513.0
				LTDL	No	0.989	-1,148.2
				UnL3	No	0.950	-1,165.2
				BagLM	No	0.885	982.6
				UnL2	No	0.954	947.8
				NevL	No	0.721	1,121.7
			MTDL	LTDL	No	1.000	-635.2
				UnL3	No	1.000	-652.2
				BagLM	No	0.370	1,495.7
				UnL2	No	0.454	1,460.9
				NevL	No	0.291	1,634.8
			LTDL	UnL3	No	1.000	-17.0
				BagLM	No	0.330	2,130.8
				UnL2	No	0.330	2,096.1
				NevL	No	0.299	2,270.0
			UnL3	BagLM	No	0.159	2,147.8
				UnL2	No	0.162	2,113.0
				NevL	No	0.151	2,287.0
			BagLM	UnL2	No	1.000	-34.8
				NevL	No	1.000	139.1
			UnL2	NevL	No	1.000	173.9

Table E.15: Post-hoc comparison of deep lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Richness	No	Tamhane	SchLD	ClaL	No	1.000	-1.6
				WeeL	No	1.000	-0.4
				UTDL	No	1.000	-1.8
				MTDL	No	1.000	1.4
				LTDL	No	0.909	4.8
				UnL3	No	0.109	9.6
				BagLM	No	1.000	2.2
				UnL2	No	0.570	5.6
				NevL	No	0.724	5.0
			ClaL	WeeL	No	1.000	1.2
				UTDL	No	1.000	-0.2
				MTDL	No	0.997	3.0
				LTDL	No	0.466	6.4
				UnL3	Yes	0.045	11.2
				BagLM	No	0.994	3.8
				UnL2	No	0.181	7.2
				NevL	No	0.260	6.6
			WeeL	UTDL	No	1.000	-1.4
				MTDL	No	1.000	1.8
				LTDL	No	0.866	5.2
				UnL3	No	0.119	10.0
				BagLM	No	1.000	2.6
				UnL2	No	0.542	6.0
				NevL	No	0.690	5.4
			UTDL	MTDL	No	1.000	3.2
				LTDL	No	0.982	6.6
				UnL3	No	0.507	11.4
				BagLM	No	1.000	4.0
				UnL2	No	0.933	7.4
				NevL	No	0.969	6.8
			MTDL	LTDL	No	0.980	3.4
				UnL3	Yes	0.008	8.2
				BagLM	No	1.000	0.8
				UnL2	No	0.406	4.2
				NevL	No	0.551	3.6
			LTDL	UnL3	No	0.701	4.8
				BagLM	No	1.000	-2.6
				UnL2	No	1.000	0.8
				NevL	No	1.000	0.2
			UnL3	BagLM	No	0.273	-7.4
				UnL2	No	0.400	-4.0
				NevL	No	0.156	-4.6
			BagLM	UnL2	No	0.993	3.4
				NevL	No	1.000	2.8
			UnL2	NevL	No	1.000	-0.6

Table E.15: Post-hoc comparison of deep lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Simpson's Evenness	No	Tamhane	SchLD	ClaL	No	0.971	0.2
				WeeL	No	1.000	0.0
				UTDL	No	0.831	0.2
				MTDL	No	0.425	0.3
				LTDL	No	0.386	0.3
				UnL3	No	1.000	0.1
				BagLM	No	1.000	0.1
				UnL2	No	1.000	0.1
				NevL	No	1.000	0.1
			ClaL	WeeL	No	1.000	-0.1
				UTDL	No	1.000	0.0
				MTDL	No	1.000	0.1
				LTDL	No	1.000	0.1
				UnL3	No	1.000	-0.1
				BagLM	No	1.000	-0.1
				UnL2	No	1.000	-0.1
				NevL	No	1.000	0.0
			WeeL	UTDL	No	0.988	0.1
				MTDL	No	0.710	0.2
				LTDL	No	0.669	0.2
				UnL3	No	1.000	0.0
				BagLM	No	1.000	0.1
				UnL2	No	1.000	0.0
				NevL	No	1.000	0.1
			UTDL	MTDL	No	1.000	0.1
				LTDL	No	1.000	0.1
				UnL3	No	0.973	-0.1
				BagLM	No	1.000	-0.1
				UnL2	No	1.000	-0.1
				NevL	No	1.000	0.0
			MTDL	LTDL	No	1.000	0.0
				UnL3	No	0.675	-0.2
				BagLM	No	1.000	-0.2
				UnL2	No	1.000	-0.2
				NevL	No	1.000	-0.1
			LTDL	UnL3	No	0.500	-0.2
				BagLM	No	1.000	-0.2
				UnL2	No	1.000	-0.2
				NevL	No	1.000	-0.1
			UnL3	BagLM	No	1.000	0.0
				UnL2	No	1.000	0.0
				NevL	No	1.000	0.1
			BagLM	UnL2	No	1.000	0.0
				NevL	No	1.000	0.0
			UnL2	NevL	No	1.000	0.1

Table E.15: Post-hoc comparison of deep lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Oligocheata	No	Tamhane	SchLD	ClaL	No	0.971	-104.3
				WeeL	No	0.992	-139.1
				UTDL	No	0.968	-150.7
				MTDL	No	1.000	-20.3
				LTDL	No	1.000	-55.5
				UnL3	No	1.000	-17.4
				BagLM	No	1.000	11.6
				UnL2	No	1.000	-8.7
				NevL	No	1.000	11.6
			ClaL	WeeL	No	1.000	-34.8
				UTDL	No	1.000	-46.4
				MTDL	No	0.998	84.1
				LTDL	No	1.000	48.9
				UnL3	No	0.998	87.0
				BagLM	No	0.931	115.9
				UnL2	No	0.989	95.7
				NevL	No	0.931	115.9
			WeeL	UTDL	No	1.000	-11.6
				MTDL	No	0.999	118.8
				LTDL	No	1.000	83.7
				UnL3	No	0.999	121.7
				BagLM	No	0.981	150.7
				UnL2	No	0.997	130.4
				NevL	No	0.981	150.7
			UTDL	MTDL	No	0.994	130.4
				LTDL	No	1.000	95.3
				UnL3	No	0.992	133.3
				BagLM	No	0.941	162.3
				UnL2	No	0.982	142.0
				NevL	No	0.941	162.3
			MTDL	LTDL	No	1.000	-35.2
				UnL3	No	1.000	2.9
				BagLM	No	0.982	31.9
				UnL2	No	1.000	11.6
				NevL	No	0.982	31.9
			LTDL	UnL3	No	1.000	38.1
				BagLM	No	1.000	67.1
				UnL2	No	1.000	46.8
				NevL	No	1.000	67.1
			UnL3	BagLM	No	1.000	29.0
				UnL2	No	1.000	8.7
				NevL	No	1.000	29.0
			BagLM	UnL2	No	0.994	-20.3
				NevL	No	.	0.0
			UnL2	NevL	No	0.994	20.3

Table E.15: Post-hoc comparison of deep lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Chironomidae	No	Tamhane	SchLD	ClaL	No	1.000	-855.1
				WeeL	No	1.000	-159.4
				UTDL	No	1.000	255.1
				MTDL	No	1.000	-185.5
				LTDL	No	0.987	-973.9
				UnL3	No	0.967	-1,292.8
				BagLM	No	0.996	559.4
				UnL2	No	1.000	475.4
				NevL	No	0.974	658.0
			ClaL	WeeL	No	1.000	695.7
				UTDL	No	1.000	1,110.1
				MTDL	No	1.000	669.6
				LTDL	No	1.000	-118.8
				UnL3	No	1.000	-437.7
				BagLM	No	1.000	1,414.5
				UnL2	No	1.000	1,330.4
				NevL	No	1.000	1,513.0
			WeeL	UTDL	No	1.000	414.5
				MTDL	No	1.000	-26.1
				LTDL	No	1.000	-814.5
				UnL3	No	0.999	-1,133.3
				BagLM	No	1.000	718.8
				UnL2	No	1.000	634.8
				NevL	No	0.999	817.4
			UTDL	MTDL	No	0.988	-440.6
				LTDL	No	0.833	-1,229.0
				UnL3	No	0.849	-1,547.8
				BagLM	No	0.944	304.3
				UnL2	No	0.999	220.3
				NevL	No	0.700	402.9
			MTDL	LTDL	No	0.999	-788.4
				UnL3	No	0.993	-1,107.2
				BagLM	No	0.526	744.9
				UnL2	No	0.668	660.9
				NevL	No	0.398	843.5
			LTDL	UnL3	No	1.000	-318.8
				BagLM	No	0.607	1,533.3
				UnL2	No	0.672	1,449.3
				NevL	No	0.535	1,631.9
			UnL3	BagLM	No	0.673	1,852.2
				UnL2	No	0.726	1,768.1
				NevL	No	0.613	1,950.7
			BagLM	UnL2	No	1.000	-84.1
				NevL	No	0.974	98.6
			UnL2	NevL	No	0.487	182.6

Table E.15: Post-hoc comparison of deep lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Chaoboridae	No	Tamhane	SchLD	ClaL	No	0.150	293.0
				WeeL	No	1.000	121.9
				UTDL	No	1.000	-330.2
				MTDL	No	0.984	-814.3
				LTDL	Yes	0.005	-776.6
				UnL3	No	0.151	-666.5
				BagLM	No	0.895	153.8
				UnL2	No	1.000	-165.0
				NevL	No	1.000	17.6
			ClaL	WeeL	No	0.784	-171.0
				UTDL	No	0.853	-623.2
				MTDL	No	0.822	-1,107.2
				LTDL	Yes	0.004	-1,069.6
				UnL3	Yes	0.054	-959.4
				BagLM	No	0.210	-139.1
				UnL2	No	1.000	-458.0
				NevL	No	1.000	-275.4
			WeeL	UTDL	No	0.991	-452.2
				MTDL	No	0.939	-936.2
				LTDL	Yes	0.002	-898.6
				UnL3	Yes	0.072	-788.4
				BagLM	No	1.000	31.9
				UnL2	No	1.000	-287.0
				NevL	No	1.000	-104.3
			UTDL	MTDL	No	1.000	-484.1
				LTDL	No	0.993	-446.4
				UnL3	No	1.000	-336.2
				BagLM	No	0.981	484.1
				UnL2	No	1.000	165.2
				NevL	No	1.000	347.8
			MTDL	LTDL	No	1.000	37.7
				UnL3	No	1.000	147.8
				BagLM	No	0.924	968.1
				UnL2	No	1.000	649.3
				NevL	No	0.983	831.9
			LTDL	UnL3	No	1.000	110.1
				BagLM	Yes	0.008	930.4
				UnL2	No	0.989	611.6
				NevL	No	0.274	794.2
			UnL3	BagLM	No	0.101	820.3
				UnL2	No	1.000	501.4
				NevL	No	0.492	684.1
			BagLM	UnL2	No	1.000	-318.8
				NevL	No	1.000	-136.2
			UnL2	NevL	No	1.000	182.6

Table E.15: Post-hoc comparison of deep lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Diptera (excludes Chironomidae and Chaoboridae)	No	Tamhane	SchLD	ClaL	No	1.000	-101.4
				WeeL	No	1.000	-78.3
				UTDL	No	1.000	-26.1
				MTDL	No	1.000	2.9
				LTDL	No	1.000	-14.5
				UnL3	No	0.790	14.5
				BagLM	No	0.227	-34.8
				UnL2	No	1.000	-11.6
				NevL	No	1.000	-5.8
			ClaL	WeeL	No	1.000	23.2
				UTDL	No	1.000	75.4
				MTDL	No	1.000	104.3
				LTDL	No	1.000	87.0
				UnL3	No	0.998	115.9
				BagLM	No	1.000	66.7
				UnL2	No	1.000	89.9
				NevL	No	1.000	95.7
			WeeL	UTDL	No	1.000	52.2
				MTDL	No	1.000	81.2
				LTDL	No	1.000	63.8
				UnL3	No	1.000	92.8
				BagLM	No	1.000	43.5
				UnL2	No	1.000	66.7
				NevL	No	1.000	72.5
			UTDL	MTDL	No	1.000	29.0
				LTDL	No	1.000	11.6
				UnL3	No	1.000	40.6
				BagLM	No	1.000	-8.7
				UnL2	No	1.000	14.5
				NevL	No	1.000	20.3
			MTDL	LTDL	No	1.000	-17.4
				UnL3	No	1.000	11.6
				BagLM	No	0.743	-37.7
				UnL2	No	1.000	-14.5
				NevL	No	1.000	-8.7
			LTDL	UnL3	No	1.000	29.0
				BagLM	No	1.000	-20.3
				UnL2	No	1.000	2.9
				NevL	No	1.000	8.7
			UnL3	BagLM	No	0.112	-49.3
				UnL2	No	0.984	-26.1
				NevL	No	0.999	-20.3
			BagLM	UnL2	No	0.999	23.2
				NevL	No	0.946	29.0
			UnL2	NevL	No	1.000	5.8

Table E.15: Post-hoc comparison of deep lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Ephemeroptera	No	Tamhane	SchLD	ClaL	No	1.000	63.8
				WeeL	No	1.000	49.3
				UTDL	No	1.000	72.5
				MTDL	No	1.000	46.4
				LTDL	No	0.998	92.8
				UnL3	No	0.981	110.1
				BagLM	No	1.000	52.2
				UnL2	No	1.000	66.7
				NevL	No	1.000	43.5
			ClaL	WeeL	No	1.000	-14.5
				UTDL	No	1.000	8.7
				MTDL	No	1.000	-17.4
				LTDL	No	1.000	29.0
				UnL3	No	1.000	46.4
				BagLM	No	1.000	-11.6
				UnL2	No	1.000	2.9
				NevL	No	1.000	-20.3
			WeeL	UTDL	No	1.000	23.2
				MTDL	No	1.000	-2.9
				LTDL	No	1.000	43.5
				UnL3	No	1.000	60.9
				BagLM	No	1.000	2.9
				UnL2	No	1.000	17.4
				NevL	No	1.000	-5.8
			UTDL	MTDL	No	1.000	-26.1
				LTDL	No	1.000	20.3
				UnL3	No	0.894	37.7
				BagLM	No	1.000	-20.3
				UnL2	No	1.000	-5.8
				NevL	No	0.997	-29.0
			MTDL	LTDL	No	1.000	46.4
				UnL3	No	0.994	63.8
				BagLM	No	1.000	5.8
				UnL2	No	1.000	20.3
				NevL	No	1.000	-2.9
			LTDL	UnL3	No	1.000	17.4
				BagLM	No	0.992	-40.6
				UnL2	No	1.000	-26.1
				NevL	No	0.348	-49.3
			UnL3	BagLM	No	0.790	-58.0
				UnL2	No	0.999	-43.5
				NevL	No	0.105	-66.7
			BagLM	UnL2	No	1.000	14.5
				NevL	No	1.000	-8.7
			UnL2	NevL	No	1.000	-23.2

Table E.15: Post-hoc comparison of deep lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Trichoptera	No	Tamhane	SchLD	ClaL	No	0.814	-26.1
				WeeL	No	1.000	-26.1
				UTDL	No	1.000	-8.7
				MTDL	No	1.000	-14.5
				LTDL	No	.	0.0
				UnL3	No	.	0.0
				BagLM	No	.	0.0
				UnL2	No	1.000	-2.9
				NevL	No	.	0.0
			ClaL	WeeL	No	1.000	0.0
				UTDL	No	1.000	17.4
				MTDL	No	1.000	11.6
				LTDL	No	0.814	26.1
				UnL3	No	0.814	26.1
				BagLM	No	0.814	26.1
				UnL2	No	0.897	23.2
				NevL	No	0.814	26.1
			WeeL	UTDL	No	1.000	17.4
				MTDL	No	1.000	11.6
				LTDL	No	1.000	26.1
				UnL3	No	1.000	26.1
				BagLM	No	1.000	26.1
				UnL2	No	1.000	23.2
				NevL	No	1.000	26.1
			UTDL	MTDL	No	1.000	-5.8
				LTDL	No	1.000	8.7
				UnL3	No	1.000	8.7
				BagLM	No	1.000	8.7
				UnL2	No	1.000	5.8
				NevL	No	1.000	8.7
			MTDL	LTDL	No	1.000	14.5
				UnL3	No	1.000	14.5
				BagLM	No	1.000	14.5
				UnL2	No	1.000	11.6
				NevL	No	1.000	14.5
			LTDL	UnL3	No	.	0.0
				BagLM	No	.	0.0
				UnL2	No	1.000	-2.9
				NevL	No	.	0.0
			UnL3	BagLM	No	.	0.0
				UnL2	No	1.000	-2.9
				NevL	No	.	0.0
			BagLM	UnL2	No	1.000	-2.9
				NevL	No	.	0.0
			UnL2	NevL	No	1.000	2.9

Table E.15: Post-hoc comparison of deep lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Gastropoda	No	Tamhane	SchLD	ClaL	No	1.000	162.3
				WeeL	No	1.000	176.8
				UTDL	No	1.000	191.3
				MTDL	No	1.000	200.0
				LTDL	No	1.000	202.9
				UnL3	No	1.000	202.9
				BagLM	No	1.000	197.1
				UnL2	No	1.000	202.9
				NevL	No	1.000	200.0
			ClaL	WeeL	No	1.000	14.5
				UTDL	No	1.000	29.0
				MTDL	No	1.000	37.7
				LTDL	No	1.000	40.6
				UnL3	No	1.000	40.6
				BagLM	No	1.000	34.8
				UnL2	No	1.000	40.6
				NevL	No	1.000	37.7
			WeeL	UTDL	No	1.000	14.5
				MTDL	No	1.000	23.2
				LTDL	No	0.997	26.1
				UnL3	No	0.997	26.1
				BagLM	No	1.000	20.3
				UnL2	No	0.997	26.1
				NevL	No	1.000	23.2
			UTDL	MTDL	No	1.000	8.7
				LTDL	No	1.000	11.6
				UnL3	No	1.000	11.6
				BagLM	No	1.000	5.8
				UnL2	No	1.000	11.6
				NevL	No	1.000	8.7
			MTDL	LTDL	No	1.000	2.9
				UnL3	No	1.000	2.9
				BagLM	No	1.000	-2.9
				UnL2	No	1.000	2.9
				NevL	No	1.000	0.0
			LTDL	UnL3	No	.	0.0
				BagLM	No	1.000	-5.8
				UnL2	No	.	0.0
				NevL	No	1.000	-2.9
			UnL3	BagLM	No	1.000	-5.8
				UnL2	No	.	0.0
				NevL	No	1.000	-2.9
			BagLM	UnL2	No	1.000	5.8
				NevL	No	1.000	2.9
			UnL2	NevL	No	1.000	-2.9

Table E.15: Post-hoc comparison of deep lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Bivalvia	No	Tamhane	SchLD	ClaL	No	1.000	-217.4
				WeeL	No	1.000	-20.3
				UTDL	No	1.000	-246.4
				MTDL	No	1.000	2.9
				LTDL	No	1.000	78.3
				UnL3	No	0.960	176.8
				BagLM	No	0.971	171.0
				UnL2	No	1.000	107.2
				NevL	No	1.000	-95.7
			ClaL	WeeL	No	1.000	197.1
				UTDL	No	1.000	-29.0
				MTDL	No	1.000	220.3
				LTDL	No	0.999	295.7
				UnL3	No	0.957	394.2
				BagLM	No	0.962	388.4
				UnL2	No	0.995	324.6
				NevL	No	1.000	121.7
			WeeL	UTDL	No	1.000	-226.1
				MTDL	No	1.000	23.2
				LTDL	No	1.000	98.6
				UnL3	No	0.913	197.1
				BagLM	No	0.930	191.3
				UnL2	No	1.000	127.5
				NevL	No	1.000	-75.4
			UTDL	MTDL	No	1.000	249.3
				LTDL	No	0.994	324.6
				UnL3	No	0.919	423.2
				BagLM	No	0.927	417.4
				UnL2	No	0.983	353.6
				NevL	No	1.000	150.7
			MTDL	LTDL	No	1.000	75.4
				UnL3	No	0.611	173.9
				BagLM	No	0.648	168.1
				UnL2	No	0.998	104.3
				NevL	No	1.000	-98.6
			LTDL	UnL3	No	0.488	98.6
				BagLM	No	0.543	92.8
				UnL2	No	1.000	29.0
				NevL	No	0.953	-173.9
			UnL3	BagLM	No	1.000	-5.8
				UnL2	No	0.999	-69.6
				NevL	No	0.547	-272.5
			BagLM	UnL2	No	1.000	-63.8
				NevL	No	0.570	-266.7
			UnL2	NevL	No	0.859	-202.9

Table E.15: Post-hoc comparison of deep lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Hirudinea	No	Tamhane	SchLD	ClaL	No	0.907	31.9
				WeeL	No	0.907	31.9
				UTDL	No	0.907	31.9
				MTDL	No	0.907	31.9
				LTDL	No	0.907	31.9
				UnL3	No	0.907	31.9
				BagLM	No	0.907	31.9
				UnL2	No	0.907	31.9
				NevL	No	0.907	31.9
			ClaL	WeeL	No	.	0.0
				UTDL	No	.	0.0
				MTDL	No	.	0.0
				LTDL	No	.	0.0
				UnL3	No	.	0.0
				BagLM	No	.	0.0
				UnL2	No	.	0.0
				NevL	No	.	0.0
			WeeL	UTDL	No	.	0.0
				MTDL	No	.	0.0
				LTDL	No	.	0.0
				UnL3	No	.	0.0
				BagLM	No	.	0.0
				UnL2	No	.	0.0
				NevL	No	.	0.0
			UTDL	MTDL	No	.	0.0
				LTDL	No	.	0.0
				UnL3	No	.	0.0
				BagLM	No	.	0.0
				UnL2	No	.	0.0
				NevL	No	.	0.0
			MTDL	LTDL	No	.	0.0
				UnL3	No	.	0.0
				BagLM	No	.	0.0
				UnL2	No	.	0.0
				NevL	No	.	0.0
			LTDL	UnL3	No	.	0.0
				BagLM	No	.	0.0
				UnL2	No	.	0.0
				NevL	No	.	0.0
			UnL3	BagLM	No	.	0.0
				UnL2	No	.	0.0
				NevL	No	.	0.0
			BagLM	UnL2	No	.	0.0
				NevL	No	.	0.0
			UnL2	NevL	No	.	0.0

Table E.15: Post-hoc comparison of deep lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Hyalella	No	Tamhane	SchLD	ClaL	No	1.000	-2.9
				WeeL	No	1.000	211.6
				UTDL	No	1.000	211.6
				MTDL	No	1.000	211.6
				LTDL	No	1.000	211.6
				UnL3	No	1.000	211.6
				BagLM	No	1.000	211.6
				UnL2	No	1.000	208.7
				NevL	No	1.000	211.6
			ClaL	WeeL	No	0.983	214.5
				UTDL	No	0.983	214.5
				MTDL	No	0.983	214.5
				LTDL	No	0.983	214.5
				UnL3	No	0.983	214.5
				BagLM	No	0.983	214.5
				UnL2	No	0.986	211.6
				NevL	No	0.983	214.5
			WeeL	UTDL	No	.	0.0
				MTDL	No	.	0.0
				LTDL	No	.	0.0
				UnL3	No	.	0.0
				BagLM	No	.	0.0
				UnL2	No	1.000	-2.9
				NevL	No	.	0.0
			UTDL	MTDL	No	.	0.0
				LTDL	No	.	0.0
				UnL3	No	.	0.0
				BagLM	No	.	0.0
				UnL2	No	1.000	-2.9
				NevL	No	.	0.0
			MTDL	LTDL	No	.	0.0
				UnL3	No	.	0.0
				BagLM	No	.	0.0
				UnL2	No	1.000	-2.9
				NevL	No	.	0.0
			LTDL	UnL3	No	.	0.0
				BagLM	No	.	0.0
				UnL2	No	1.000	-2.9
				NevL	No	.	0.0
			UnL3	BagLM	No	.	0.0
				UnL2	No	1.000	-2.9
				NevL	No	.	0.0
			BagLM	UnL2	No	1.000	-2.9
				NevL	No	.	0.0
			UnL2	NevL	No	1.000	2.9

Table E.15: Post-hoc comparison of deep lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Sialis	No	Tamhane	SchLD	ClaL	No	0.323	-40.6
				WeeL	No	1.000	-26.1
				UTDL	No	1.000	-8.7
				MTDL	No	1.000	-8.7
				LTDL	No	.	0.0
				UnL3	No	.	0.0
				BagLM	No	1.000	-8.7
				UnL2	No	0.908	-20.3
				NevL	No	.	0.0
			ClaL	WeeL	No	1.000	14.5
				UTDL	No	0.749	31.9
				MTDL	No	0.749	31.9
				LTDL	No	0.323	40.6
				UnL3	No	0.323	40.6
				BagLM	No	0.533	31.9
				UnL2	No	0.994	20.3
				NevL	No	0.323	40.6
			WeeL	UTDL	No	1.000	17.4
				MTDL	No	1.000	17.4
				LTDL	No	1.000	26.1
				UnL3	No	1.000	26.1
				BagLM	No	1.000	17.4
				UnL2	No	1.000	5.8
				NevL	No	1.000	26.1
			UTDL	MTDL	No	1.000	0.0
				LTDL	No	1.000	8.7
				UnL3	No	1.000	8.7
				BagLM	No	1.000	0.0
				UnL2	No	1.000	-11.6
				NevL	No	1.000	8.7
			MTDL	LTDL	No	1.000	8.7
				UnL3	No	1.000	8.7
				BagLM	No	1.000	0.0
				UnL2	No	1.000	-11.6
				NevL	No	1.000	8.7
			LTDL	UnL3	No	.	0.0
				BagLM	No	1.000	-8.7
				UnL2	No	0.908	-20.3
				NevL	No	.	0.0
			UnL3	BagLM	No	1.000	-8.7
				UnL2	No	0.908	-20.3
				NevL	No	.	0.0
			BagLM	UnL2	No	1.000	-11.6
				NevL	No	1.000	8.7
			UnL2	NevL	No	0.908	20.3

Table E.15: Post-hoc comparison of deep lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Hydrachnidia	No	Tamhane	SchLD	ClaL	No	1.000	5.8
				WeeL	No	1.000	-20.3
				UTDL	No	0.823	-23.2
				MTDL	No	1.000	-11.6
				LTDL	No	0.991	11.6
				UnL3	No	0.991	11.6
				BagLM	No	1.000	-5.8
				UnL2	No	1.000	5.8
				NevL	No	1.000	-5.8
			ClaL	WeeL	No	1.000	-26.1
				UTDL	No	0.449	-29.0
				MTDL	No	0.977	-17.4
				LTDL	No	1.000	5.8
				UnL3	No	1.000	5.8
				BagLM	No	1.000	-11.6
				UnL2	No	1.000	0.0
				NevL	No	1.000	-11.6
			WeeL	UTDL	No	1.000	-2.9
				MTDL	No	1.000	8.7
				LTDL	No	1.000	31.9
				UnL3	No	1.000	31.9
				BagLM	No	1.000	14.5
				UnL2	No	1.000	26.1
				NevL	No	1.000	14.5
			UTDL	MTDL	No	1.000	11.6
				LTDL	No	0.342	34.8
				UnL3	No	0.342	34.8
				BagLM	No	1.000	17.4
				UnL2	No	0.449	29.0
				NevL	No	0.998	17.4
			MTDL	LTDL	No	0.798	23.2
				UnL3	No	0.798	23.2
				BagLM	No	1.000	5.8
				UnL2	No	0.977	17.4
				NevL	No	1.000	5.8
			LTDL	UnL3	No	.	0.0
				BagLM	No	0.994	-17.4
				UnL2	No	1.000	-5.8
				NevL	No	0.963	-17.4
			UnL3	BagLM	No	0.994	-17.4
				UnL2	No	1.000	-5.8
				NevL	No	0.963	-17.4
			BagLM	UnL2	No	1.000	11.6
				NevL	No	1.000	0.0
			UnL2	NevL	No	1.000	-11.6

Table E.15: Post-hoc comparison of deep lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Harpacticoida	No	Tamhane	SchLD	ClaL	No	.	0.0
				WeeL	No	.	0.0
				UTDL	No	.	0.0
				MTDL	No	.	0.0
				LTDL	No	.	0.0
				UnL3	No	.	0.0
				BagLM	No	0.985	-411.6
				UnL2	No	.	0.0
				NevL	No	.	0.0
			ClaL	WeeL	No	.	0.0
				UTDL	No	.	0.0
				MTDL	No	.	0.0
				LTDL	No	.	0.0
				UnL3	No	.	0.0
				BagLM	No	0.985	-411.6
				UnL2	No	.	0.0
				NevL	No	.	0.0
			WeeL	UTDL	No	.	0.0
				MTDL	No	.	0.0
				LTDL	No	.	0.0
				UnL3	No	.	0.0
				BagLM	No	0.985	-411.6
				UnL2	No	.	0.0
				NevL	No	.	0.0
			UTDL	MTDL	No	.	0.0
				LTDL	No	.	0.0
				UnL3	No	.	0.0
				BagLM	No	0.985	-411.6
				UnL2	No	.	0.0
				NevL	No	.	0.0
			MTDL	LTDL	No	.	0.0
				UnL3	No	.	0.0
				BagLM	No	0.985	-411.6
				UnL2	No	.	0.0
				NevL	No	.	0.0
			LTDL	UnL3	No	.	0.0
				BagLM	No	0.985	-411.6
				UnL2	No	.	0.0
				NevL	No	.	0.0
			UnL3	BagLM	No	0.985	-411.6
				UnL2	No	.	0.0
				NevL	No	.	0.0
			BagLM	UnL2	No	0.985	411.6
				NevL	No	0.985	411.6
			UnL2	NevL	No	.	0.0

Table E.15: Post-hoc comparison of deep lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Ostracoda	No	Tamhane	SchLD	ClaL	No	0.999	26.1
				WeeL	No	0.999	26.1
				UTDL	No	0.999	26.1
				MTDL	No	1.000	23.2
				LTDL	No	0.999	26.1
				UnL3	No	0.999	26.1
				BagLM	No	0.999	26.1
				UnL2	No	0.999	26.1
				NevL	No	0.999	26.1
			ClaL	WeeL	No	.	0.0
				UTDL	No	.	0.0
				MTDL	No	1.000	-2.9
				LTDL	No	.	0.0
				UnL3	No	.	0.0
				BagLM	No	.	0.0
				UnL2	No	.	0.0
				NevL	No	.	0.0
			WeeL	UTDL	No	.	0.0
				MTDL	No	1.000	-2.9
				LTDL	No	.	0.0
				UnL3	No	.	0.0
				BagLM	No	.	0.0
				UnL2	No	.	0.0
				NevL	No	.	0.0
			UTDL	MTDL	No	1.000	-2.9
				LTDL	No	.	0.0
				UnL3	No	.	0.0
				BagLM	No	.	0.0
				UnL2	No	.	0.0
				NevL	No	.	0.0
			MTDL	LTDL	No	1.000	2.9
				UnL3	No	1.000	2.9
				BagLM	No	1.000	2.9
				UnL2	No	1.000	2.9
				NevL	No	1.000	2.9
			LTDL	UnL3	No	.	0.0
				BagLM	No	.	0.0
				UnL2	No	.	0.0
				NevL	No	.	0.0
			UnL3	BagLM	No	.	0.0
				UnL2	No	.	0.0
				NevL	No	.	0.0
			BagLM	UnL2	No	.	0.0
				NevL	No	.	0.0
			UnL2	NevL	No	.	0.0

Table E.15: Post-hoc comparison of deep lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Nemata	No	Tamhane	SchLD	ClaL	No	0.999	-31.9
				WeeL	No	1.000	-8.7
				UTDL	No	1.000	-11.6
				MTDL	No	1.000	0.0
				LTDL	No	1.000	-5.8
				UnL3	No	1.000	2.9
				BagLM	No	1.000	8.7
				UnL2	No	1.000	8.7
				NevL	No	1.000	5.8
			ClaL	WeeL	No	1.000	23.2
				UTDL	No	1.000	20.3
				MTDL	No	0.999	31.9
				LTDL	No	1.000	26.1
				UnL3	No	0.996	34.8
				BagLM	No	0.976	40.6
				UnL2	No	0.976	40.6
				NevL	No	0.989	37.7
			WeeL	UTDL	No	1.000	-2.9
				MTDL	No	1.000	8.7
				LTDL	No	1.000	2.9
				UnL3	No	0.996	11.6
				BagLM	No	0.776	17.4
				UnL2	No	0.776	17.4
				NevL	No	0.924	14.5
			UTDL	MTDL	No	1.000	11.6
				LTDL	No	1.000	5.8
				UnL3	No	1.000	14.5
				BagLM	No	1.000	20.3
				UnL2	No	1.000	20.3
				NevL	No	1.000	17.4
			MTDL	LTDL	No	1.000	-5.8
				UnL3	No	1.000	2.9
				BagLM	No	1.000	8.7
				UnL2	No	1.000	8.7
				NevL	No	1.000	5.8
			LTDL	UnL3	No	1.000	8.7
				BagLM	No	1.000	14.5
				UnL2	No	1.000	14.5
				NevL	No	1.000	11.6
			UnL3	BagLM	No	1.000	5.8
				UnL2	No	1.000	5.8
				NevL	No	1.000	2.9
			BagLM	UnL2	No	.	0.0
				NevL	No	1.000	-2.9
			UnL2	NevL	No	1.000	-2.9

statistically significant at p-value < 0.10.

Table E.16: Post-hoc comparison of shallow lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Density (individuals/m^2)	No	Tamhane	SchLS	CheL	No	0.108	6,559.4
				DelL	No	0.105	6,837.7
				BagLS	No	0.113	6,318.8
				UnL1	No	0.143	5,866.7
			CheL	DelL	No	1.000	278.3
				BagLS	No	1.000	-240.6
				UnL1	No	0.998	-692.8
			DelL	BagLS	No	0.997	-518.8
				UnL1	No	0.966	-971.0
			BagLS	UnL1	No	1.000	-452.2
Richness	Yes	Bonferroni	SchLS	CheL	Yes	0.001	9.0
				DelL	Yes	0.000	11.4
				BagLS	Yes	0.022	6.6
				UnL1	No	0.703	-3.6
			CheL	DelL	No	1.000	2.4
				BagLS	No	1.000	-2.4
				UnL1	Yes	0.000	-12.6
			DelL	BagLS	No	0.191	-4.8
				UnL1	Yes	0.000	-15.0
			BagLS	UnL1	Yes	0.000	-10.2
Evenness	Yes	Bonferroni	SchLS	CheL	Yes	0.057	-0.3
				DelL	No	0.913	-0.1
				BagLS	No	0.134	-0.2
				UnL1	No	0.703	-0.2
			CheL	DelL	No	1.000	0.1
				BagLS	No	1.000	0.0
				UnL1	No	1.000	0.1
			DelL	BagLS	No	1.000	-0.1
				UnL1	No	1.000	0.0
			BagLS	UnL1	No	1.000	0.1
Oligocheata	No	Tamhane	SchLS	CheL	No	1.000	0.0
				DelL	No	0.955	23.2
				BagLS	No	0.684	34.8
				UnL1	No	0.831	29.0
			CheL	DelL	No	1.000	23.2
				BagLS	No	0.991	34.8
				UnL1	No	0.998	29.0
			DelL	BagLS	No	0.937	11.6
				UnL1	No	1.000	5.8
			BagLS	UnL1	No	0.859	-5.8
Chironomidae	No	Tamhane	SchLS	CheL	No	0.218	4,927.5
				DelL	No	0.204	5,092.8
				BagLS	No	0.245	4,637.7
				UnL1	No	0.332	4,142.0
			CheL	DelL	No	0.999	165.2
				BagLS	No	1.000	-289.9
				UnL1	No	0.921	-785.5
			DelL	BagLS	No	0.984	-455.1
				UnL1	No	0.797	-950.7
			BagLS	UnL1	No	0.999	-495.7

Table E.16: Post-hoc comparison of shallow lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Chaobordiae	Yes	Bonferroni	SchLS	CheL	No	1.000	-159.4
				DelL	No	0.591	-347.8
				BagLS	No	1.000	-185.5
				UnL1	No	1.000	191.3
			CheL	DelL	No	1.000	-188.4
				BagLS	No	1.000	-26.1
				UnL1	No	0.572	350.7
			DelL	BagLS	No	1.000	162.3
				UnL1	Yes	0.056	539.1
			BagLS	UnL1	No	0.424	376.8
Diptera (excludes Chironomidae and Chaoboridae)	No	Tamhane	SchLS	CheL	No	1.000	-40.6
				DelL	No	0.527	133.3
				BagLS	No	0.742	107.2
				UnL1	No	0.975	66.7
			CheL	DelL	No	0.498	173.9
				BagLS	No	0.655	147.8
				UnL1	No	0.897	107.2
			DelL	BagLS	No	0.969	-26.1
				UnL1	No	0.285	-66.7
			BagLS	UnL1	No	0.911	-40.6
Ephemeroptera	No	Tamhane	SchLS	CheL	No	0.293	-287.0
				DelL	No	0.917	78.3
				BagLS	No	0.987	58.0
				UnL1	No	1.000	2.9
			CheL	DelL	No	0.155	365.2
				BagLS	No	0.178	344.9
				UnL1	No	0.287	289.9
			DelL	BagLS	No	0.953	-20.3
				UnL1	No	0.942	-75.4
			BagLS	UnL1	No	0.992	-55.1
Trichoptera	No	Tamhane	SchLS	CheL	No	0.224	55.1
				DelL	Yes	0.036	89.9
				BagLS	No	0.595	55.1
				UnL1	No	0.580	40.6
			CheL	DelL	No	0.466	34.8
				BagLS	No	1.000	0.0
				UnL1	No	0.999	-14.5
			DelL	BagLS	No	0.903	-34.8
				UnL1	No	0.228	-49.3
			BagLS	UnL1	No	1.000	-14.5
Gastropoda	No	Tamhane	SchLS	CheL	No	0.433	266.7
				DelL	No	0.407	275.4
				BagLS	No	1.000	34.8
				UnL1	No	0.999	75.4
			CheL	DelL	No	0.999	8.7
				BagLS	No	0.990	-231.9
				UnL1	No	0.207	-191.3
			DelL	BagLS	No	0.987	-240.6
				UnL1	No	0.193	-200.0
			BagLS	UnL1	No	1.000	40.6

Table E.16: Post-hoc comparison of shallow lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Bivalvia	Yes	Bonferroni	SchLS	CheL	Yes	0.051	333.3
				DelL	No	1.000	-2.9
				BagLS	No	0.244	258.0
				UnL1	No	1.000	150.7
			CheL	DelL	Yes	0.048	-336.2
				BagLS	No	1.000	-75.4
				UnL1	No	1.000	-182.6
			DelL	BagLS	No	0.230	260.9
				UnL1	No	1.000	153.6
			BagLS	UnL1	No	1.000	-107.2
Hirudinea	No	Tamhane	SchLS	CheL	No	0.422	26.1
				DelL	No	0.422	26.1
				BagLS	No	1.000	2.9
				UnL1	No	0.527	23.2
			CheL	DelL	No	.	0.0
				BagLS	No	0.649	-23.2
				UnL1	No	0.991	-2.9
			DelL	BagLS	No	0.649	-23.2
				UnL1	No	0.991	-2.9
			BagLS	UnL1	No	0.768	20.3
Hyalella	Yes	Bonferroni	SchLS	CheL	Yes	0.000	1,275.4
				DelL	Yes	0.000	1,287.0
				BagLS	Yes	0.000	1,191.3
				UnL1	Yes	0.000	1,092.8
			CheL	DelL	No	1.000	11.6
				BagLS	No	1.000	-84.1
				UnL1	No	1.000	-182.6
			DelL	BagLS	No	1.000	-95.7
				UnL1	No	1.000	-194.2
			BagLS	UnL1	No	1.000	-98.6
Sialis	No	Tamhane	SchLS	CheL	No	0.991	-5.8
				DelL	No	0.991	-2.9
				BagLS	No	.	0.0
				UnL1	No	.	0.0
			CheL	DelL	No	1.000	2.9
				BagLS	No	0.991	5.8
				UnL1	No	0.991	5.8
			DelL	BagLS	No	0.991	2.9
				UnL1	No	0.991	2.9
			BagLS	UnL1	No	.	0.0
Hydrachnidia	No	Tamhane	SchLS	CheL	No	0.394	127.5
				DelL	No	0.348	136.2
				BagLS	No	0.621	101.4
				UnL1	No	0.486	115.9
			CheL	DelL	No	0.999	8.7
				BagLS	No	0.776	-26.1
				UnL1	No	1.000	-11.6
			DelL	BagLS	No	0.265	-34.8
				UnL1	No	0.926	-20.3
			BagLS	UnL1	No	0.997	14.5

Table E.16: Post-hoc comparison of shallow lake stations. Metrics calculated at the lowest practical level of taxonomic resolution, Côté Gold, 2013.

Metric	3-group ANOVA Post-hoc Comparisons						
	Equal Variance	Test Type	(I) Area	(J) Area	Significant Difference Between Areas?	p-value	Mean Difference (i - j)
Harpacticoida	No	Tamhane	SchLS	CheL	No	0.293	29.0
				DelL	No	0.293	29.0
				BagLS	No	0.960	17.4
				UnL1	No	0.293	29.0
			CheL	DelL	No	.	0.0
				BagLS	No	0.991	-11.6
				UnL1	No	.	0.0
			DelL	BagLS	No	0.991	-11.6
				UnL1	No	.	0.0
			BagLS	UnL1	No	0.991	11.6
Ostracoda	No	Tamhane	SchLS	CheL	No	0.991	11.6
				DelL	No	0.991	11.6
				BagLS	No	0.991	11.6
				UnL1	No	0.960	-17.4
			CheL	DelL	No	.	0.0
				BagLS	No	.	0.0
				UnL1	No	0.293	-29.0
			DelL	BagLS	No	.	0.0
				UnL1	No	0.293	-29.0
			BagLS	UnL1	No	0.293	-29.0
Nemata	Yes	Bonferroni	SchLS	CheL	No	1.000	0.0
				DelL	No	1.000	8.7
				BagLS	No	1.000	5.8
				UnL1	Yes	0.067	-52.2
			CheL	DelL	No	1.000	8.7
				BagLS	No	1.000	5.8
				UnL1	Yes	0.067	-52.2
			DelL	BagLS	No	1.000	-2.9
				UnL1	Yes	0.021	-60.9
			BagLS	UnL1	Yes	0.031	-58.0

statistically significant at p-value < 0.10.

Table E.17: Nonmetric Multidimensional Scaling (NMDS) results displaying: percent variance explained, Monte Carlo randomization p-values of axis significance, and station scores of deep (4 m) lake stations, Côté Gold, 2013.

	Axis 1	Axis 2
% Variance explained	54.10	24.40
Monte Carlo *p*	0.00	0.00
ClaL-1	-0.99	-0.85
ClaL-2	-0.61	-0.94
ClaL-3	-1.10	-1.21
ClaL-4	-1.56	-0.49
ClaL-5	-0.13	0.09
WeeL-1	-1.13	0.29
WeeL-2	-0.30	0.44
WeeL-3	-0.99	-0.30
WeeL-4	-1.48	0.43
WeeL-5	-0.47	-0.04
UTDL-1	-0.15	-0.28
UTDL-2	0.81	-0.28
UTDL-3	-0.27	-0.31
UTDL-4	-0.12	-0.19
UTDL-5	0.54	-0.50
MTDL-1	0.72	-0.32
MTDL-2	0.46	-0.19
MTDL-3	0.89	0.12
MTDL-4	0.61	-0.30
MTDL-5	0.00	-0.18
LTDL-1	0.90	-0.06
LTDL-2	0.94	0.02
LTDL-3	0.65	-0.15
LTDL-4	1.00	0.04
LTDL-5	1.05	-0.03
UnL3-1	1.36	0.26
UnL3-2	1.15	0.25
UnL3-3	1.04	0.24
UnL3-4	1.17	0.37
UnL3-5	1.09	0.46
SchLD-1	-0.86	1.02
SchLD-2	-0.53	0.21
SchLD-3	-1.09	-0.10
SchLD-4	-1.40	-0.14
SchLD-5	-0.57	0.03
BagLM-1	-0.93	0.89
BagLM-2	-0.51	0.72
BagLM-3	-0.45	1.04
BagLM-4	-1.30	1.04
BagLM-5	-0.52	1.56
UnL2-1	-0.07	-0.38
UnL2-2	0.65	0.35
UnL2-3	1.09	0.97
UnL2-4	0.48	0.03
UnL2-5	0.16	0.01
NevL-1	0.53	-0.66
NevL-2	0.15	-0.84
NevL-3	0.08	-0.74
NevL-4	0.25	-0.54
NevL-5	-0.24	-0.83

Table E.18: Nonmetric Multidimensional Scaling (NMDS) results displaying: percent variance explained, Monte Carlo randomization p-values of axis significance, and station scores of shallow (2 m) lake stations, Côté Gold, 2013.

	Axis 1	Axis 2	Axis 3
% Variance explained	37.40	25.70	20.30
Monte Carlo *p*	0.00	0.00	0.00
CheL-1	0.50	-0.96	0.09
CheL-2	0.52	-0.79	0.21
CheL-3	0.06	-0.66	0.35
CheL-4	0.67	-0.53	0.10
CheL-5	-0.15	-0.60	0.74
DelL-1	0.82	0.65	0.15
DelL-2	1.07	0.65	-0.17
DelL-3	1.04	0.64	0.21
DelL-4	1.02	0.68	0.01
DelL-5	0.94	0.32	-0.08
SchLS-1	-0.80	0.64	-0.15
SchLS-2	-1.04	0.75	-0.16
SchLS-3	-1.05	0.62	0.30
SchLS-4	-0.66	0.50	0.07
SchLS-5	-0.73	0.37	0.24
BagLS-1	-0.75	-1.02	-0.21
BagLS-2	-0.27	0.11	0.54
BagLS-3	-0.63	-0.62	0.66
BagLS-4	0.41	0.26	0.37
BagLS-5	-0.44	0.41	0.18
UnL1-1	-0.28	-0.50	-0.51
UnL1-2	0.07	-0.22	-1.10
UnL1-3	0.41	-0.78	-0.42
UnL1-4	-0.27	0.10	-0.92
UnL1-5	-0.48	-0.03	-0.46

Table E.19: Deep station Nonmetric Multidimensional Scaling (NMDS) axis scores of benthic invertebrate taxa and associated Pearson correlation of abundance with NMDS station scores, Côté Gold, 2013.

Taxa	Pearson Correlation Coefficient[a]		p-value[b]		Axis Scores[c]	
	NMDS Axis-1 (54.1%)	NMDS Axis-2 (24.4%)	NMDS Axis-1 (54.1%)	NMDS Axis-2 (24.4%)	NMDS Axis-1 (54.1%)	NMDS Axis-2 (24.4%)
P. Nemata	-0.282	-0.275	0.048	0.053	-0.434	-0.293
Dero digitata	-0.210	0.071	0.143	0.622	-0.601	0.142
Slavina appendiculata	-0.308	-0.388	0.029	0.005	-0.899	-0.783
Aulodrilus limnobius	0.009	-0.045	0.949	0.757	0.037	-0.124
immatures with hair chaetae	-0.099	0.057	0.495	0.696	-0.179	0.071
immatures without hair chaetae	0.160	-0.138	0.268	0.341	0.291	-0.173
Gloiobdella elongata	-0.186	0.103	0.195	0.476	-0.725	0.278
Subcl. Acari	-0.207	0.117	0.150	0.419	-0.274	0.107
O. Harpacticoida	-0.209	0.581	0.146	0.000	-0.594	1.144
Cl. Ostracoda	-0.155	0.149	0.281	0.300	-0.590	0.392
Hyalella	-0.399	-0.304	0.004	0.032	-0.942	-0.496
Caenis	-0.612	0.429	0.000	0.002	-0.962	0.466
Hexagenia	0.135	-0.307	0.351	0.030	0.182	-0.287
Sialis	-0.168	0.018	0.242	0.901	-0.291	0.022
Epitheca	-0.099	0.010	0.496	0.944	-0.292	0.021
Phylocentropus	-0.092	-0.069	0.527	0.633	-0.210	-0.110
F. Phryganeidae	-0.204	-0.377	0.155	0.007	-0.680	-0.869
Bezzia	-0.074	-0.214	0.611	0.136	-0.243	-0.488
Mallochohelea	-0.480	0.100	0.000	0.488	-0.805	0.116
Sphaeromias	-0.086	0.332	0.554	0.018	-0.129	0.347
Chaoborus albatus	-0.396	0.448	0.004	0.001	-0.742	0.580
Chaoborus flavicans	0.386	0.285	0.006	0.045	0.887	0.453
Chaoborus punctipennis	0.532	-0.243	0.000	0.089	0.359	-0.114
Chironomus	-0.208	0.229	0.147	0.109	-0.419	0.320
Cladotanytarsus	-0.289	0.010	0.042	0.944	-0.902	0.022
Cryptochironomus	-0.210	0.264	0.144	0.064	-0.438	0.382
Dicrotendipes	-0.423	-0.145	0.002	0.315	-1.085	-0.257
Einfeldia	-0.273	0.381	0.055	0.006	-0.603	0.581
Glyptotendipes	-0.369	-0.439	0.008	0.001	-0.988	-0.813
Microtendipes	-0.341	-0.302	0.015	0.033	-1.028	-0.629
Polypedilum halterale	-0.336	-0.081	0.017	0.578	-1.218	-0.202
Polypedilum nubeculosum	-0.322	0.052	0.023	0.718	-1.008	0.113
Pseudochironomus	-0.318	0.045	0.025	0.754	-1.207	0.120
Tanytarsus	-0.526	-0.091	0.000	0.531	-0.779	-0.093
Tribelos	-0.392	0.037	0.005	0.799	-1.096	0.071
Zalutschia	0.798	0.066	0.000	0.651	0.799	0.045
Ablabesmyia	0.009	-0.200	0.951	0.165	0.015	-0.234
Clinotanypus	-0.030	-0.331	0.836	0.019	-0.057	-0.434
Procladius	-0.715	0.251	0.000	0.079	-0.625	0.151
Amnicola	-0.341	0.013	0.015	0.926	-1.095	0.030
Valvata	-0.278	-0.116	0.050	0.424	-0.624	-0.179
Cyclocalyx	-0.240	-0.630	0.094	0.000	-0.250	-0.454
Sphaerium (Musculium)	-0.073	-0.221	0.613	0.122	-0.169	-0.354

[a] Highlighted cells showcase pearson correlation coefficients greater than an absolute value of 0.70.
[b] Highlighted cells showcase pearson correlation with p-value less than 0.05.
[c] Highlighted cells meet criteria of both a and b.

Table E.20: Shallow station Nonmetric Multidimensional Scaling (NMDS) axis scores of benthic invertebrate taxa and associated Pearson correlation of abundance with NMDS station scores, Côté Gold, 2013.

Taxa	Pearson Correlation Coefficient[a]			p-value[b]			Axis Scores[c]		
	NMDS Axis-1 (37.4%)	NMDS Axis-2 (25.7%)	NMDS Axis-3 (20.3%)	NMDS Axis-1 (37.4%)	NMDS Axis-2 (25.7%)	NMDS Axis-3 (20.3%)	NMDS Axis-1 (37.4%)	NMDS Axis-2 (25.7%)	NMDS Axis-3 (20.3%)
P. Nemata	-0.062	-0.220	-0.701	0.769	0.290	0.000	-0.074	-0.230	-0.537
Lumbriculus	-0.116	0.041	-0.502	0.580	0.846	0.011	-0.258	0.078	-0.717
Gloiobdella elongata	-0.047	0.070	0.083	0.822	0.739	0.693	-0.089	0.114	0.100
Helobdella stagnalis	-0.282	-0.309	-0.068	0.171	0.133	0.745	-0.753	-0.717	-0.117
Subcl. Acari	-0.429	-0.163	0.239	0.032	0.435	0.250	-0.455	-0.151	0.162
O. Harpacticoida	-0.406	-0.183	-0.095	0.044	0.382	0.653	-0.768	-0.303	-0.115
Cl. Ostracoda	-0.083	-0.249	-0.480	0.694	0.230	0.015	-0.141	-0.369	-0.521
Hyalella	-0.670	0.416	0.025	0.000	0.039	0.907	-0.639	0.345	0.015
Caenis	-0.265	-0.114	0.480	0.200	0.587	0.015	-0.354	-0.132	0.408
Hexagenia	0.345	-0.603	0.096	0.092	0.001	0.649	0.475	-0.725	0.084
F. Leptophlebiidae	-0.260	-0.065	-0.267	0.210	0.759	0.197	-0.502	-0.109	-0.329
F. Coenagrionidae	-0.067	-0.060	-0.701	0.751	0.776	0.000	-0.136	-0.106	-0.911
Epitheca	0.076	-0.217	-0.617	0.718	0.297	0.001	0.160	-0.398	-0.828
Phylocentropus	0.157	-0.534	-0.340	0.453	0.006	0.097	0.189	-0.559	-0.260
Oecetis	-0.554	0.047	-0.040	0.004	0.823	0.848	-0.687	0.051	-0.032
F. Phryganeidae	0.006	-0.164	-0.500	0.978	0.433	0.011	0.013	-0.289	-0.641
Bezzia	-0.151	0.010	-0.523	0.471	0.962	0.007	-0.229	0.013	-0.505
Mallochohelea	0.177	-0.433	0.211	0.397	0.031	0.312	0.249	-0.530	0.189
Sphaeromias	-0.236	-0.298	0.282	0.255	0.149	0.171	-0.518	-0.568	0.395
Chaoborus albatus	-0.180	-0.428	0.652	0.390	0.033	0.000	-0.171	-0.355	0.396
Chaoborus punctipennis	0.763	0.435	0.178	0.000	0.030	0.396	0.755	0.375	0.112
Cladotanytarsus	-0.216	0.073	0.180	0.299	0.728	0.388	-0.264	0.077	0.141
Cryptochironomus	0.028	-0.215	-0.192	0.894	0.302	0.359	0.026	-0.172	-0.113
Dicrotendipes	-0.285	-0.226	-0.065	0.167	0.277	0.759	-0.420	-0.290	-0.061
Glyptotendipes	0.085	-0.431	-0.491	0.687	0.032	0.013	0.112	-0.496	-0.415
Lauterborniella	-0.408	0.298	0.239	0.043	0.148	0.251	-0.611	0.389	0.228
Microtendipes	-0.145	-0.033	-0.567	0.489	0.874	0.003	-0.279	-0.056	-0.695
Pagastiella	-0.129	-0.190	0.235	0.539	0.364	0.259	-0.267	-0.342	0.310
Polypedilum halterale	-0.438	0.369	-0.089	0.029	0.070	0.671	-0.872	0.640	-0.113
Polypedilum nubeculosum	-0.124	0.013	-0.519	0.554	0.952	0.008	-0.252	0.022	-0.670
Pseudochironomus	-0.203	-0.091	-0.741	0.331	0.665	0.000	-0.273	-0.107	-0.638
Tanytarsus	-0.629	0.461	0.251	0.001	0.020	0.227	-0.678	0.433	0.173
Zalutschia	0.613	0.401	-0.031	0.001	0.047	0.885	0.963	0.548	-0.031
Clinotanypus	0.199	-0.454	-0.540	0.339	0.023	0.005	0.190	-0.377	-0.329
Guttipelopia	-0.486	0.409	-0.069	0.014	0.042	0.744	-0.895	0.656	-0.081
Procladius	0.068	-0.540	0.085	0.746	0.005	0.688	0.037	-0.255	0.029
Amnicola	-0.292	-0.394	-0.300	0.157	0.052	0.145	-0.427	-0.501	-0.280
F. Planorbidae	-0.098	-0.219	-0.557	0.639	0.292	0.004	-0.218	-0.423	-0.787
Valvata	-0.529	0.421	-0.054	0.007	0.036	0.797	-0.759	0.526	-0.050
Cyclocalyx	0.601	0.565	-0.052	0.001	0.003	0.807	0.526	0.431	-0.029
Sphaerium (Musculium)	0.096	-0.394	-0.333	0.650	0.052	0.103	0.152	-0.543	-0.337

[a] Highlighted cells showcase pearson correlation coefficients greater than an absolute value of 0.70.

[b] Highlighted cells showcase pearson correlation with p-value less than 0.05.

[c] Highlighted cells meet criteria of both a and b.

Table E.21: Deep station Nonmetric Multidimensional Scaling (NMDS) axis scores of sediment particle size and TOC content and associated Pearson correlation with NMDS station scores, Côté Gold, 2013.

Sediment Endpoint	Pearson Correlation Coefficient[a]		p-value[b]	
	NMDS Axis-1 (25.1%)	NMDS Axis-2 (24.4%)	NMDS Axis-1 (25.1%)	NMDS Axis-2 (24.4%)
TOC	-0.021	0.411	0.884	0.003
Gravel	-0.199	0.278	0.167	0.051
Sand	-0.144	-0.135	0.319	0.351
Silt	0.219	-0.003	0.127	0.982
Clay	-0.031	0.279	0.831	0.050

[a] Highlighted cells showcase pearson correlation coefficients greater than an absolute value of 0.50

[b] Highlighted cells showcase pearson correlation with p-value less than 0.05

Table E.22: Shallow station Nonmetric Multidimensional Scaling (NMDS) axis scores of sediment particle size and TOC content and associated Pearson correlation with NMDS station scores, Côté Gold, 2013.

Sediment Endpoint	Pearson Correlation Coefficient[a]			p-value[b]		
	NMDS Axis-1 (37.4%)	NMDS Axis-2 (25.7%)	NMDS Axis-3 (20.3%)	NMDS Axis-1 (37.4%)	NMDS Axis-2 (25.7%)	NMDS Axis-3 (20.3%)
TOC	-0.708	0.200	-0.025	0.000	0.339	0.907
Gravel*	n/a	n/a	n/a	n/a	n/a	n/a
Sand	0.204	-0.603	0.003	0.328	0.001	0.987
Silt	0.523	0.306	-0.183	0.007	0.137	0.381
Clay	-0.723	0.369	0.171	0.000	0.069	0.414

[a] Highlighted cells showcase pearson correlation coefficients greater than an absolute value of 0.50

[b] Highlighted cells showcase pearson correlation with p-value less than 0.05

* Only 1 sample (CheL-1) had percent gravel above MDL (<0.10).

BENTHIC INVERTEBRATE FIELD SHEETS

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAMGOLD
Date/Time: Chester Lakes
Waterbody: Sept 13, 2013
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47° 31' 39.2

Project Name/Number: 2496 Baseline
Field Crew: KC, JT
Station Identifier: CheL-1
Grabs in Composite: 3
Station Depth (m): 1.9
Longitude (ddmmss): 81° 56' 12.3

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble 0 % Gravel <5 % Sand & finer 100%

%Organic debris <5 Comments: sand on bottom 1/2 of ponar top sediment v. soft dark brown, no macro, no algae.

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☑ NS Water sample collected

Surface (25 cm from surface) ~1m

Temperature (°C): 14.94
pH (pH units): 7.74
DO (% sat): 88.3
DO (mg/L): 8.88
Conductivity (uS/cm): 39 cond. 32

Bottom (25 cm from bottom)

Temperature (°C):
pH (pH units):
DO (% sat):
DO (mg/L):
Conductivity (uS/cm):

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
TP (Y/N): ✓
Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): NO

Signature: KConnors

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MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Depositional Benthic Grab Study Field Sheet

Client:	IAMGOLD	Project Name/Number:	2496 Baseline
Date/Time:	Sept 13, 2013	Field Crew:	KC, JT
Waterbody:	Chester Lake	Station Identifier:	CheL-2
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	1.9
Latitude (ddmmss):	47° 31' 44.0"	Longitude (ddmmss):	81° 56' 17.3

SAMPLE CHARACTERISTICS

Number of Jars:

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble 0 % Gravel 0 % Sand & finer ~~100~~ 90

%Organic debris 10 Comments: less sand to none in this sample, more organics, no macrophytes dark brown sed.

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	15.13	DO (% sat):	87.4
pH (pH units):	7.63	DO (mg/L):	8.76
		Conductivity (uS/cm):	sp 39 cond 32

Bottom (25 cm from bottom)

Temperature (°C):		DO (% sat):	
pH (pH units):		DO (mg/L):	
		Conductivity (uS/cm):	

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	✓	Sample for TOC (Y/N):	✓
Metals (Y/N):	✓	TKN (Y/N):	✓
TP (Y/N):	✓	Duplicate taken (Y/N):	NO

Signature: K Connor

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAMGOLD
Date/Time: Sept 13 2013 10:50
Waterbody: Chester Lake
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47°31'49.9"

Project Name/Number: 2496 Baseline
Field Crew: KC, JT
Station Identifier: CheL-3
Grabs in Composite: ~~5~~ 3
Station Depth (m): 1.9
Longitude (ddmmss): 81°56'22.7"

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 90

%Organic debris <10 Comments: dark brown sediment burrowing mayflies, some wood, pine cone

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface) ~1m.

Temperature (°C): 15.13
pH (pH units): 7.56

DO (% sat): 88.4
DO (mg/L): 8.87
Conductivity (uS/cm): sp 39 cond 32

Bottom (25 cm from bottom)

Temperature (°C):
pH (pH units):

DO (% sat):
DO (mg/L):
Conductivity (uS/cm):

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
TP (Y/N): ✓

Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): NO

Signature: KConnors

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	IAM GOLD	Project Name/Number:	2496 Baseline
Date/Time:	Sept 13, 2013 11:51	Field Crew:	KC, JT
Waterbody:	Chester Lake	Station Identifier:	CheL-4
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	1.5 - 1.6
Latitude (ddmmss):	47° 32' 01.1"	Longitude (ddmmss):	081° 56' 17.5"

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble Ø % Gravel Ø % Sand & finer ~~100%~~ 85

%Organic debris 15% Comments: no sand, more wood than #3

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☒ Water sample collected

Surface (25 cm from surface) ~1m.

Temperature (°C):	14.50	DO (% sat):	86.6
pH (pH units):	7.49	DO (mg/L):	8.82
		Conductivity (uS/cm):	sp 39 cond 31

Bottom (25 cm from bottom)

Temperature (°C):		DO (% sat):	
pH (pH units):		DO (mg/L):	
		Conductivity (uS/cm):	

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	✓	Sample for TOC (Y/N):	✓
Metals (Y/N):	✓	TKN (Y/N):	✓
TP (Y/N):	✓	Duplicate taken (Y/N):	No

Signature: KCamor

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAMGOLD
Date/Time: Sept 13, 2013 12:30
Waterbody: Chester Lake
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47 32 66.8

Project Name/Number: 2496 Baseline
Field Crew: KG, JT
Station Identifier: ChеL - 5
Grabs in Composite: ~~5~~ 3
Station Depth (m): 1.4
Longitude (ddmmss): ~~83~~ 81°56'14.1"

SAMPLE CHARACTERISTICS

Number of Jars: 2

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble 0 % Gravel 0 % Sand & finer 65

%Organic debris 35 Comments: a lot of woody debris; only place to sample; dark brown sediment

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

No Water sample collected

Surface (25 cm from surface) ~1 m.

Temperature (°C): 14.64
pH (pH units): 7.26
DO (% sat): 86.0
DO (mg/L): 8.73
Conductivity (uS/cm): sp 39 cond. 31

Bottom (25 cm from bottom)

Temperature (°C):
pH (pH units):
DO (% sat):
DO (mg/L):
Conductivity (uS/cm):

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
TP (Y/N): ✓
Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): NO

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	Iam Gold	Project Name/Number:	2496
Date/Time:	12-Sept-13	Field Crew:	RH, TW
Waterbody:	Clam Lake	Station Identifier:	ClaL-P1
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	4.4
Latitude (ddmmss):	47 33 13.4	Longitude (ddmmss):	81 57 07.9

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 90

%Organic debris 10 Comments: typical lake sediment dark brown, very fine material

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): ?

*pH is not quite accurate

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	17.55	DO (% sat):	109.8
* pH (pH units):	7.91	DO (mg/L):	10.48
		Conductivity (uS/cm):	52

Bottom (25 cm from bottom)

Temperature (°C):	17.0	DO (% sat):	101.0
* pH (pH units):	7.87	DO (mg/L):	9.77
		Conductivity (uS/cm):	52

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	

Signature: [signature]

minnow environmental inc. **Depositional Benthic Grab Study Field Sheet**	**MINNOW ENVIRONMENTAL INCORPORATED** 2 Lamb Street, Georgetown, Ontario L7G 3M9 Telephone: (905) 873 - 3371 Facsimilie: (905) 873 - 6370

Client: Iam Gold | Project Name/Number: 2496
Date/Time: 12-Sept-15 | Field Crew: RH, TN
Waterbody: Clam Lake | Station Identifier: ClaL-P2
Sampling Device: petite Ponar | Grabs in Composite: ~~5~~ 3
Seive Size: 500 um | Station Depth (m): 4.0
Latitude (ddmmss): 47 33 11.4 | Longitude (ddmmss): 81 57 22.1

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 90

%Organic debris 10 Comments: Same as #1 ClaL-P1

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

*pH reading wonky

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 17.59 | DO (% sat): 111.2
* pH (pH units): 7.90 | DO (mg/L): 10.62
Conductivity (uS/cm): 52

Bottom (25 cm from bottom)

Temperature (°C): 16.81 | DO (% sat): 96.6
* pH (pH units): 7.93 | DO (mg/L): 9.37
Conductivity (uS/cm): 53

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y | Sample for TOC (Y/N): Y
Metals (Y/N): Y | TKN (Y/N): Y
TP (Y/N): Y | Duplicate taken (Y/N): N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

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Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	IAMGOLD	Project Name/Number:	2496 - Cote Gold
Date/Time:	2013/09/15 11:45	Field Crew:	~~CLAL 3~~
Waterbody:	Clam Lake	Station Identifier:	CLAL-3
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	4.0
Latitude (ddmmss):	47°32' 57.9"	Longitude (ddmmss):	81° 57' 11.1"

SAMPLE CHARACTERISTICS

Number of Jars: 1 (1L)

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 100%

%Organic debris ____ Comments: ____

very fine

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): ____

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

N ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	15.52	DO (% sat):	98.6
pH (pH units):	6.95	DO (mg/L):	9.83
		Sp. Conductivity (uS/cm):	38

Bottom (25 cm from bottom)

Temperature (°C):	15.48	DO (% sat):	95.0
pH (pH units):	6.99	DO (mg/L):	9.61
		Conductivity (uS/cm):	39

SEDIMENT QUALITY MEASURES

CLAL-P3
CLAL-P3Z

Sample for Particle Size (Y/N):	✓	Sample for TOC (Y/N):	✓
Metals (Y/N):	✓	TKN (Y/N):	✓
TP (Y/N):	✓	Duplicate taken (Y/N):	~~P3Z~~ CLAL-P3Z

Signature: ____

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Client: IAM Gold
Date/Time: 2013/09/15 ~~15:??~~ 15:40
Waterbody: Clam Lake
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): ~~47°32'49.2"~~ 47°32' 39.4"

Project Name/Number: 2496
Field Crew: CR PI
Station Identifier: CLAL-4
Grabs in Composite: ~~5~~ 3
Station Depth (m): 3.9
Longitude (ddmmss): ~~81°57'09.1"~~ 81°57' 21.3"

SAMPLE CHARACTERISTICS

Number of Jars: 1 (L)

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 100

%Organic debris ____ Comments: ____

Fine

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): ____

WATER QUALITY MEASURES mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m NC ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	~~15.23~~ 15.34	DO (% sat):	~~99.3~~ 99.4
pH (pH units):	~~7.07~~ 7.09	DO (mg/L):	~~9.93~~ 9.96
		Conductivity (uS/cm):	~~38~~ 39

Bottom (25 cm from bottom)

Temperature (°C):	~~15.49~~ 15.35	DO (% sat):	96.8 97.3
pH (pH units):	~~7.08~~ 7.08	DO (mg/L):	9.68 9.75
		Conductivity (uS/cm):	~~38~~ 38

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: ____

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Client: IAM GOLD
Date/Time: 2013/09/15 17:00
Waterbody: Clam Lake
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47°32'47.9"

Project Name/Number: 2496
Field Crew: CR PI
Station Identifier: CLAL-5
Grabs in Composite: ~~5~~ 3
Station Depth (m): 4.4
Longitude (ddmmss): 81°57'28.9"

SAMPLE CHARACTERISTICS

Number of Jars: 1 (L)

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 100

%Organic debris ____ Comments: ____

fine

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): ____

☑ Water sample collected atcentre

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

Surface (25 cm from surface)

Temperature (°C): 15.34
pH (pH units): 6.95
DO (% sat): 95.4
DO (mg/L): 9.55
Conductivity (uS/cm): 39

Bottom (25 cm from bottom)

Temperature (°C): 15.37
pH (pH units): 6.97
DO (% sat): 94.2
DO (mg/L): 9.44
Conductivity (uS/cm): 38

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ~~Y~~
Metals (Y/N): ~~Y~~
TP (Y/N): Y
Sample for TOC (Y/N): Y
TKN (Y/N): Y
Duplicate taken (Y/N): N

Signature: ____

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Depositional Benthic Grab Study Field Sheet

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mark074

Client:	IAMGOLD	Project Name/Number:	2496
Date/Time:	2013/09/12 9:45	Field Crew:	C
Waterbody:	WEE DUCK LAKE	Station Identifier:	WEEL-1
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	4.0
Latitude (ddmmss):	47°34'00.6"	Longitude (ddmmss):	81°54'49.6"

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 80

%Organic debris 20 Comments:

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☑ Water sample collected ~~WEE~~ - mid lake

Surface (25 cm from surface)

Temperature (°C):	17.27°	DO (% sat):	~~[illegible]~~ 98%
pH (pH units):	6.68	DO (mg/L):	9.43
		Conductivity (uS/cm):	34

Bottom (25 cm from bottom)

Temperature (°C):	16.9	DO (% sat):	90.3
pH (pH units):	6.77	DO (mg/L):	8.75
		Conductivity (uS/cm):	34

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	✓	Sample for TOC (Y/N):	✓
Metals (Y/N):	✓	TKN (Y/N):	✓
TP (Y/N):	✓	Duplicate taken (Y/N):	WEEL-P1 Z

Signature: C Russel

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Depositional Benthic Grab Study Field Sheet

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Client:	IAM GOLD	Project Name/Number:	2496
Date/Time:	2013/09/12 10:30	Field Crew:	CR PT
Waterbody:	WEE DUCK LAKE	Station Identifier:	WEEL-P2
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	4.0
Latitude (ddmmss):	47°33'58.0"	Longitude (ddmmss):	81°55'02.4"

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 95

%Organic debris 5 Comments: ___

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): green on surface

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	16.9	DO (% sat):	~~95.7~~ 94.9
pH (pH units):	6.9	DO (mg/L):	9.13
		Sp Conductivity (uS/cm):	32

Bottom (25 cm from bottom)

Temperature (°C):	16.6	DO (% sat):	86.3
pH (pH units):	6.8	DO (mg/L):	8.49
		Sp Conductivity (uS/cm):	34

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):		Sample for TOC (Y/N):	WEEL-P2
Metals (Y/N):		TKN (Y/N):	
TP (Y/N):		Duplicate taken (Y/N):	

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Depositional Benthic Grab Study Field Sheet

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Telephone: (905) 873 - 3371
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Client: IAMGOLD
Date/Time: Sept 12.13 11am
Waterbody: wee duck Lake
Sampling Device: petite Ponar
Seive Size: 500 um
N Latitude (ddmmss): N 47° 33' 47.2

Project Name/Number: 2496 / Cote Lake
Field Crew: CR PI
Station Identifier: WEEL-P3.
Grabs in Composite: ~~5~~ 3
Station Depth (m): 3.7 m
Longitude (ddmmss): W 081° 54 54.1

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 95

%Organic debris 5 Comments: very fine

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse — common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): green on surface of sed

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

N Water sample collected

Surface (25 cm from surface)

Temperature (°C): 17.2°C
pH (pH units): 6.88
DO (% sat): ~~96.4~~ 95.9
DO (mg/L): 9.22
(spec) Conductivity (uS/cm): 34

Bottom (25 cm from bottom)

Temperature (°C): 17.17
pH (pH units): 6.94
DO (% sat): 93.6
DO (mg/L): 9.04
(spec) Conductivity (uS/cm): 0.30

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
TP (Y/N): ✓
Sample for TOC (Y/N): ✓ WEEL-P3
TKN (Y/N): ✓
Duplicate taken (Y/N): N

Signature: Russel

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Telephone: (905) 873 - 3371
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Client:	IAM GOLD	Project Name/Number:	2496
Date/Time:	2013/09/12 11:45 am	Field Crew:	CR-PT
Waterbody:	WEE DUCK LK	Station Identifier:	WEEL-P4
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	3.6
Latitude (ddmmss):	47°33'47.6"	Longitude (ddmmss):	81° 54'42.3

WP - 076

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 90

%Organic debris 10 Comments: more sand in this sample some sticks (few)

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m NO ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	17.32	DO (% sat):	~~9.88~~ 102.3
pH (pH units):	7.01	DO (mg/L):	9.88
		Conductivity (uS/cm):	33

Bottom (25 cm from bottom)

Temperature (°C):	17.27	DO (% sat):	99.2
pH (pH units):	~~8,~~ 7.03	DO (mg/L):	9.54
		Conductivity (uS/cm):	33

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	✓	Sample for TOC (Y/N):	✓ WeeL-P4
Metals (Y/N):	✓	TKN (Y/N):	✓
TP (Y/N):	✓	Duplicate taken (Y/N):	NO

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

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Client:	IAMGOLD	Project Name/Number:	2496
Date/Time:	2013/09/12 12:15	Field Crew:	CR PF
Waterbody:	WEEDUCK LK	Station Identifier:	WEED P5
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	4.1
Latitude (ddmmss):	47°33'51.8"	Longitude (ddmmss):	81°54'39.7"

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 90

%Organic debris 10 Comments:

more clay at this station - still very fine

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	17.38	DO (% sat):	98.9
pH (pH units):	7.01	DO (mg/L):	9.49
		Conductivity (uS/cm):	34

Bottom (25 cm from bottom)

Temperature (°C):	17.21	DO (% sat):	95.7
pH (pH units):	6.97	DO (mg/L):	9.22
		Conductivity (uS/cm):	34

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y WEEL-P5
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	No

Signature: Reissel

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Depositional Benthic Grab Study Field Sheet

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Telephone: (905) 873 - 3371
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Client: IAM GOLD
Date/Time: 2013/09/12 14:00
Waterbody: UPPER THREE DUCK LK
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47°33'33.1"

Project Name/Number: 2496
Field Crew: CR PI
Station Identifier: UTDL-P1
Grabs in Composite: ~~5~~ 3
Station Depth (m): 3.1
Longitude (ddmmss): 81°54'57.8"

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 98

%Organic debris 2 Comments: very fine

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

see profile

[✓] Water sample collected

Surface (25 cm from surface)

Temperature (°C): 17.06
pH (pH units): 6.9
DO (% sat): 96.8
DO (mg/L): 9.39
SP. Conductivity (uS/cm): 39

Bottom (25 cm from bottom)

Temperature (°C): 17.05
pH (pH units): 6.98
DO (% sat): 94.0
DO (mg/L): 9.11
SP Conductivity (uS/cm): 39

SEDIMENT QUALITY MEASURES

UTDLP1 & UTDLP1Z

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
TP (Y/N): ✓

Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): Y UTDL-P1Z

Signature: C Russel

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Depositional Benthic Grab Study Field Sheet

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Telephone: (905) 873 - 3371
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Client:	IAM GOLD	Project Name/Number:	2496
Date/Time:	2013/09/12 14:30	Field Crew:	CR PI
Waterbody:	Upper Three Duck Lk	Station Identifier:	UTDL-P2
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	3.6
Latitude (ddmmss):	47°33'23.3"	Longitude (ddmmss):	81°54'57.8"

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 100

%Organic debris ___ Comments: very fine

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☑ Water sample collected — see profile

Surface (25 cm from surface)

Temperature (°C):	17.02	DO (% sat):	94.4
pH (pH units):	6.97	DO (mg/L):	9.10
		Sp Conductivity (uS/cm):	39

Bottom (25 cm from bottom)

Temperature (°C):	17.01	DO (% sat):	93.4
pH (pH units):	6.98	DO (mg/L):	9.00
		Conductivity (uS/cm):	38

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	✓	Sample for TOC (Y/N):	✓
Metals (Y/N):	✓	TKN (Y/N):	✓
TP (Y/N):	✓	Duplicate taken (Y/N):	N

Signature: CRussel

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Depositional Benthic Grab Study Field Sheet

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Telephone: (905) 873 - 3371
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Client: IAMGOLD
Date/Time: 20 12/09/12 3 pm
Waterbody: Upper Three Rock Lake
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47°23'25.7"

Project Name/Number: 2496
Field Crew: CR PT
Station Identifier: UTRL-P3
Grabs in Composite: ~~5~~ 3
Station Depth (m): 3.1
Longitude (ddmmss): 81°54'36.5"

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 100

%Organic debris ___ Comments: very fine

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☑ Water sample collected ✓ See profile

Surface (25 cm from surface)

Temperature (°C): 17.33
pH (pH units): 6.99
DO (% sat): 99.1
DO (mg/L): 9.53
Sp Conductivity (uS/cm): 39

Bottom (25 cm from bottom)

Temperature (°C): 17.31
pH (pH units): 7.01
DO (% sat): 97.5
DO (mg/L): 9.38
Conductivity (uS/cm): 39

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y
Metals (Y/N): Y
TP (Y/N): Y
Sample for TOC (Y/N): Y
TKN (Y/N): Y
Duplicate taken (Y/N): N.

Signature: CRussel

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Depositional Benthic Grab Study Field Sheet

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2 Lamb Street
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Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAMGOLD
Date/Time: Sept 12.13 3:30pm.
Waterbody: Upper Three duck Lake
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47°33'32.8"

Project Name/Number: Cote Gold / 2496
Field Crew: CR PI
Station Identifier: UTDL-P4
Grabs in Composite: ~~5~~ 3
Station Depth (m): 3.4
Longitude (ddmmss): 81°54'35.8"

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 100

%Organic debris ____ Comments: very fine

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☑ Water sample collected see profile

Surface (25 cm from surface)

Temperature (°C): 17.07
pH (pH units): 7.02
DO (% sat): 97.2
DO (mg/L): 9.38
Conductivity (uS/cm): 39

Bottom (25 cm from bottom)

Temperature (°C): 17.09
pH (pH units): 6.98
DO (% sat): 95.2
DO (mg/L): 9.19
Conductivity (uS/cm): 38

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): yes
Metals (Y/N): yes
TP (Y/N): yes
Sample for TOC (Y/N): ✓ y
TKN (Y/N): yes
Duplicate taken (Y/N): N

Signature: CRussel

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Depositional Benthic Grab Study Field Sheet

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Telephone: (905) 873 - 3371
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Client: IAM Gold
Date/Time: 2013/09/12 16:40
Waterbody: Upper Three Duck Lk
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47°33'34.7

Project Name/Number: 2496
Field Crew: CR PT
Station Identifier: UTDL - P5
Grabs in Composite: ~~5~~ 3
Station Depth (m): 3.4
Longitude (ddmmss): 81°54'47.8" WP 079

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 100

%Organic debris ___ Comments: very fine

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

[✓] Water sample collected — see profile

Surface (25 cm from surface)

Temperature (°C): 17.10
pH (pH units): 6.99
DO (% sat): 99.6
DO (mg/L): 9.61
Conductivity (uS/cm): 38

Bottom (25 cm from bottom)

Temperature (°C): 17.14
pH (pH units): 7.03
DO (% sat): 97.8
DO (mg/L): 9.45
Conductivity (uS/cm): 39

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): yes
Metals (Y/N): yes
TP (Y/N): yes
Sample for TOC (Y/N): yes UTDL-P5
TKN (Y/N): yes
Duplicate taken (Y/N): No

Signature: C Russel

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	IAM GOLD	Project Name/Number:	2496
Date/Time:	2013/09/13 9:00am	Field Crew:	CR PI
Waterbody:	Middle Three Duck Lake	Station Identifier:	MTDL-P1
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	3.9
Latitude (ddmmss):	47°32'58.6"	Longitude (ddmmss):	81°54'38.6"

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 100

%Organic debris ____ Comments:

→ large fresh water clam in sed grabs

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	15.64	DO (% sat):	93.2
pH (pH units):	6.91	DO (mg/L):	9.27
		SP Conductivity (uS/cm):	38

Bottom (25 cm from bottom)

Temperature (°C):	15.58	DO (% sat):	91.7
pH (pH units):	6.87	DO (mg/L):	9.12
		SP Conductivity (uS/cm):	37

SEDIMENT QUALITY MEASURES

MTDL-P1
MTDL-P1Z

Sample for Particle Size (Y/N):	✓	Sample for TOC (Y/N):	✓
Metals (Y/N):	✓	TKN (Y/N):	✓
TP (Y/N):	✓	Duplicate taken (Y/N):	Y- MTDL-P1Z

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAMGOLD
Date/Time: 2013/09/13 10:00am
Waterbody: Middle Three Duck Lk
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47°32'53.8"

Project Name/Number: 2496
Field Crew: CR PI
Station Identifier: MTDL-P2
Grabs in Composite: ~~5~~ 3
Station Depth (m): 4.0
Longitude (ddmmss): 81°54'28.3" WP-080

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 100

%Organic debris ___ Comments: ___

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): ___

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 15.54
pH (pH units): 6.93
DO (% sat): 94.4
DO (mg/L): 9.48
Conductivity (uS/cm): 38

Bottom (25 cm from bottom)

Temperature (°C): 15.55
pH (pH units): 6.91
DO (% sat): 91.9
DO (mg/L): 9.14
Conductivity (uS/cm): 37

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
TP (Y/N): ✓
Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

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Georgetown, Ontario L7G 3M9 | Facsimilie: (905) 873 - 6370

Client:	IAM GOLD	Project Name/Number:	2496
Date/Time:	2013/09/13 10:35	Field Crew:	CR PI
Waterbody:	Middle Three Duck LK	Station Identifier:	MTDL - P3
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	4.0
Latitude (ddmmss):	47° 32' 43.4"	Longitude (ddmmss):	81° 54' 19.8" WP 081

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 100

%Organic debris ____ Comments: 3 clams in each sed grab - none in benthic grabs

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): ____

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	15.56	DO (% sat):	95.8
pH (pH units):	6.97	DO (mg/L):	9.55
		Conductivity (uS/cm):	38

Bottom (25 cm from bottom)

Temperature (°C):	15.50	DO (% sat):	93.6
pH (pH units):	6.97	DO (mg/L):	9.22
		Conductivity (uS/cm):	37

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	✓	Sample for TOC (Y/N):	✓
Metals (Y/N):	✓	TKN (Y/N):	✓
TP (Y/N):	✓	Duplicate taken (Y/N):	N

Signature: CRussel

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAMGOLD
Date/Time: 2013/09/13 11:10
Waterbody: Middle Three Duck Lk
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47°32' 33.0'

Project Name/Number: 2496
Field Crew: CR PI
Station Identifier: MTDL-P4
Grabs in Composite: ~~5~~ 3
Station Depth (m): 4.0
Longitude (ddmmss): 81°54'26.1" WP082

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 (1) full (3)

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 100

%Organic debris ____ Comments: - a bit sandier at this station.

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): ____

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 15.5
pH (pH units): 7.01
DO (% sat): 96.5
DO (mg/L): 9.63
Conductivity (uS/cm): 37

Bottom (25 cm from bottom)

Temperature (°C): 15.41
pH (pH units): 7.03
DO (% sat): 93.2
DO (mg/L): 9.35
Conductivity (uS/cm): 38

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
TP (Y/N): ✓
Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAM GOLD
Date/Time: 2013/09/13 12:25
Waterbody: Middle Three Duck Lk
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47°32'30.6" WP084

Project Name/Number: 2496
Field Crew: CR PI
Station Identifier: MTDL-P5
Grabs in Composite: ~~5~~ 3
Station Depth (m): 4.1
Longitude (ddmmss): 81°54'17.8"

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 100

%Organic debris ____ Comments: 2 more clams in sediment grabs

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 15.42
pH (pH units): 7.02
DO (% sat): 97.0
DO (mg/L): 9.68
Conductivity (uS/cm): 37

Bottom (25 cm from bottom)

Temperature (°C): 14.90
pH (pH units): 6.97
DO (% sat): 96.4
DO (mg/L): 9.75
Conductivity (uS/cm): 37

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y
Metals (Y/N): Y
TP (Y/N): Y
Sample for TOC (Y/N): Y
TKN (Y/N): Y
Duplicate taken (Y/N): N

Signature: CRussel

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAMGOLD
Project Name/Number: 2496-Cote Gold
Date/Time: Sept 13 13 1 15pm
Field Crew: CR / PI
Waterbody: Lower Three Duck Lake
Station Identifier: LTDL-1
Sampling Device: petite Ponar
Grabs in Composite: ~~5~~ 3
Seive Size: 500 um
Station Depth (m): 4.1
Latitude (ddmmss): 47° 32' 08.7'
Longitude (ddmmss): 81° 54' 11.9" wP085

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 100

%Organic debris ___ Comments: very very fine

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 15.13
DO (% sat): 94.6
pH (pH units): 6.90
DO (mg/L): 9.45
Conductivity (uS/cm): 36

Bottom (25 cm from bottom)

Temperature (°C): 15.04
DO (% sat): 88.5
pH (pH units): 6.86 (spec)
DO (mg/L): 8.90
Conductivity (uS/cm): 36

SEDIMENT QUALITY MEASURES

LTDL-P12

Sample for Particle Size (Y/N): ✓
Sample for TOC (Y/N): ✓
Metals (Y/N): ✓
TKN (Y/N): ✓
TP (Y/N): ✓
Duplicate taken (Y/N): Y LTDL-P12

Signature: CRussel

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAM GOLD
Date/Time: 2013/09/13 1:55
Waterbody: ~~lower~~ Three Duck Lk
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47°31' 57.2"

Project Name/Number: 2496
Field Crew: CR PI
Station Identifier: LTDL-P2
Grabs in Composite: ~~5~~ 3
Station Depth (m): 4.2
Longitude (ddmmss): 81°54' 01.4" WP096

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 100%

%Organic debris ___ Comments: ___

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): ___

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 15.49
pH (pH units): 6.95
DO (% sat): 91.6
DO (mg/L): 9.12
Conductivity (uS/cm): 29

Bottom (25 cm from bottom)

Temperature (°C): 15.32
pH (pH units): 6.91
DO (% sat): 89.8
DO (mg/L): 9.00
Conductivity (uS/cm): 36

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y
Metals (Y/N): Y
TP (Y/N): Y
Sample for TOC (Y/N): Y
TKN (Y/N): Y
Duplicate taken (Y/N): N

Signature: Russel

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	IAMGOLD	Project Name/Number:	2496
Date/Time:	2013/09/13 14:00	Field Crew:	CR PI
Waterbody:	Lower Three Duck Lk	Station Identifier:	LTDL-P3
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	4.0
Latitude (ddmmss):	47°31'49.2"	Longitude (ddmmss):	81°53'54.3" WP087

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ✓ % Sand & finer 100

%Organic debris ___ Comments: very very fine

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	15.54	DO (% sat):	93.4
pH (pH units):	6.85	DO (mg/L):	9.31
		Conductivity (uS/cm):	35

Bottom (25 cm from bottom)

Temperature (°C):	15.37	DO (% sat):	90.5
pH (pH units):	6.83	DO (mg/L):	9.06
		Conductivity (uS/cm):	36

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	✓	Sample for TOC (Y/N):	✓
Metals (Y/N):	✓	TKN (Y/N):	✓
TP (Y/N):	✓	Duplicate taken (Y/N):	N

Signature: CRussel

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	IAM GOLD	Project Name/Number:	2496
Date/Time:	2013/09/13 15:45	Field Crew:	CR PI
Waterbody:	Lower Three Duck Lk	Station Identifier:	LTDL-P4
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	4.3
Latitude (ddmmss):	47° 31' 37.8" WP089	Longitude (ddmmss):	81° 53' 40.0"

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 100

%Organic debris ____ Comments: very very fine

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	15.73	DO (% sat):	91.0
pH (pH units):	6.95	DO (mg/L):	9.02
	Sp	Conductivity (uS/cm):	35

Bottom (25 cm from bottom)

Temperature (°C):	15.62	DO (% sat):	86.5
pH (pH units):	6.94	DO (mg/L):	8.61
	Sp	Conductivity (uS/cm):	36

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: CRussel

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAMGOLD.
Date/Time: 2013/09/13 16:25
Waterbody: Lower Three Duck Lk
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47°31'28.0"

Project Name/Number: 2496
Field Crew: CR PT
Station Identifier: LTDL-P5
Grabs in Composite: ~~5~~ 3
Station Depth (m): 4.1
Longitude (ddmmss): 81°53'25.3" WP090

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 100

%Organic debris ___ Comments: very very fine

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 16.16
pH (pH units): 7.00
DO (% sat): 98.0
DO (mg/L): 9.62
Conductivity (uS/cm): 35

Bottom (25 cm from bottom)

Temperature (°C): 15.78
pH (pH units): 6.97 (spec)
DO (% sat): 93.5
DO (mg/L): 9.27
Conductivity (uS/cm): 35

SEDIMENT QUALITY MEASURES

LTDL-P5

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
TP (Y/N): ✓
Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): N

Signature: Russel

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: Iam Gold
Date/Time: 15-Sept-13
Waterbody: Unnamed Lake 3
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47 31 13.0

Project Name/Number: 2496
Field Crew: BB, TW
Station Identifier: Un L3-P1
Grabs in Composite: ~~5~~ 3
Station Depth (m): 4.3
Longitude (ddmmss): 81 54 23.0

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 95

%Organic debris 5 Comments: Very Soft consistency, consolidated, dark brown, like chocolate mousse

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 14.78
pH (pH units): 7.96
DO (% sat): 104.7
DO (mg/L): 10.61
Conductivity (uS/cm): 43

Bottom (25 cm from bottom)

Temperature (°C): 13.62
pH (pH units): 7.69
DO (% sat): 75.3
DO (mg/L): 7.82
Conductivity (uS/cm): 44

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y
Metals (Y/N): Y
TP (Y/N): Y
Sample for TOC (Y/N): Y
TKN (Y/N): Y
Duplicate taken (Y/N): Y UnL3-X

Signature: [signature]

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2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Depositional Benthic Grab Study Field Sheet

Client:	Iam Gold	Project Name/Number:	2496
Date/Time:	15-Sept-13	Field Crew:	BB, TW
Waterbody:	Unnamed Lake 3	Station Identifier:	UnL3-R2
Sampling Device:	petite Ponar	Grabs in Composite	5
Seive Size:	500 um	Station Depth (m):	4.3
Latitude (ddmmss):	47 31 16.8	Longitude (ddmmss):	81 54 22.2

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 95

%Organic debris 5 Comments: Same as sample 1

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	14.84	DO (% sat):	103.5
pH (pH units):	7.62	DO (mg/L):	10.46
		Conductivity (uS/cm):	43

Bottom (25 cm from bottom)

Temperature (°C):	12.84	DO (% sat):	22.1
pH (pH units):	7.33	DO (mg/L):	2.97
		Conductivity (uS/cm):	47

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: Iam Gold
Date/Time: 15-Sept-13
Waterbody: Unnamed Lake 3
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47 31 19.7

Project Name/Number: 2496
Field Crew: BB, TW
Station Identifier: UnL3-P3
Grabs in Composite: ~~5~~ 3
Station Depth (m): 3.9
Longitude (ddmmss): 81 54 23.7

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 95

%Organic debris 5 Comments: Same as first two stations.

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): ___

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 14.76
pH (pH units): 7.32
DO (% sat): 103.3
DO (mg/L): 10.47
Conductivity (uS/cm): 43

Bottom (25 cm from bottom)

Temperature (°C): 11.83
pH (pH units): 6.98
DO (% sat): 15.6
DO (mg/L): 1.60
Conductivity (uS/cm): 52

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y
Metals (Y/N): Y
TP (Y/N): Y
Sample for TOC (Y/N): Y
TKN (Y/N): Y
Duplicate taken (Y/N): N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street

Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371

Facsimilie: (905) 873 - 6370

Client:	Iam Gold	Project Name/Number:	2496
Date/Time:	15-Sept-13	Field Crew:	BB, TW
Waterbody:	Unnamed Lake 3.	Station Identifier:	UnL3-P4
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	4.0
Latitude (ddmmss):	47 31 20.9	Longitude (ddmmss):	81 54 29.6

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 95

%Organic debris 5 Comments: Same as first 3 Stations

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): ___

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	14.75	DO (% sat):	103.8
pH (pH units):	7.03	DO (mg/L):	10.53
		Conductivity (uS/cm):	43

Bottom (25 cm from bottom)

Temperature (°C):	12.71	DO (% sat):	51.9
pH (pH units):	7.01	DO (mg/L):	5.45
		Conductivity (uS/cm):	46

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: Tyrell Worrall

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	IamGold	Project Name/Number:	2496
Date/Time:	15-Sept-15	Field Crew:	BB, TW
Waterbody:	Unnamed Lake 3	Station Identifier:	UnL3-P5
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	3.8
Latitude (ddmmss):	47 31 16.9	Longitude (ddmmss):	81 54 28.5

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 95

%Organic debris 5 Comments: Same as first 4 stations

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): ____

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	14.74	DO (% sat):	106.7
pH (pH units):	7.06	DO (mg/L):	10.84
		Conductivity (uS/cm):	43

Bottom (25 cm from bottom)

Temperature (°C):	12.71	DO (% sat):	64.4
pH (pH units):	6.92	DO (mg/L):	6.72
		Conductivity (uS/cm):	46

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: Tyrell Worrall

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Depositional Benthic Grab Study Field Sheet

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Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	Iam Gold	Project Name/Number:	249
Date/Time:	16-Sept	Field Crew:	BB, TW
Waterbody:	Delany Lake	Station Identifier:	DelL-R1
Sampling Device:	petite Ponar	Grabs in Composite	5 3
Seive Size:	500 um	Station Depth (m):	1.9
Latitude (ddmmss):	47 30 43.1	Longitude (ddmmss):	81 54 44.2

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble 0 % Gravel 0 % Sand & finer 95

%Organic debris 5 Comments: Very Smooth Substrate, almost like chocolate mouse, dark brown, nice and consolidated

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	12.76	DO (% sat):	118.0
pH (pH units):	8.08	DO (mg/L):	12.36
		Conductivity (uS/cm):	47

Bottom (25 cm from bottom)

Temperature (°C):	12.85	DO (% sat):	68.7
pH (pH units):	8.09	DO (mg/L):	.6.84
		Conductivity (uS/cm):	47

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: Tyrell Ward

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Depositional Benthic Grab Study Field Sheet

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Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	Iam Gold	Project Name/Number:	2496
Date/Time:	16-Sept-13	Field Crew:	BB, TW
Waterbody:	Delury Lake	Station Identifier:	DelL-P2
Sampling Device:	petite Ponar	Grabs in Composite	5 3
Seive Size:	500 um	Station Depth (m):	2.1
Latitude (ddmmss):	47 30 57.2	Longitude (ddmmss):	81 55 03.7

SAMPLE CHARACTERISTICS

Number of Jars: /

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 95

%Organic debris 5 Comments: Same as station 1

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	13.11	DO (% sat):	110.6
pH (pH units):	7.80	DO (mg/L):	11.62
		Conductivity (uS/cm):	46

Bottom (25 cm from bottom)

Temperature (°C):	12.73	DO (% sat):	105.5
pH (pH units):	7.69	DO (mg/L):	~~B~~ 11.17
		Conductivity (uS/cm):	46

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: Iam Gold
Date/Time: 16-Sept-13
Waterbody: Delany Lake
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47 30 54.2

Project Name/Number: 2496
Field Crew: BB, TW
Station Identifier: DelL-P3
Grabs in Composite: 3
Station Depth (m): 2.1
Longitude (ddmmss): 81 54 57.3

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 95

%Organic debris 5 Comments: Same - 5 first 2 stations

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 13.27
pH (pH units): 7.70
DO (% sat): 107.5
DO (mg/L): 11.24
Conductivity (uS/cm): 46

Bottom (25 cm from bottom)

Temperature (°C): 13.06
pH (pH units): 7.72
DO (% sat): 103.9
DO (mg/L): 10.96
Conductivity (uS/cm): 47

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y
Metals (Y/N): Y
TP (Y/N): Y
Sample for TOC (Y/N): Y
TKN (Y/N): Y
Duplicate taken (Y/N): N

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Depositional Benthic Grab Study Field Sheet

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Telephone: (905) 873 - 3371
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Client: Iam Gold
Date/Time: 16-Sept-13
Waterbody: Delany Lk
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47 30 39.8

Project Name/Number: Z496
Field Crew: BB, TW
Station Identifier: DelL-P4
Grabs in Composite: 5/3
Station Depth (m): 1.7
Longitude (ddmmss): 81 54 40.6

SAMPLE CHARACTERISTICS

Number of Jars: 1
Average Sampler Fullness: 1/4 1/2 3/4 full
Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 95
%Organic debris 5
Comments: Same as previous 3 stations

Macrophytes (in sample): none sparse common abundant
Algae (in sample): none sparse common abundant
List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 13.12
pH (pH units): 7.47
DO (% sat): 108.9
DO (mg/L): 11.45
Conductivity (uS/cm): 47

Bottom (25 cm from bottom)

Temperature (°C): 12.81
pH (pH units): 7.52
DO (% sat): 107.1
DO (mg/L): -
Conductivity (uS/cm): 47

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y
Metals (Y/N): Y
TP (Y/N): Y
Sample for TOC (Y/N): Y
TKN (Y/N): Y
Duplicate taken (Y/N): N

Signature: Tyrell Worrall

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street

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Telephone: (905) 873 - 3371

Facsimilie: (905) 873 - 6370

Client: Ian Gold

Date/Time: 16-Sept-13

Waterbody: Delong Lk

Sampling Device: petite Ponar

Seive Size: 500 um

Latitude (ddmmss): 47 30 35.2

Project Name/Number: 2496

Field Crew: BB, TW

Station Identifier: DelL-P5

Grabs in Composite: ~~5~~ 3

Station Depth (m): 1.8

Longitude (ddmmss): 81 54 34.7

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 95

%Organic debris 1 Comments: Same as previous 4 Stations

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 13.12

pH (pH units): 7.39

DO (% sat): 108.~~4~~

DO (mg/L): 11.40

Conductivity (uS/cm): 47

Bottom (25 cm from bottom)

Temperature (°C): 13.03

pH (pH units): 7.41

DO (% sat): 99.7

DO (mg/L): 10.46

Conductivity (uS/cm): 49

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y

Metals (Y/N): Y

TP (Y/N): Y

Sample for TOC (Y/N): Y

TKN (Y/N): Y

Duplicate taken (Y/N): N

Signature: [signature]

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Telephone: (905) 873 - 3371
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Client:	Iam Gold	Project Name/Number:	2496
Date/Time:	13-Sept-15	Field Crew:	BB, TW
Waterbody:	Schist Lake	Station Identifier:	SchLD-P1
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	~~500 um~~ 500um	Station Depth (m):	4.6
Latitude (ddmmss):	47 35 02.9	Longitude (ddmmss):	81 58 48.8

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 25

%Organic debris 75 Comments: very flocy and loose substrate

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

*pH acting up

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	15.72	DO (% sat):	120.4
* pH (pH units):	8.69	DO (mg/L):	11.96
		Conductivity (uS/cm):	65

Bottom (25 cm from bottom)

Temperature (°C):	15.67	DO (% sat):	18.9
pH (pH units):	8.56	DO (mg/L):	1.89
		Conductivity (uS/cm):	65

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: Ian Gold
Project Name/Number: 2496
Date/Time: Sept 13, 2015
Field Crew: BB, TW
Waterbody: Schist Lake
Station Identifier: SchLD-P2
Sampling Device: petite Ponar
Grabs in Composite: 5
Seive Size: 500 um
Station Depth (m): 4.6
Latitude (ddmmss): 47 35 01.5
Longitude (ddmmss): 81 58 47.1

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 25

%Organic debris 75 Comments: Similar to SchLD-P1 very floc, almost soupy

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): green / single celled by look of it

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 15.73
DO (% sat): 121.4
pH (pH units): 8.63
DO (mg/L): 12.05
Conductivity (uS/cm): 65

Bottom (25 cm from bottom)

Temperature (°C): 15.71
DO (% sat): 59.7
pH (pH units): 8.25
DO (mg/L): 5.65
Conductivity (uS/cm): 84

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y
Sample for TOC (Y/N): Y
Metals (Y/N): Y
TKN (Y/N): Y
TP (Y/N): Y
Duplicate taken (Y/N): N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

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2 Lamb Street
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Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	Tam Gold	Project Name/Number:	2496
Date/Time:	13-Sept-13	Field Crew:	BB, TW
Waterbody:	Sch. St. Lake	Station Identifier:	SCLLD-P3
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	4.5
Latitude (ddmmss):	47 35 05.8	Longitude (ddmmss):	81 58 58.7

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 25

%Organic debris 75 Comments: Similar to D1 & D2.

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): Same as previous

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (^{o}C):	15.56	DO (% sat):	121.6
pH (pH units):	8.07	DO (mg/L):	12.11
		Conductivity (uS/cm):	64

Bottom (25 cm from bottom)

Temperature (^{o}C):	15.7	DO (% sat):	22.9
pH (pH units):	8.03	DO (mg/L):	2.39
		Conductivity (uS/cm):	84

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

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2 Lamb Street
Telephone: (905) 873 - 3371

Georgetown, Ontario L7G 3M9
Facsimilie: (905) 873 - 6370

Client:	Ian Gold	Project Name/Number:	2496
Date/Time:	13-Sept-13	Field Crew:	BB, TW
Waterbody:	Schist Lake	Station Identifier:	SchLD-P4
Sampling Device:	petite Ponar	Grabs in Composite	53
Seive Size:	500 um	Station Depth (m):	3.5
Latitude (ddmmss):	47 35 05.5	Longitude (ddmmss):	81 59 02.1

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 25

%Organic debris 75 Comments: Same as before very flocculent, very soupy, lots of algae

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): Same as before

WATER QUALITY MEASURES mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	15.13	DO (% sat):	123.6
pH (pH units):	8.04	DO (mg/L):	12.14
		Conductivity (uS/cm):	64

Bottom (25 cm from bottom)

Temperature (°C):	14.59	DO (% sat):	122.1
pH (pH units):	8.07	DO (mg/L):	12.46
		Conductivity (uS/cm):	64

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: Trell Wall

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: Iam Gold
Date/Time: 13-Sept-13
Waterbody: Schist Lake
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47 35 00.3

Project Name/Number: 2496
Field Crew: BB, TW
Station Identifier: SchL D-P5
Grabs in Composite: ~~5~~ 3
Station Depth (m): 4.6
Longitude (ddmmss): 81 58 46.4

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 80

%Organic debris 20 Comments: Similar to all other deep ponars, slightly more sand,

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): Slime

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 16.26
pH (pH units): 8.18
DO (% sat): 122.12
DO (mg/L): 11.98
Conductivity (uS/cm): 65

Bottom (25 cm from bottom)

Temperature (°C): 15.97
pH (pH units): 7.96
DO (% sat): 116.8
DO (mg/L): 11.58
Conductivity (uS/cm): 64

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y
Metals (Y/N): Y
TP (Y/N): Y
Sample for TOC (Y/N): Y
TKN (Y/N): Y
Duplicate taken (Y/N): Y

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet	2 Lamb Street — Telephone: (905) 873 - 3371
	Georgetown, Ontario L7G 3M9 — Facsimilie: (905) 873 - 6370

Client:	Iam Gold	Project Name/Number:	2496
Date/Time:	Sept 13, 2013	Field Crew:	BB, JW
Waterbody:	Schist Lake	Station Identifier:	SchLS-P1
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	1.5
Latitude (ddmmss):	47 35 28.5	Longitude (ddmmss):	82 00 06.8

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 5

%Organic debris 95 Comments: much "chunkier" than deep areas, looks like brown "vomit."

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): lots of green algae surface of sediment, due to Lagoon?

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	15.02	DO (% sat):	128.0
pH (pH units):	7.85	DO (mg/L):	12.89
		Conductivity (uS/cm):	63

Bottom (25 cm from bottom)

Temperature (°C):	15.03	DO (% sat):	126.8
pH (pH units):	7.98	DO (mg/L):	12.78
		Conductivity (uS/cm):	63

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

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2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	Ian Gold	Project Name/Number:	2496
Date/Time:	13-Sept-15	Field Crew:	BB, TW
Waterbody:	Schist Lake	Station Identifier:	SchLS-R2
Sampling Device:	petite Ponar	Grabs in Composite	~~8~~ 3
Seive Size:	500 um	Station Depth (m):	1.6
Latitude (ddmmss):	47 35 21.2	Longitude (ddmmss):	82 00 08.1

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 5

%Organic debris 95 Comments: Same as SchLS-R1 Very flocculent!

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): Same as first shallow

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	15.05	DO (% sat):	128.1
pH (pH units):	8.06	DO (mg/L):	12.9
		Conductivity (uS/cm):	63

Bottom (25 cm from bottom)

Temperature (°C):	15.05	DO (% sat):	127.0
pH (pH units):	8.11	DO (mg/L):	12.79
		Conductivity (uS/cm):	63

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	Iam Gold	Project Name/Number:	2496
Date/Time:	13-Sept-13	Field Crew:	BB, TW
Waterbody:	Schist Lake	Station Identifier:	SchLS-P3
Sampling Device:	petite Ponar	Grabs in Composite	~~8~~ 3
Seive Size:	500 um	Station Depth (m):	1.7
Latitude (ddmmss):	47 34 57.8	Longitude (ddmmss):	82 00 02.6

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 5

%Organic debris 95 Comments: Same as other Shallow ones

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): ____

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m ☐ Water sample collected

Surface (25 cm from surface)

Temperature (^oC):	15.38	DO (% sat):	132.6
pH (pH units):	8.04	DO (mg/L):	13.27
		Conductivity (uS/cm):	62

Bottom (25 cm from bottom)

Temperature (^oC):	15.08	DO (% sat):	131.1
pH (pH units):	8.23	DO (mg/L):	13.20
		Conductivity (uS/cm):	63

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	Iam Gold	Project Name/Number:	2496
Date/Time:	Sept 13, 2013	Field Crew:	BB, TW
Waterbody:	Schist Lake	Station Identifier:	SchLS-P4
Sampling Device:	petite Ponar	Grabs in Composite	3
Seive Size:	500 um	Station Depth (m):	1.5
Latitude (ddmmss):	47 35 00.5	Longitude (ddmmss):	81 59 54.5

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 5

%Organic debris 95 Comments: same as before

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	14.97	DO (% sat):	119.3
pH (pH units):	8.11	DO (mg/L):	12.02
		Conductivity (uS/cm):	63

Bottom (25 cm from bottom)

Temperature (°C):	15.23	DO (% sat):	95.9
pH (pH units):	8.20	DO (mg/L):	9.41
		Conductivity (uS/cm):	71

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	Iam Gold	Project Name/Number:	2496
Date/Time:	13-sept-13	Field Crew:	BB, TW
Waterbody:	Schist Lake	Station Identifier:	SchLS-P5
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	2.0
Latitude (ddmmss):	47 35 00.5	Longitude (ddmmss):	81 59 53.4

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 5

%Organic debris 95 Comments: Same as the other Shallow sites

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m ☐ Water sample collected

Surface (25 cm from surface)

Temperature (^{o}C):	14.72	DO (% sat):	119.1
pH (pH units):	8.10	DO (mg/L):	12.09
		Conductivity (uS/cm):	64

Bottom (25 cm from bottom)

Temperature (^{o}C):	14.68	DO (% sat):	117.9
pH (pH units):	8.18	DO (mg/L):	11.98
		Conductivity (uS/cm):	64

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: Todd Wall

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAMGOLD
Date/Time: Sept 12, 2013 10:48
Waterbody: Bagsverd Lake South Arm
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47° 34' 00.9"

Project Name/Number: 2496
Field Crew: KC, JT
Station Identifier: BagLS - P1
Grabs in Composite: ~~8~~ 3
Station Depth (m): 1.8m
Longitude (ddmmss): 081° 55' 54.6"

WSG84

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 **full**

Sample Texture: % Cobble Ø % Gravel Ø % Sand & finer Ø

%Organic debris 100 organics + v.very fine Comments: Sediment was green c algae / plant. / after sieved small pieces of macrophytes in sample

Macrophytes (in sample): none **sparse** — **common** abundant

Algae (in sample): none sparse common **abundant**

List Macrophyte/Algae Type/Species (in sample, to extent possible): sediment v soft.

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

[N] ~~Y~~ Water sample collected NO

Surface (25 cm from surface) @ 1m

Temperature (°C): 17.61
pH (pH units): 7.60

DO (% sat): 88.3
DO (mg/L): 8.43
Conductivity (uS/cm): sp 53, cond. 45 μS/cm

Bottom (25 cm from bottom)

Temperature (°C):
pH (pH units):

DO (% sat):
DO (mg/L):
Conductivity (uS/cm):

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
TP (Y/N): ✓

Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): No

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

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Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAMGOLD
Date/Time: Sept 12, 2013
Waterbody: Bagsverd Lake South Arm
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47° 33' 59.4
WSG 84

Project Name/Number: 2496 Côté Baseline 2013
Field Crew: KC, JT
Station Identifier: BagL8-P2
Grabs in Composite: 53
Station Depth (m): 1.8 m
Longitude (ddmmss): 081° 56' 14.6"

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble 0 % Gravel 0 % Sand & finer 0

%Organic debris 100% Comments: all fines less algae than +1 fines P1 station, less plant matter.

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ N Water sample collected NO

Surface (25 cm from surface) ~1 m

Temperature (°C): 17.88
pH (pH units): 7.66

DO (% sat): 88.1
DO (mg/L): 8.36
Conductivity (uS/cm): sp 52 cond 45

Bottom (25 cm from bottom)

Temperature (°C):
pH (pH units):

DO (% sat):
DO (mg/L):
Conductivity (uS/cm):

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
TP (Y/N): ✓

Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): NO

Signature: K Connors

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAMGOLD

Date/Time: Sept 12 12:27

Waterbody: Bagsverd Lake South Arm

Sampling Device: petite Ponar

Seive Size: 500 um

Latitude (ddmmss): 47° 33' 59.8" WSG84

Project Name/Number: 2496 Baseline 2013

Field Crew: KC, JT

Station Identifier: BagLS-P3

Grabs in Composite: 5/3

Station Depth (m): 1.8m

Longitude (ddmmss): 81° 55' 54.3"

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble 0 % Gravel 0 % Sand & finer 0

%Organic debris 100 + fines Comments: green layer on top

less macrophytes in sample; soupy

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

NO Water sample collected

Surface (25 cm from surface) ~1m

Temperature (°C): 17.68

pH (pH units): 7.58

DO (% sat): 89.8

DO (mg/L): 8.56

Conductivity (uS/cm): sp. 56 cond. 45

Bottom (25 cm from bottom)

Temperature (°C):

pH (pH units):

DO (% sat):

DO (mg/L):

Conductivity (uS/cm):

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓

Metals (Y/N): ✓

TP (Y/N): ✓

Sample for TOC (Y/N): ✓

TKN (Y/N): ✓

Duplicate taken (Y/N): NO

Signature: KConnors

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	IAMGOLD	Project Name/Number:	2496 Côté Baseline
Date/Time:	Sept 12, 2013 13:00	Field Crew:	KC, JT
Waterbody:	Bagsverdlake S. Arm	Station Identifier:	BagLS-P4
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	1.8
Latitude (ddmmss):	47°33 58.6	Longitude (ddmmss):	81°56 26.3

WSG 84

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble Ø % Gravel Ø % Sand & finer Ø

%Organic debris 100 + fines Comments: not as much green on top, all fines some small woody debris

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected NO

Surface (25 cm from surface) ~1 m

Temperature (°C):	17.88	DO (% sat):	90.1
pH (pH units):	7.61	DO (mg/L):	8.54
		Conductivity (uS/cm):	~~54~~ cond 46

Bottom (25 cm from bottom)

Temperature (°C):		DO (% sat):	
pH (pH units):		DO (mg/L):	
		Conductivity (uS/cm):	

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	✓	Sample for TOC (Y/N):	✓
Metals (Y/N):	✓	TKN (Y/N):	✓
TP (Y/N):	✓	Duplicate taken (Y/N):	No

Signature: KConnors

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Depositional Benthic Grab Study Field Sheet

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Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAMGOLD
Project Name/Number: 2496 Côte Baseline 2013
Date/Time: Sept 12, 2013
Field Crew: KC, JT
Waterbody: Bagsverd Lake South Arm
Station Identifier: BagLS-P5
Sampling Device: petite Ponar
Grabs in Composite: ~~5~~ 3
Seive Size: 500 um
Station Depth (m): 1.3-1.4
Latitude (ddmmss): 47° 34' 03.2 WSG 84
Longitude (ddmmss): 81° 56' 21.8

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ∅ % Gravel 0 % Sand & finer ∅

%Organic debris 100% fines
Comments: very fine, soupy substrate, some green on surface, sample around ~~[illegible]~~ wall,

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): shallowest sample

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

NO Water sample collected

Surface (25 cm from surface)

Temperature (°C): 18.19
pH (pH units): 7.46
DO (% sat): 91.4
DO (mg/L): 8.62
Conductivity (uS/cm): sp 52 cond. 45

Bottom (25 cm from bottom)

Temperature (°C):
pH (pH units):
DO (% sat):
DO (mg/L):
Conductivity (uS/cm):

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
TP (Y/N): ✓
Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): NO

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: Iamgold
Date/Time: 14-Sept-13
Waterbody: Bagsverd Lake
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47 34 45.1

Project Name/Number: 2496
Field Crew: BB, TW
Station Identifier: Bag ~~KM~~-P1
Grabs in Composite: ~~5~~ 3
Station Depth (m): 3.7
Longitude (ddmmss): 81 56 24.8

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 95

%Organic debris 5 Comments: nice looking sediment, not as consolidated as Unnamed Lake 2, but much moreso than Schist.

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 15.98
pH (pH units): 7.61
DO (% sat): 109.2
DO (mg/L): 10.79
Conductivity (uS/cm): 64

Bottom (25 cm from bottom)

Temperature (°C): 15.45
pH (pH units): 7.67
DO (% sat): 34.5
DO (mg/L): 3.19
Conductivity (uS/cm): 85

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y
Metals (Y/N): Y
TP (Y/N): Y

Sample for TOC (Y/N): Y
TKN (Y/N): Y
Duplicate taken (Y/N): N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	Iam Gold	Project Name/Number:	2496
Date/Time:	14-Sept-13	Field Crew:	BB, TW
Waterbody:	Bagsverd Lake	Station Identifier:	~~BG~~ BagLM-P2
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	4.5
Latitude (ddmmss):	47 34 46.1	Longitude (ddmmss):	81 56 21.1

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 95

%Organic debris 5 Comments: Similar to #1M (BagLM-P1)

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	16.07	DO (% sat):	109.2
pH (pH units):	7.68	DO (mg/L):	10.76
		Conductivity (uS/cm):	64

Bottom (25 cm from bottom)

Temperature (°C):	14.53	DO (% sat):	56.7
pH (pH units):	7.71	DO (mg/L):	5.02
		Conductivity (uS/cm):	74

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	~~Y~~ N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	Iam Gold	Project Name/Number:	2496
Date/Time:	14-Sept-13	Field Crew:	BB, TW
Waterbody:	Bagsvrd Lake	Station Identifier:	Bag LM-P3
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	4.5
Latitude (ddmmss):	47 34 41.8	Longitude (ddmmss):	81 38 18.1

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 95

%Organic debris 5 Comments: Same as previous 2

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	16.23	DO (% sat):	125.8
pH (pH units):	7.68	DO (mg/L):	12.36
		Conductivity (uS/cm):	64

Bottom (25 cm from bottom)

Temperature (°C):	14.82	DO (% sat):	122.1
pH (pH units):	7.79	DO (mg/L):	12.37
		Conductivity (uS/cm):	64

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	Iam Gold	Project Name/Number:	2496
Date/Time:	14-sept-13	Field Crew:	BB, TW
Waterbody:	Bagsverd Lake	Station Identifier:	BagLM-P4
Sampling Device:	petite Ponar	Grabs in Composite:	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	3.5
Latitude (ddmmss):	47 34 40.8	Longitude (ddmmss):	81 56 24.4

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 95

%Organic debris 5 Comments: Same as other 3

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	16.06	DO (% sat):	124.5
pH (pH units):	7.90	DO (mg/L):	12.28
		Conductivity (uS/cm):	64

Bottom (25 cm from bottom)

Temperature (°C):	15.25	DO (% sat):	30.9
pH (pH units):	7.92	DO (mg/L):	2.89
		Conductivity (uS/cm):	77

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: Tyell Ward

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

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Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371

Facsimilie: (905) 873 - 6370

Client: Iam Gold
Date/Time: 14-Sept-13
Waterbody: Baysvard Lake
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47 34 45.8

Project Name/Number: 2496
Field Crew: BB, TW
Station Identifier: Bay LM-R5
Grabs in Composite: ~~8~~ 3
Station Depth (m): 3.7
Longitude (ddmmss): 81 56 26.4

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 95

%Organic debris 5 Comments: Same as other

4

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 16.17
pH (pH units): 7.99

DO (% sat): 121.2
DO (mg/L): 11.94
Conductivity (uS/cm): 64

Bottom (25 cm from bottom)

Temperature (°C): ~~8~~ 15.05
pH (pH units): 8.07

DO (% sat): 116.4
DO (mg/L): 11.73
Conductivity (uS/cm): 65

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y
Metals (Y/N): Y
TP (Y/N): Y

Sample for TOC (Y/N): Y
TKN (Y/N): Y
Duplicate taken (Y/N): N

Signature: Tyrell Worrall

minnow environmental inc. **Depositional Benthic Grab Study Field Sheet**	**MINNOW ENVIRONMENTAL INCORPORATED** 2 Lamb Street, Georgetown, Ontario L7G 3M9 Telephone: (905) 873 - 3371 Facsimilie: (905) 873 - 6370

Client: Iam Gold
Date/Time: 14-Sept-13
Waterbody: Unnamed Lake 2
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47 36 27.1

Project Name/Number: 2496
Field Crew: BB, TW
Station Identifier: UnL2-P1
Grabs in Composite: ~~5~~ 3
Station Depth (m): 3.7
Longitude (ddmmss): 81 57 54.4

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 90

%Organic debris 10 Comments: very similar to UnL1, appears as chocolate pudding

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 14.72
pH (pH units): 8.57
DO (% sat): 120.1
DO (mg/L): 11.12
Conductivity (uS/cm): 47

Bottom (25 cm from bottom)

Temperature (°C): 14.40
pH (pH units): 8.49
DO (% sat): 108.2
DO (mg/L): 11.06
Conductivity (uS/cm): 47

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y
Metals (Y/N): Y
TP (Y/N): Y
Sample for TOC (Y/N): Y
TKN (Y/N): Y
Duplicate taken (Y/N): N

Signature: Tyrell Worrall

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	Iam Gold	Project Name/Number:	2496
Date/Time:	14-Sept-13	Field Crew:	BB, TW
Waterbody:	Unnamed Lake 2	Station Identifier:	Unl-2-P2
Sampling Device:	petite Ponar	Grabs in Composite:	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	4.0
Latitude (ddmmss):	~~[illegible]~~ 47 36 27.4	Longitude (ddmmss):	~~[illegible]~~ 81 58 13.6

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 90

%Organic debris 10 Comments: Same as Station 1 in this lake

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	~~[illegible]~~ 14.80	DO (% sat):	~~[illegible]~~ 105.7
pH (pH units):	~~[illegible]~~ 8.18	DO (mg/L):	~~[illegible]~~ 10.70
		Conductivity (uS/cm):	~~[illegible]~~ 47

Bottom (25 cm from bottom)

Temperature (°C):	~~[illegible]~~ 14.65	DO (% sat):	~~[illegible]~~ 97.0
pH (pH units):	~~[illegible]~~ 8.02	DO (mg/L):	~~[illegible]~~ 9.81
		Conductivity (uS/cm):	~~[illegible]~~ 48

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: Iam Gold
Date/Time: 14-Sept-13
Waterbody: Unnamed Lake 2
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47 36 25.9

Project Name/Number: 2796
Field Crew: BB, TW
Station Identifier: UnL2-P3
Grabs in Composite: ~~5~~ 3
Station Depth (m): 4.5
Longitude (ddmmss): 81 58 14.8

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 90
%Organic debris 10 Comments: Same as first 2

Macrophytes (in sample): none sparse common abundant
Algae (in sample): none sparse common abundant
List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 14.83
pH (pH units): 7.64
DO (% sat): 108.4
DO (mg/L): 10.95
Conductivity (uS/cm): 47

Bottom (25 cm from bottom)

Temperature (°C): 14.66
pH (pH units): 7.71
DO (% sat): 105.4
DO (mg/L): 10.72
Conductivity (uS/cm): 47

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y
Metals (Y/N): Y
TP (Y/N): Y
Sample for TOC (Y/N): Y
TKN (Y/N): Y
Duplicate taken (Y/N): N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

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Georgetown, Ontario L7G 3M9 | Facsimilie: (905) 873 - 6370

Client:	Iam Gold	Project Name/Number:	2496
Date/Time:	14-Sept-13	Field Crew:	BB, TW
Waterbody:	Unnamed Lake 2	Station Identifier:	UnL2-P4
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	4.0
Latitude (ddmmss):	47 36 17.8	Longitude (ddmmss):	81.58 19.6

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 90

%Organic debris 10 Comments: Same as others, except more sticks / woody debris

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): ____

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	14.89	DO (% sat):	108.[illegible]
pH (pH units):	7.46	DO (mg/L):	10.91
		Conductivity (uS/cm):	47

Bottom (25 cm from bottom)

Temperature (°C):	14.45	DO (% sat):	89.2
pH (pH units):	7.54	DO (mg/L):	9.20
		Conductivity (uS/cm):	48

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

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Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	Iam Gold	Project Name/Number:	2496
Date/Time:	14-Sept-13	Field Crew:	BB, TW
Waterbody:	Unnamed Lake 2	Station Identifier:	UnL2-PS
Sampling Device:	petite Ponar	Grabs in Composite:	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	4.5
Latitude (ddmmss):	47 36 25.6	Longitude (ddmmss):	81 57 55.6

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 90

%Organic debris 10 Comments: Same as others nice chocolate mouse look and feel to it

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	15.07	DO (% sat):	113.8
pH (pH units):	7.47	DO (mg/L):	11.48
		Conductivity (uS/cm):	47

Bottom (25 cm from bottom)

Temperature (°C):	14.83	DO (% sat):	112.1
pH (pH units):	7.43	DO (mg/L):	11.34
		Conductivity (uS/cm):	47

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: Iamgold
Date/Time: 10:27 12-Sept-13
Waterbody: Unnamed Lake 1
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47 36 44.3

Project Name/Number: 2496
Field Crew: RH, TW
Station Identifier: ~~UL1~~ UnL1-1P
Grabs in Composite: ~~5~~ 3
Station Depth (m): 1.8
Longitude (ddmmss): 81 56 33.0

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer ~~100~~ 90

%Organic debris 10 Comments: ___

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): Burreed

*pH acting up

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 16.89
*pH (pH units): 7.90
DO (% sat): 86.5
DO (mg/L): 8.37
Conductivity (uS/cm): 50

Bottom (25 cm from bottom)

Temperature (°C): 16.87
*pH (pH units): 7.9~~0~~
DO (% sat): 84%
DO (mg/L): 8.13
Conductivity (uS/cm): 50

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y
Metals (Y/N): Y
TP (Y/N): Y

Sample for TOC (Y/N): Y
TKN (Y/N): Y
Duplicate taken (Y/N): Y UNL1-PX

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	Iam Gold	Project Name/Number:	2496
Date/Time:	10:30 Sept 12, 2013	Field Crew:	RH, TW
Waterbody:	Unnamed Lake 1	Station Identifier:	UnL1-P2
Sampling Device:	petite Ponar	Grabs in Composite	~~5~~ 3
Seive Size:	500 um	Station Depth (m):	1.5
Latitude (ddmmss):	47 36 46.8	Longitude (ddmmss):	81 56 28.2

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 90

%Organic debris 10 Comments:

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

* pH acting up

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	16.86	DO (% sat):	98.3
* pH (pH units):	7.94	DO (mg/L):	9.54
		Conductivity (uS/cm):	50

Bottom (25 cm from bottom)

Temperature (°C):	16.86	DO (% sat):	97.4
* pH (pH units):	7.94	DO (mg/L):	9.44
		Conductivity (uS/cm):	50

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
TP (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: Iam Gold
Date/Time: 11 am 12-Sept-13
Waterbody: Unnamed Lake 1
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47 36 44.9

Project Name/Number: 2496
Field Crew: RH, TW
Station Identifier: UnL1-P3
Grabs in Composite: 5
Station Depth (m): 1.8
Longitude (ddmmss): 81 56 25.1

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 95

%Organic debris 5 Comments:

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

* pH acting up

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 16.86
* pH (pH units): ~~8.~~ 7.90
DO (% sat): 100.4
DO (mg/L): 9.74
Conductivity (uS/cm): 51

Bottom (25 cm from bottom)

Temperature (°C): 16.81
* pH (pH units): 7.91
DO (% sat): 98.6
DO (mg/L): 9.56
Conductivity (uS/cm): 51

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y
Metals (Y/N): Y
TP (Y/N): Y
Sample for TOC (Y/N): Y
TKN (Y/N): Y
Duplicate taken (Y/N): N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: Tam Gold
Project Name/Number: 2496
Date/Time: Sept 12, 2013
Field Crew: RH, TW
Waterbody: Unnamed Lake 1
Station Identifier: UnL-P4
Sampling Device: petite Ponar
Grabs in Composite: ~~5~~ 3
Seive Size: 500 um
Station Depth (m): 1.5
Latitude (ddmmss): moisture blocking screen
see map
Longitude (ddmmss):

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 90

%Organic debris 10 Comments:

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): mermaid hair

* pH acting up

WATER QUALITY MEASURES mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 17.12
DO (% sat): 99.7
* pH (pH units): 7.66
DO (mg/L): 9.61
Conductivity (uS/cm): 52

Bottom (25 cm from bottom)

Temperature (°C): 17.12
DO (% sat): ~~99.7~~ 100.3
* pH (pH units): 7.71
DO (mg/L): 9.61
Conductivity (uS/cm): 52

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y
Sample for TOC (Y/N): Y
Metals (Y/N): Y
TKN (Y/N): Y
TP (Y/N): Y
Duplicate taken (Y/N): N

Signature: Tyrell Worrall

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Depositional Benthic Grab Study Field Sheet

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: Ian Gall
Date/Time: Sept 12, 2013 12:30
Waterbody: Charnel Lake 1
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): See map GPS mesgd

Project Name/Number: 2491
Field Crew: RH, TW
Station Identifier: UnL1-P5
Grabs in Composite: ~~5~~ 3
Station Depth (m): 1.6
Longitude (ddmmss):

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 90

%Organic debris 10 Comments:

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): Mermaid hair

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 17.2
pH (pH units): 7.69
DO (% sat): 100.6
DO (mg/L): 9.71
Conductivity (uS/cm): 52

Bottom (25 cm from bottom)

Temperature (°C): 17.16
pH (pH units): 7.69
DO (% sat): 94.2
DO (mg/L): 9.06
Conductivity (uS/cm): 53

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): Y
Metals (Y/N): Y
TP (Y/N): Y
Sample for TOC (Y/N): Y
TKN (Y/N): Y
Duplicate taken (Y/N): N

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAMGOLD
Date/Time: Sept 14 10:00
Waterbody: Neville Lake
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47° 38' 49.9

Project Name/Number: 2496 Baseline
Field Crew: KC JT
Station Identifier: NevL-1
Grabs in Composite: ~~5~~ 3
Station Depth (m): 4.0
Longitude (ddmmss): 081° 54' 50.43

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble 0 % Gravel 0 % Sand & finer 100%

%Organic debris <5%

Comments: dark brown sediment, very soft. Burrowing mayflies seen

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): —

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 14.98
pH (pH units): 7.29
DO (% sat): 77.2
DO (mg/L): 7.73
Conductivity (uS/cm): sp 43 cond 35

Bottom (25 cm from bottom)

Temperature (°C): 14.22
pH (pH units): 6.86
DO (% sat): 73.9
DO (mg/L): 7.55
Conductivity (uS/cm): sp 43 cond 34

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
TP (Y/N): ✓
Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): NO

Signature: KConnors

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAMGOLD
Date/Time: Sept 14, 2013 11:00
Waterbody: Neville Lake
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47°38 57.9

Project Name/Number: 2496 Baseline
Field Crew: KC, JT
Station Identifier: NeVL-2
Grabs in Composite: ~~5~~ 3
Station Depth (m): 4.0
Longitude (ddmmss): 081° 54 44.9'

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ∅ % Gravel ∅ % Sand & finer 100

%Organic debris <5 Comments: very little in sieve bags some small organics; burrowing mayfly

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☒ No Water sample collected

Surface (25 cm from surface)

Temperature (°C): 15.11
pH (pH units): 6.98
DO (% sat): 78.8
DO (mg/L): 7.91
Conductivity (uS/cm): Sp 43 cond 35

Bottom (25 cm from bottom)

Temperature (°C): 14.74
pH (pH units): 6.91
DO (% sat): 76.4
DO (mg/L): 7.73
Conductivity (uS/cm): Sp 43 cond 34

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
TP (Y/N): ✓
Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): NO

Signature:

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAMGOLD
Date/Time: Sept 19, 2013 12:40
Waterbody: Neville Lake
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47 39 02.5

Project Name/Number: 2496 Baseline
Field Crew: KC JT
Station Identifier: Nev2-4
Grabs in Composite: ~~5~~ 3
Station Depth (m): ~~4.0~~ 3.9
Longitude (ddmmss): 81 54 53.9

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble 0 % Gravel 0 % Sand & finer 100%

%Organic debris <5 Comments: same as all other stations

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): —

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

NO Water sample collected

Surface (25 cm from surface)

Temperature (°C): 15.09
pH (pH units): 6.95
DO (% sat): 82.7
DO (mg/L): 8.24
Conductivity (uS/cm): sp 43 cond 35

Bottom (25 cm from bottom)

Temperature (°C): 14.72
pH (pH units): 6.80
DO (% sat): 77.7
DO (mg/L): 7.88
Conductivity (uS/cm): sp 42 cond 34

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
TP (Y/N): ✓
Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): NO

Signature: [signature]

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAMGOLD
Date/Time: Sept 1?, 2013 11:28
Waterbody: Neville Lake
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47 38 56.7

Project Name/Number: 2496 Baseline
Field Crew: KC JT
Station Identifier: NevL-3
Grabs in Composite: ~~5~~ 3
Station Depth (m): 4.1
Longitude (ddmmss): 81 54 45.9

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble Ø % Gravel Ø % Sand & finer 100

%Organic debris <5 Comments: dark brown, very little organics, burrowing mayfly.

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): /

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 15.03
pH (pH units): 7.01
DO (% sat): 82.3
DO (mg/L): 8.20
Conductivity (uS/cm): Sp 43 cond 35

Bottom (25 cm from bottom)

Temperature (°C): 14.54
pH (pH units): 6.94
DO (% sat): ~~8~~ 75.5
DO (mg/L): 7.69
Conductivity (uS/cm): Sp 43 cond 34

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
TP (Y/N): ✓
Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): No

Signature: KConnors

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2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Depositional Benthic Grab Study Field Sheet

Client: IAMGOLD
Date/Time: Sept 14, 2013 12:00
Waterbody: Neville lake
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47 39' 11.6

Project Name/Number: 2486 Baseline
Field Crew: KC JT
Station Identifier: NEVL-5
Grabs in Composite: ~~5~~ 3
Station Depth (m): 3.9m
Longitude (ddmmss): 081 54 52.8

SAMPLE CHARACTERISTICS

Number of Jars: 1

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble 0 % Gravel 0 % Sand & finer 100

%Organic debris <5 Comments: dark brown sediment few organics ; burrowing mayfly seen

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

NO Water sample collected

Surface (25 cm from surface)

Temperature (°C): 15.14
pH (pH units): 6.88
DO (% sat): 79.4
DO (mg/L): 7.98
Conductivity (uS/cm): Sp 43 cond 34

Bottom (25 cm from bottom)

Temperature (°C): 14.67
pH (pH units): 6.82
DO (% sat): 79.8
DO (mg/L): 8.10
Conductivity (uS/cm): Sp 42 cond 34

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
TP (Y/N): ✓
Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): No

Signature: KConnors

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	IAMGOLD	Project Name/Number:	2496
Date/Time:	2013/09/15 10:00	Field Crew:	CR PI
Waterbody:	Bagsverd Ck	Station Identifier:	BAGC-P1
Sampling Device:	petite Ponar	Grabs in Composite	3
Seive Size:	500 um	Station Depth (m):	1.7m
Latitude (ddmmss):	47°37'05.4"	Longitude (ddmmss):	81°55'50.3" WP BAGCP1

SAMPLE CHARACTERISTICS

Number of Jars: 1 (2L)

Average Sampler Fullness: 1/4 1/2 → 3/4 full (1 2)

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 70

%Organic debris 30 Comments: ___

Macrophytes (in sample): none sparse common → abundant

Algae (in sample): none → sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): grasses

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☑ NO Water sample collected

Surface (25 cm from surface)

Temperature (°C):	10.87	DO (% sat):	72.6
pH (pH units):	6.32	DO (mg/L):	8.04
		Conductivity (uS/cm):	40

Bottom (25 cm from bottom)

Temperature (°C):	10.87	DO (% sat):	~~8~~. 70.9
pH (pH units):	6.40	DO (mg/L):	7.84
velocity Flow (m/s):	0.08 m/se (20 cm from surface)	Conductivity (uS/cm):	40

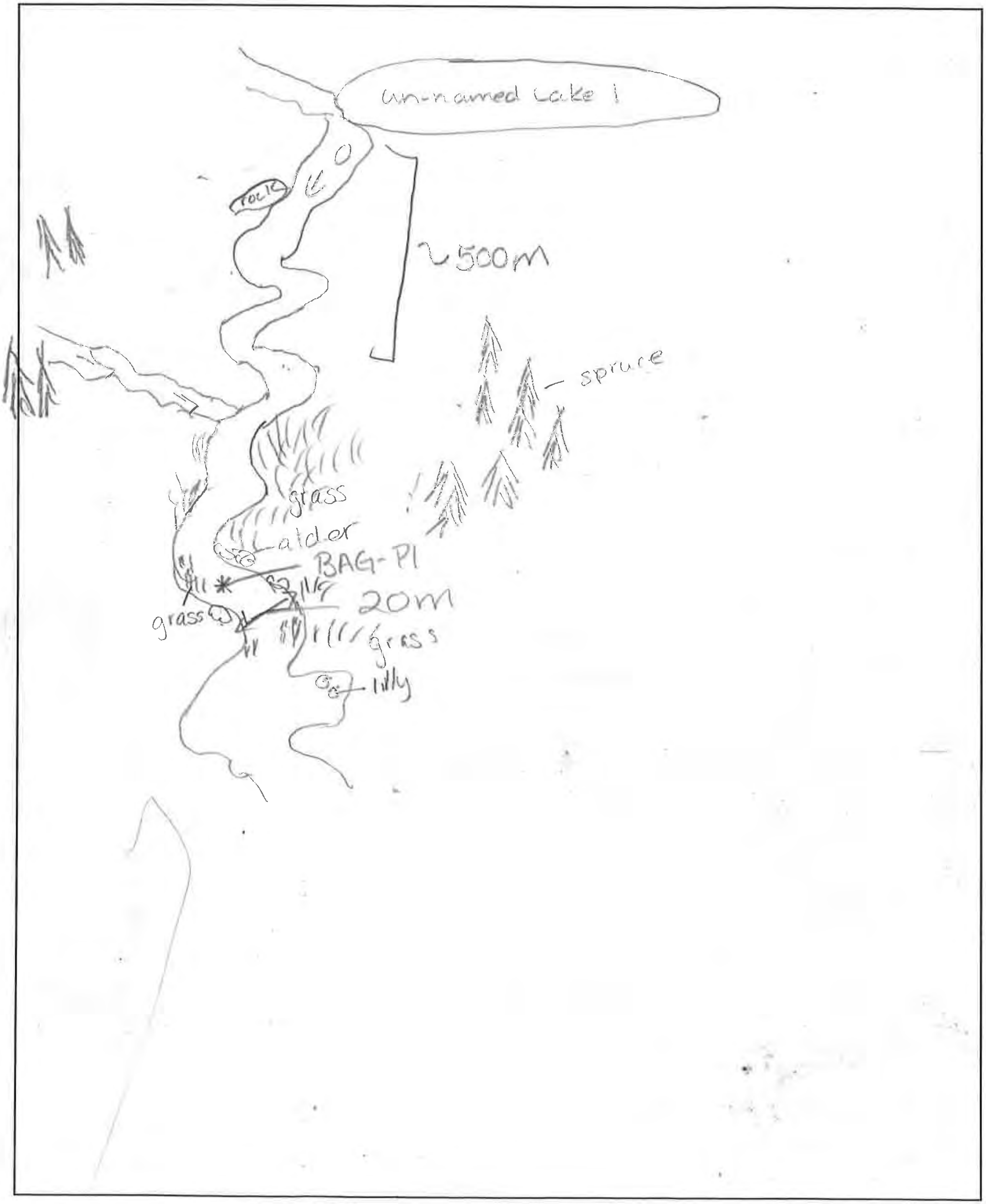
BagcP1 & BAGC-P12

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	✓	Sample for TOC (Y/N):	✓
Metals (Y/N):	✓	TKN (Y/N):	✓
Total Phosphorus (Y/N):	✓	Duplicate taken (Y/N):	Y BAG-P12

Signature: [signature]

Diagram: ☑ Photos taken



minnow environmental inc. **Depositional Benthic Grab Study Field Sheet**	**MINNOW ENVIRONMENTAL INCORPORATED** 2 Lamb Street, Georgetown, Ontario L7G 3M9 Telephone: (905) 873 - 3371 Facsimilie: (905) 873 - 6370

Client: IAM GOLD
Project Name/Number: 2496/Cote Gold
Date/Time: Sept/14/13 11 am
Field Crew: CR PI
Waterbody: Bagsverd Creek
Station Identifier: BAGC-P2
Sampling Device: petite Ponar
Grabs in Composite: 3
Seive Size: 500 um
Station Depth (m): 1.5 m
Latitude (ddmmss): N 47 ' 37 ' 09.9
Longitude (ddmmss): W 081 55 ' 49.2

SAMPLE CHARACTERISTICS

Number of Jars: 1 (2L)

Average Sampler Fullness: 1/4 | 1/2 (1) | 3/4 (2) | full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 60

%Organic debris 40 Comments: ____

Macrophytes (in sample): none | sparse | common | abundant

Algae (in sample): none | sparse | common | abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): grasses

WATER QUALITY MEASURES mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

[✓] Water sample collected

Surface (25 cm from surface)

Temperature (°C): 11.09
DO (% sat): 72.5
pH (pH units): 6.36
DO (mg/L): 7.99
Conductivity (uS/cm): 40

Bottom (25 cm from bottom)

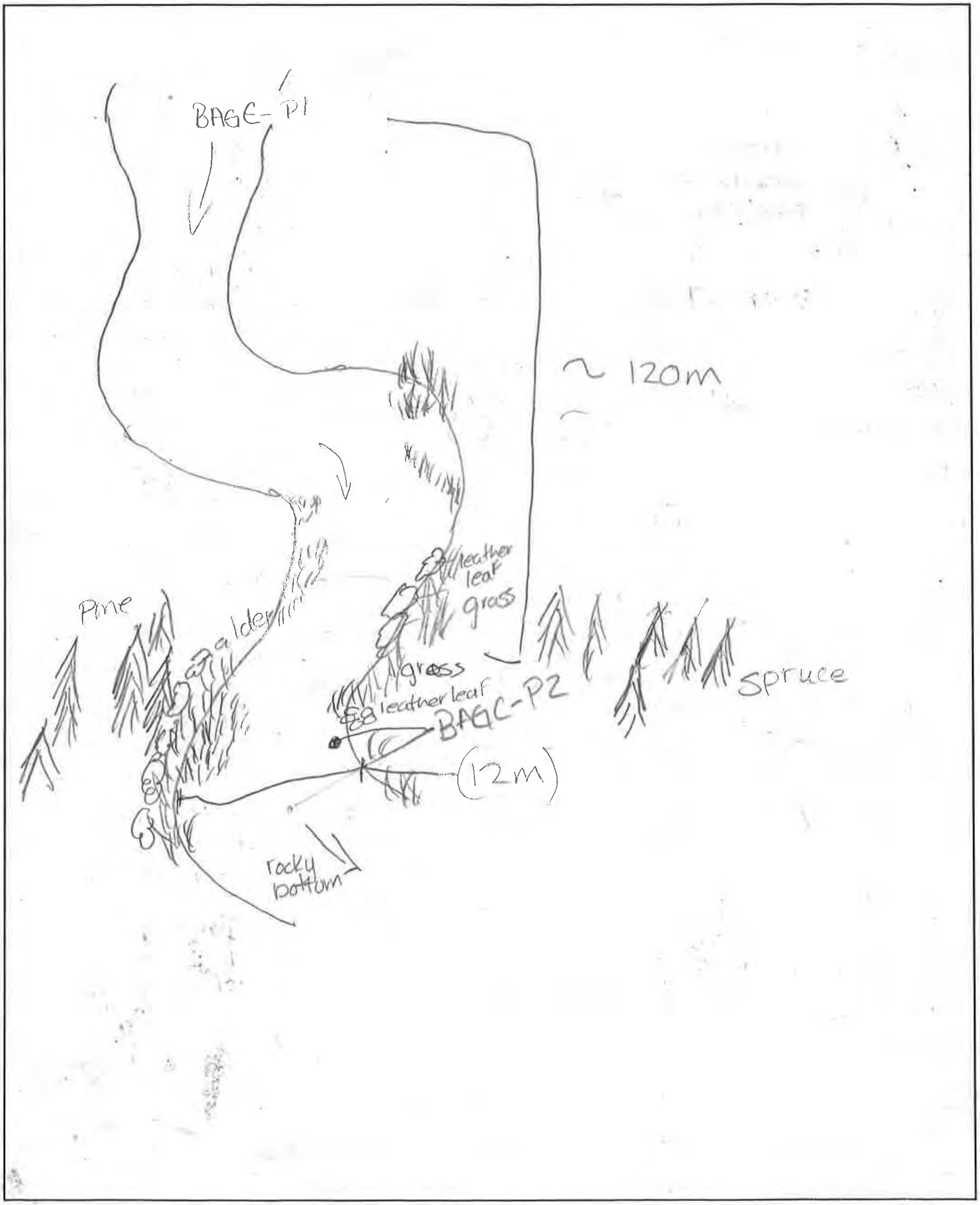
Temperature (°C): 11.09
DO (% sat): ~~71~~ 72.2
pH (pH units): 6.38
DO (mg/L): 7.98
Flow (m/s): 0.06m/sec (50cm from bottom)
Conductivity (uS/cm): 40 (spec)

SEDIMENT QUALITY MEASURES (BAGC-P2)

Sample for Particle Size (Y/N): ✓
Sample for TOC (Y/N): ✓
Metals (Y/N): ✓
TKN (Y/N): ✓
Total Phosphorus (Y/N): ✓
Duplicate taken (Y/N): N

Signature: C Russel

Diagram: ☑ Photos taken



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	2 Lamb Street — Telephone: (905) 873 - 3371
	Georgetown, Ontario L7G 3M9 — Facsimilie: (905) 873 - 6370

Client: IAMGOLD
Date/Time: Sept 14/13 11:50
Waterbody: Bagsverd Creek
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47°37' 11.9

Project Name/Number: 2496 / Cote Gold
Field Crew: CR / PI
Station Identifier: BAGC-P3
Grabs in Composite: 3
Station Depth (m): ~~1m~~ 1.4 m
Longitude (ddmmss): 81° 55' 50.9" WP: BAGC3

SAMPLE CHARACTERISTICS

Number of Jars: 1 (2L) 1 2

Average Sampler Fullness: 1/4 (1/2) (3/4) full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 60

%Organic debris 40 Comments: lots of detritus

Macrophytes (in sample): none sparse (common) abundant

Algae (in sample): (none) sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): grasses / Pondweed

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

☑ Water sample collected BAGC

Surface (25 cm from surface)

Temperature (°C): 11.34
pH (pH units): 6.34
DO (% sat): 74.8
DO (mg/L): 8.18
Sp. Conductivity (uS/cm): 40

Bottom (25 cm from bottom)

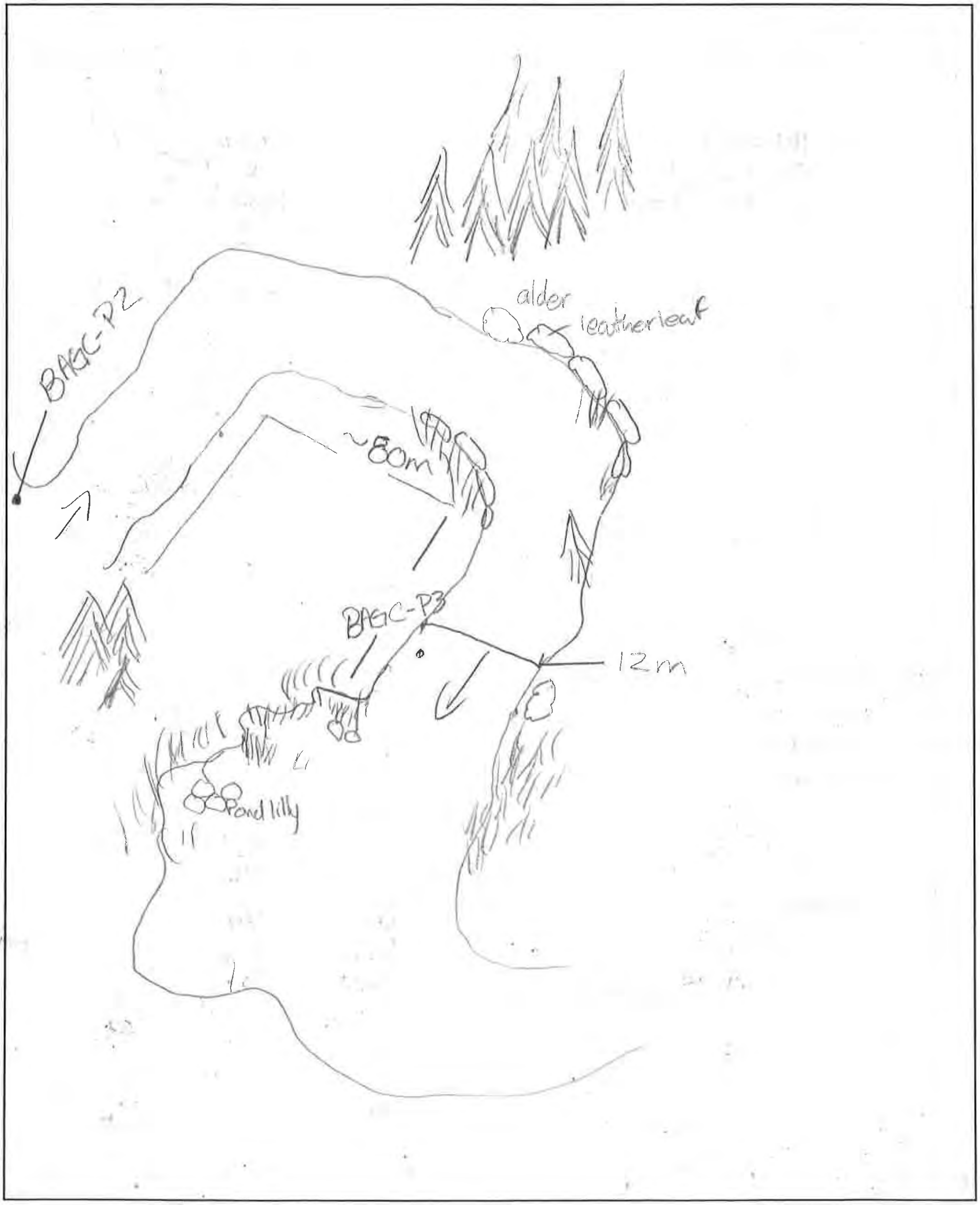
Temperature (°C): 11.31
pH (pH units): 6.27
Flow (m/s): 0.04 m/sec ~50cm from bottom
DO (% sat): 74.0
DO (mg/L): 8.10
Sp. Conductivity (uS/cm): 40

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
Total Phosphorus (Y/N): ✓
Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): N

Signature: C Russel

Diagram: ☑ Photos taken



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Depositional Benthic Grab Study Field Sheet

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2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	IAMGOLD	Project Name/Number:	2496
Date/Time:	2013/09/15 12:30	Field Crew:	CR PI
Waterbody:	Bagsverd Creek	Station Identifier:	BAGC-P4
Sampling Device:	petite Ponar	Grabs in Composite	3
Seive Size:	500 um	Station Depth (m):	1.1
Latitude (ddmmss):	47° 37' 14.3"	Longitude (ddmmss):	81°55' 50.6"

SAMPLE CHARACTERISTICS

Number of Jars: 1 (2L)

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 60

%Organic debris 40 Comments:

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): pondweed & grasses

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	11.73	DO (% sat):	79.8
pH (pH units):	6.45	DO (mg/L):	8.69
stream width: 13m		Sp. Conductivity (uS/cm):	40

Bottom (25 cm from bottom)

Temperature (°C):	11.73	DO (% sat):	78.7
pH (pH units):	6.29	DO (mg/L):	8.54
Velocity ~~Flow~~ (m/s):	0.03 m	Conductivity (uS/cm):	40

No water sample

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
Total Phosphorus (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: [signature]

Diagram: ☑ Photos taken

- not done - not enough field sheets
habitat similar to other locations
- stream width 12m
→ instream vegetation - Pond lilly, grasses
Pond weed - lots of pond weed on bottom
Shores dominated by grasses, &
leather leaf - wide open

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAMGOLD
Date/Time: Sept 14 13 3:30pm
Waterbody: Bagsverd Creek
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): N 47°37' 15.5

Project Name/Number: Cote Gold - 2496
Field Crew: CR PI
Station Identifier: BAGC-5
Grabs in Composite: 3
Station Depth (m): 1.4 m
Longitude (ddmmss): W 81° 55' 54.7

SAMPLE CHARACTERISTICS

Number of Jars: 2

Average Sampler Fullness: 1/4 1/2 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 50 %

%Organic debris 50 Comments: detritus, grass, pondweed & sticks

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): Pondweed grass

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

N Water sample collected

Surface (25 cm from surface)

Temperature (°C): 12.05
pH (pH units): 6.46
DO (% sat): 77.3
DO (mg/L): 8.32
Conductivity (uS/cm): 40 (spec)

Bottom (25 cm from bottom)

Temperature (°C): 12.03
pH (pH units): 6.41
Flow (m/s): 0.01
DO (% sat): 77.2
DO (mg/L): 8.33
Conductivity (uS/cm): 40 (spec)

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
Total Phosphorus (Y/N): ✓
Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): N

Signature: CRussel

Diagram: ☑ Photos taken

Not done as not enough field sheets
- habitat very similar to other stations

Stream width 12m - in stream macrophytes of grasses & pondweed banks of grasses & leather leaf - Some pond lilly
-

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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client:	IAMGOLD	Project Name/Number:	2496 Cote Gold
Date/Time:	Sept 15/ 845am	Field Crew:	CR PI
Waterbody:	Errington Creek	Station Identifier:	ERRC-P1
Sampling Device:	petite Ponar	Grabs in Composite	3
Seive Size:	500 um	Station Depth (m):	1.2
Latitude (ddmmss):	N 47°34'58.6"	Longitude (ddmmss):	W 81°51'26.4"

SAMPLE CHARACTERISTICS

Number of Jars: 1 (2L)

Average Sampler Fullness: 1/4 1/2 (1) 3/4 (2) full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 55

%Organic debris 45 Comments:

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): grass, lilly Pondweed

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m NO ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C):	12.96	DO (% sat):	52.0
pH (pH units):	6.12	DO (mg/L):	5.54
		Conductivity (uS/cm):	44

Bottom (25 cm from bottom)

Temperature (°C):	12.94	DO (% sat):	50.01
pH (pH units):	6.14	DO (mg/L):	5.29
Flow (m/s):		Conductivity (uS/cm):	44

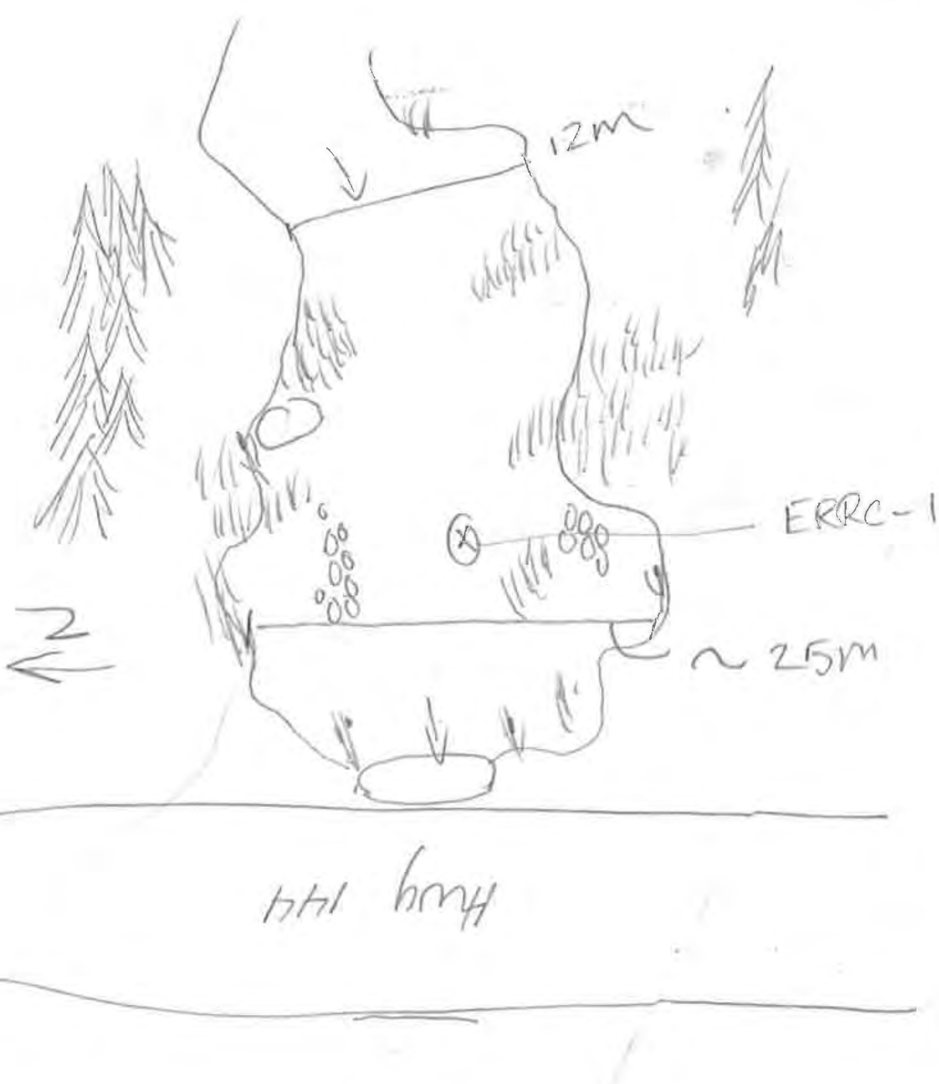
SEDIMENT QUALITY MEASURES

ERRC-P1
ERRC-P1 Z

Sample for Particle Size (Y/N):	✓	Sample for TOC (Y/N):	✓
Metals (Y/N):	✓	TKN (Y/N):	✓
Total Phosphorus (Y/N):	✓	Duplicate taken (Y/N):	Y ERRC-P1Z

Signature:

Diagram: ☑ Photos taken



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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAMGOLD
Date/Time: Sept 15 · 10am
Waterbody: Errington Creek
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): N 47 34 58.6

Project Name/Number: 2496 / Cote Gold
Field Crew: OR / PI
Station Identifier: ERRC-2
Grabs in Composite: 3
Station Depth (m): 1.2
Longitude (ddmmss): 81° 51' 21.1

SAMPLE CHARACTERISTICS

Number of Jars: 1 (2L)

Average Sampler Fullness: 1/4   1/2 (2)   3/4 (1)   full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer ~~55~~ 45

%Organic debris 55   Comments:

woody deprise

Macrophytes (in sample): none   sparse   common   abundant

Algae (in sample): none   sparse   common   abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

No Water sample collected

Surface (25 cm from surface)

Temperature (°C): 13.35
pH (pH units): 6.19
stream width 5p
DO (% sat): 56.5
DO (mg/L): 5.93
Conductivity (uS/cm): 39

Bottom (25 cm from bottom)

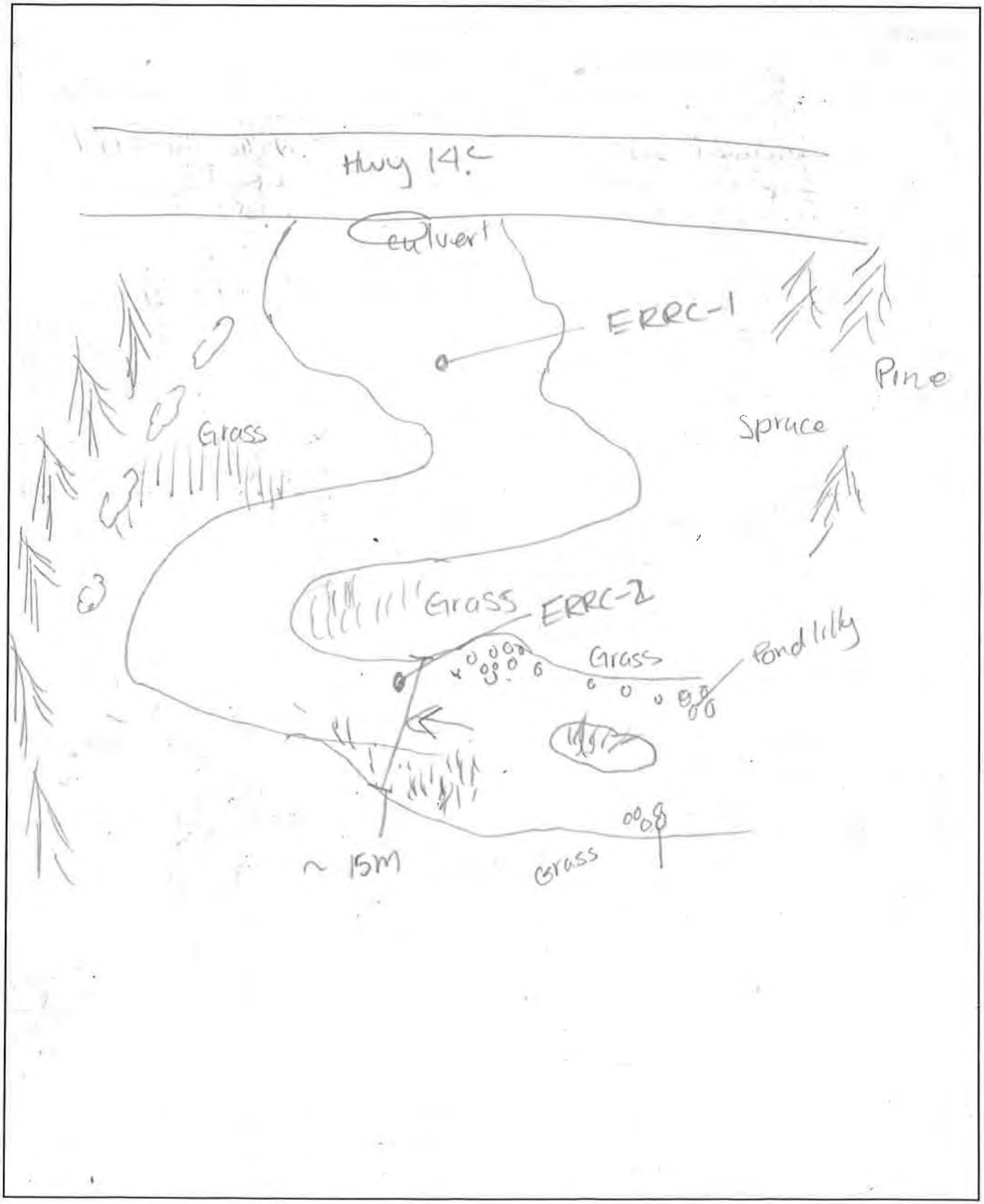
Temperature (°C): 13.33
pH (pH units): 6.25
Flow (m/s): 0.01 m/sec Sp
DO (% sat): 54.7
DO (mg/L): 5.73
Conductivity (uS/cm): 40

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
Total Phosphorus (Y/N): ✓
Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): NO

Signature: [signature]

Diagram: ☑ Photos taken



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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
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Client:	IAM GOLD	Project Name/Number:	2496 Cote Gold
Date/Time:	Sept 15 1030am	Field Crew:	CR PJ
Waterbody:	Errington Creek	Station Identifier:	ERRC-3
Sampling Device:	petite Ponar	Grabs in Composite	3
Seive Size:	500 um	Station Depth (m):	1.1
Latitude (ddmmss):	47 35 0.5	Longitude (ddmmss):	81 51 19.8

SAMPLE CHARACTERISTICS

Number of Jars: 1 (2L)

Average Sampler Fullness: 1/4 1/2 2 3/4 1 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 45

%Organic debris 55 Comments: Woody fibre

Macrophytes (in sample): none sparse common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): water lily pads

WATER QUALITY MEASURES mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m ☑ Water sample collected ERRC

Surface (25 cm from surface)

Temperature (°C):	13.41	DO (% sat):	59.8
pH (pH units):	6.07	DO (mg/L):	6.26
		Conductivity (uS/cm):	39

Bottom (25 cm from bottom)

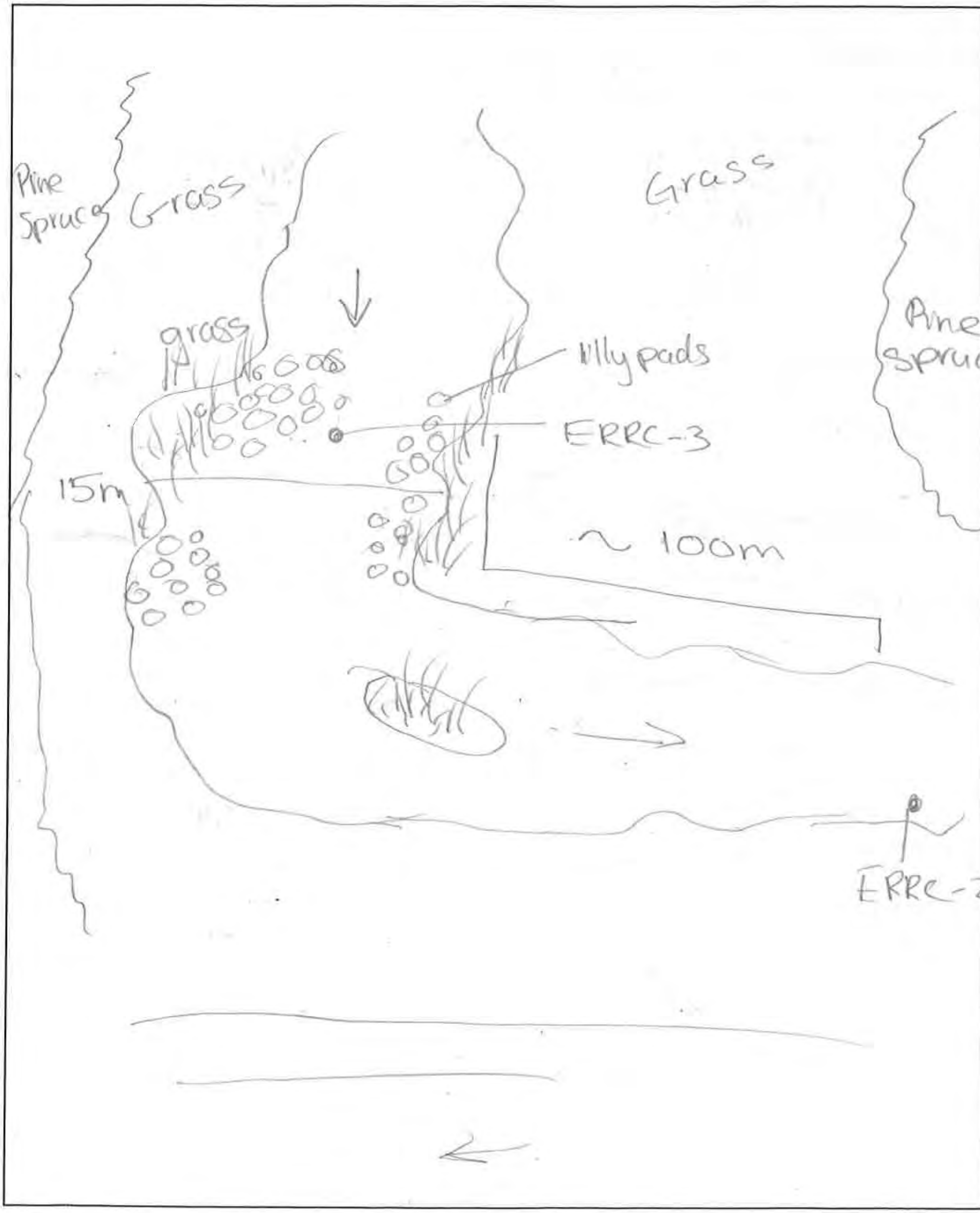
Temperature (°C):	13.39	DO (% sat):	58.3
pH (pH units):	6.23	DO (mg/L):	6.04
Flow (m/s):	~~6.0~~ 0.00	Conductivity (uS/cm):	39

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N):	Y	Sample for TOC (Y/N):	Y
Metals (Y/N):	Y	TKN (Y/N):	Y
Total Phosphorus (Y/N):	Y	Duplicate taken (Y/N):	N

Signature: ____________

Diagram: ☑ Photos taken



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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAM GOLD
Date/Time: Sept 15 12pm
Waterbody: Errington Creek
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47 34 58.6

Project Name/Number: 2496 Cote Gold
Field Crew: CR PI
Station Identifier: ERRC-4
Grabs in Composite: 3
Station Depth (m): 1.3
Longitude (ddmmss): 81 51 26.9

SAMPLE CHARACTERISTICS

Number of Jars: 1 (2L)

Average Sampler Fullness: 1/4 1/2 — 3/4 full

Sample Texture: % Cobble ____ % Gravel ____ % Sand & finer 50

%Organic debris 50 Comments: - slight sulfur smell
some sand & a couple or rocks (small ~3cm)

Macrophytes (in sample): none sparse → common abundant

Algae (in sample): none sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible): Pond lilly

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m

NO ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 13.05
pH (pH units): 6.21
DO (% sat): 59.0
DO (mg/L): 6.21
Conductivity (uS/cm): 49

Bottom (25 cm from bottom)

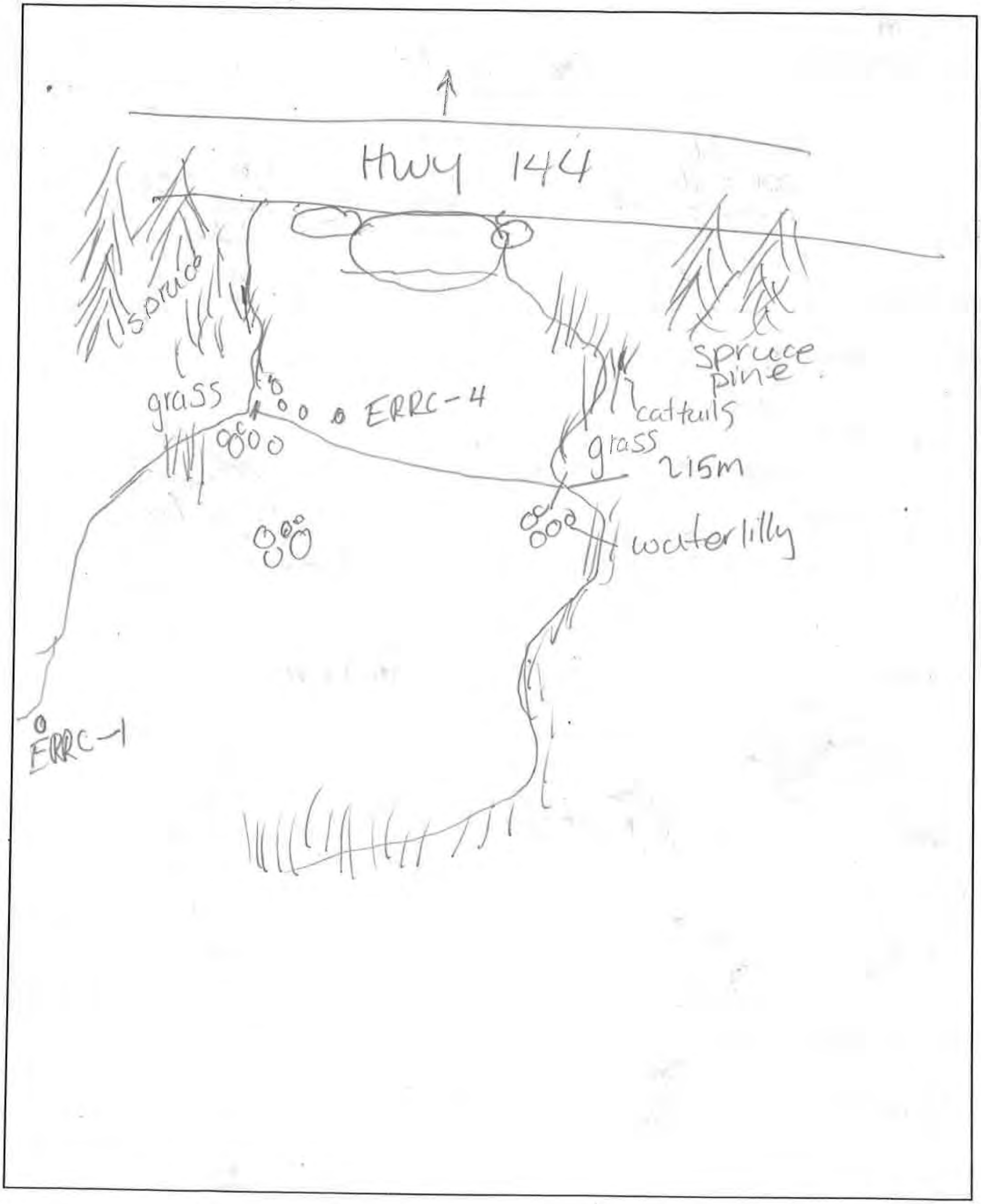
Temperature (°C): 13.02
pH (pH units): 6.19
Flow (m/s): 0.01
DO (% sat): 55.4
DO (mg/L): 5.82
Conductivity (uS/cm): 49

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
Total Phosphorus (Y/N): ✓
Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): NO

Signature: ____

Diagram: ☑ Photos taken



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Depositional Benthic Grab Study Field Sheet

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
Telephone: (905) 873 - 3371
Facsimilie: (905) 873 - 6370

Client: IAM GOLD
Date/Time: Sept 15 12:30
Waterbody: Errington Creek
Sampling Device: petite Ponar
Seive Size: 500 um
Latitude (ddmmss): 47 34 58.9

Project Name/Number: 2496 Côté Baseline
Field Crew: ~~KS JT~~ CR PL
Station Identifier: ~~[illegible]~~ ERRC-5
Grabs in Composite 3
Station Depth (m): 1.3
Longitude (ddmmss): 81 51 23.6

SAMPLE CHARACTERISTICS

Number of Jars: 2 (1-1L 1-2L)

Average Sampler Fullness: 1/4 1/2 → 3/4 full

Sample Texture: % Cobble ___ % Gravel ___ % Sand & finer 45

%Organic debris 55 Comments:

Macrophytes (in sample): none **sparse** common abundant

Algae (in sample): **none** sparse common abundant

List Macrophyte/Algae Type/Species (in sample, to extent possible):

WATER QUALITY MEASURES

mid-depth if < 2 m; surface/bottom if > 2 m and < 4 m NO ☐ Water sample collected

Surface (25 cm from surface)

Temperature (°C): 13.2
pH (pH units): 6.14
DO (% sat): 55.1
DO (mg/L): 5.78
Conductivity (uS/cm): 42 (spec)

Bottom (25 cm from bottom)

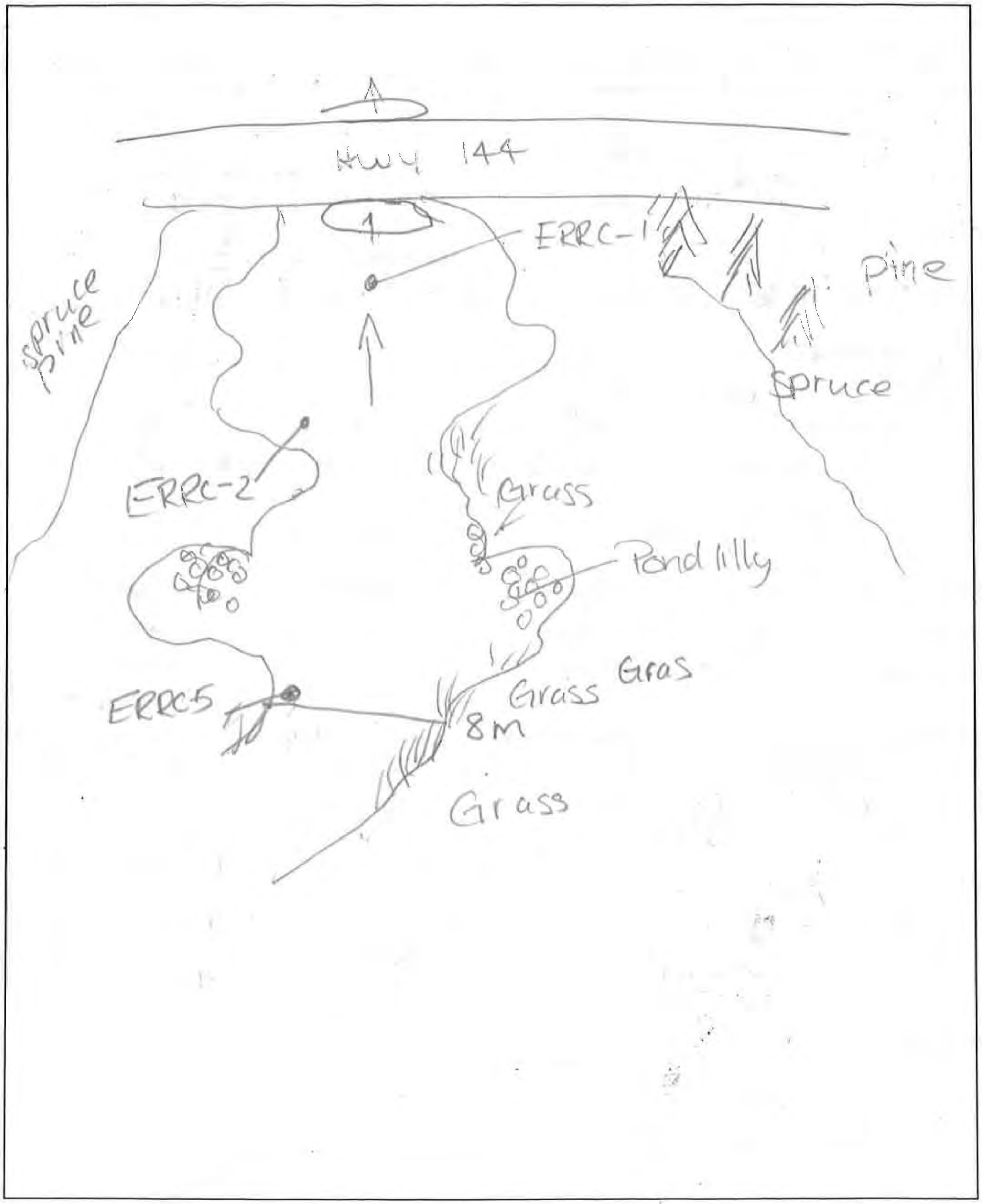
Temperature (°C): 13.19
pH (pH units): 6.13
Flow (m/s): 0.0 m/sec
DO (% sat): 54.2
DO (mg/L): 5.69
Conductivity (uS/cm): 40 spec

SEDIMENT QUALITY MEASURES

Sample for Particle Size (Y/N): ✓
Metals (Y/N): ✓
Total Phosphorus (Y/N): ✓
Sample for TOC (Y/N): ✓
TKN (Y/N): ✓
Duplicate taken (Y/N): NO

Signature: [signature]

Diagram: ☑ Photos taken



APPENDIX F

FISH DATA

Table F.1: Catch records for fish caught in Bagsverd Creek, Côté Gold Baseline Study, 2012 and 2013.

a) Minnow Trapping

Year	Location	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Yellow Perch			Northern Pike			Crayfish			Central Mudminnow			Golden Shiner			Nothern Redbelly Dace			Finescale Dace			Blacknose Shiner		
			Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	Lower Bagsverd Creek	MT-1	5275032	430002	8-Jul-12	9-Jul-12	15:50	11:25	19.58	2	1.63			0			0	5	0	3.06			0			0			0			0			0
		MT-2	5274952	430047	8-Jul-12	9-Jul-12	15:54	11:16	19.37	1	0.81			0			0			0			0			0			0			0			0
		MT-3	5274928	429980	8-Jul-12	9-Jul-12	15:58	11:10	19.20	2	1.60			0			0	3	0	1.87			0			0			0			0			0
		MT-4	5277833	429931	8-Jul-12	9-Jul-12	16:01	11:08	19.12	2	1.59	1	0	0.63			0	3	0	1.88			0			0			0			0			0
		MT-5	5274778	429967	8-Jul-12	9-Jul-12	16:03	11:07	19.07	2	1.59			0			0	5	0	3.15			0			0			0			0			0
		MT-6	5274757	429894	8-Jul-12	9-Jul-12	16:18	11:03	18.75	1	0.78			0			0	3	0	3.84			0			0			0			0			0
		MT-7	5274597	429909	8-Jul-12	9-Jul-12	16:24	10:54	18.50	1	0.77			0			0			0			0			0			0			0			0
		MT-8	5274558	430016	8-Jul-12	9-Jul-12	16:27	10:49	18.37	2	1.53			0			0	5	0	3.27			0			0			0			0			0
		MT-9	5274490	430086	8-Jul-12	9-Jul-12	16:35	10:44	18.15	1	0.76			0			0	2	0	2.64			0			0			0			0			0
		MT-10	5274441	430046	8-Jul-12	9-Jul-12	16:37	10:43	18.10	2	1.51			0			0	1	0	0.66			0			0			0			0			0
		MT-11	5274415	430097	8-Jul-12	9-Jul-12	16:40	10:40	18.00	1	0.75			0			0			0			0			0			0			0			0
		MT-12	5274147	430080	8-Jul-12	9-Jul-12	16:47	10:28	17.68	2	1.47			0			0	4	0	2.71			0			0			0			0			0
		MT-13	5276087	429850	9-Jul-12	10-Jul-12	11:44	11:55	24.18	2	2.02			0			0	1	0	0.50			0			0			0			0			0
		MT-14	5276154	429716	9-Jul-12	10-Jul-12	11:53	11:52	23.98	2	2.00			0	1	0	0.50	2	0	1.00			0			0			0			0			0
		MT-15	5276194	429748	9-Jul-12	10-Jul-12	12:08	11:40	23.53	1	0.98			0			0			0			0			0			0			0			0
		MT-16	5276531	429576	9-Jul-12	10-Jul-12	12:18	11:30	23.20	2	1.93			0			0	4	0	2.07			0			0			0			0			0
		MT-17	5276754	429430	9-Jul-12	10-Jul-12	12:28	11:17	22.82	2	1.90			0			0	10	0	5.26			0			0			0			0			0
		MT-18	5276857	429343	9-Jul-12	10-Jul-12	12:41	11:06	22.42	2	1.87			0			0	4	0	2.14			0			0			0			0			0
		MT-19	5277007	429419	9-Jul-12	10-Jul-12	12:52	11:00	22.13	1	0.92			0			0			0			0			0			0			0			0
		MT-20	5277114	429307	9-Jul-12	10-Jul-12	14:04	10:54	20.83	2	1.74			0			0	4	0	2.30			0			0			0			0			0
		MT-21	5277364	429330	9-Jul-12	10-Jul-12	14:20	10:30	20.17	1	0.84			0			0	1	0	1.19			0			0			0			0			0
		MT-22	5277505	429302	9-Jul-12	10-Jul-12	14:25	10:24	19.98	2	1.67			0			0	5	0	3.00			0			0			0			0			0
		MT-23	5277537	429364	9-Jul-12	10-Jul-12	14:27	10:20	19.88	1	0.83			0			0	4	0	4.83			0			0			0			0			0
		MT-24	5277559	429472	9-Jul-12	10-Jul-12	14:32	10:17	19.75	1	0.82			0			0	3	0	3.65			0			0			0			0			0
		Total							**486.77**	**38**	**32.30**	**1**	**0**	**0.03**	**1**	**0**	**0.03**	**69**	**0**	**2.14**	**0**	**0**	**0.00**	**0**	**0**	**0.00**	**0**	**0**	**0.00**	**0**	**0**	**0.00**	**0**	**0**	**0.00**
	Upper Bagsverd Creek	MT-1	5273579	430221	7-Jul-12	8-Jul-12	12:55	12:18	23.38	2	1.95			0	1	0	0.51	2	0	1.03			0			0			0			0			0
		MT-2	5273542	430263	7-Jul-12	8-Jul-12	13:00	12:17	23.28	2	1.94			0			0	1	0	0.52			0			0			0			0			0
		MT-3	5273417	430264	7-Jul-12	8-Jul-12	13:07	12:12	23.08	2	1.92			0			0	1	0	0.52			0			0			0			0			0
		MT-4	5273326	430206	7-Jul-12	8-Jul-12	13:14	12:07	22.88	1	0.95			0			0	1	0	1.05			0			0			0			0			0
		MT-5	5273362	430122	7-Jul-12	8-Jul-12	13:22	10:35	21.22	2	1.77			0	1	0	0.57			0			0			0			0			0			0
		MT-6	5273327	430078	7-Jul-12	8-Jul-12	13:30	12:00	22.50	1	0.94			0			0			0			0			0			0			0			0
		MT-7	5273281	429976	7-Jul-12	8-Jul-12	13:37	11:55	22.30	1	0.93			0			0	1	0	1.08			0			0			0			0			0
		MT-8	5273261	429904	7-Jul-12	8-Jul-12	13:39	11:53	22.23	2	1.85			0			0	1	0	0.54			0			0			0			0			0
		MT-9	5273150	429933	7-Jul-12	8-Jul-12	13:46	11:48	22.03	1	0.92			0			0	1	0	1.09			0			0			0			0			0
		MT-10	5272995	429916	7-Jul-12	8-Jul-12	13:50	11:45	21.92	2	1.83			0			0			0			0			0			0			0			0
		MT-11	5272829	429878	7-Jul-12	8-Jul-12	14:00	11:27	21.45	1	0.89			0			0			0			0			0			0			0			0
		MT-12	5272856	429854	7-Jul-12	8-Jul-12	14:05	11:25	21.33	2	1.78			0			0			0			0			0			0			0			0
		Total							**267.62**	**19**	**17.67**	**0**	**0**	**0.00**	**2**	**0**	**0.11**	**8**	**0**	**0.45**	**0**	**0**	**0.00**	**0**	**0**	**0.00**	**0**	**0**	**0.00**	**0**	**0**	**0.00**	**0**	**0**	**0.00**
	TOTAL								**754.38**	**57**	**49.97**	1	0	0.02	**3**	**0**	**0.06**	**77**	**0**	**1.54**	**0**	**0**	**0.00**	**0**	**0**	**0.00**	**0**	**0**	**0.00**	**0**	**0**	**0.00**	**0**	**0**	**0.00**
2013	Unnamed Creek Inlet to Bagsverd Creek, upstream of the road	MT-1	5273955	430557	15-Sep-13	16-Sep-13	9:00	8:35	23.58	6	5.90			0			0			0	1	0	0.17	1	0	0.17	4	0	0.68	25	0	4.24	5	0	0.85
	Unnamed Creek Inlet to Bagsverd Creek, downstream of the road	MT-2	5273955	430557	15-Sep-13	15-Sep-13	9:00	13:45	4.75	2	0.40			0	2	0	5.05			0			0			0			0			0			0
	Total								**28.33**	**8**	**6.29**	**0**	**0**	**0.00**	**2**	**0**	**0.32**	**0**	**0**	**0.00**	**1**	**0**	**0.16**	**1**	**0**	**0.16**	**4**	**0**	**0.64**	**25**	**0**	**3.97**	**5**	**0**	**0.79**

Total CPUE = total # of fish / trap*day

Table F.1: Catch records for fish caught in Bagsverd Creek, Côté Gold Baseline Study, 2012 and 2013.

b) Seining

Year	Location	Seining Station	Date	Time	Location (17n, NAD83)		Length (m)	Distance (m)	# of Hauls	Area Seined (m^2)	Northern Pike			Yellow Perch			Golden Shiner			Central Mudminnow			Blacknose Shiner			Finescale Dace		
					Northing	Easting					Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	Lower Bagsverd Creek	SN-1	9-Jul-12	14:00	5277007	429416	17	6	1	102			0	23	0	0.23			0			0			0			0
		SN-2	9-Jul-12	15:00	5277549	429712	17	6	1	102			0	1	0	0.01			0			0			0			0
		SN-3	9-Jul-12	15:40	5277537	429358	16	8	1	128	1	0	0.01	1	0	0.01	1	0	0.01			0			0			0
		SN-4	9-Jul-12	15:50	5277543	429321	15.24	15.24	1	232	1	0	0.00			0			0			0			0			0
		SN-5	9-Jul-12	16:00	5277262	429305	15.24	15.24	1	232			0			0	1	0	0.00			0			0			0
		TOTAL								**797**	**2**	**0**	**0.00**	**25**	**0**	**0.03**	**2**	**0**	**0.00**	**0**	**0**	**0.00**	**0**	**0**	**0.00**	**0**	**0**	**0.00**
	Upper Bagsverd Creek	SN-1	7-Jul-12	13:45	5273577	430189	15.24	7.62	1	116			0			0	1	0	0.01			0			0			0
		SN-2	7-Jul-12	14:45	5273376	430210	15.24	7.62	1	60	1	0	0.02			0			0			0			0			0
		TOTAL								**176**	**1**	**0**	**0.01**			**0.00**	**1**	**0**	**0.01**	**0**	**0**	**0.00**			**0.00**	**0**	**0**	**0.00**
	TOTAL									**973**	**3**	**0**	**0.00**	**25**	**0**	**0.03**	**3**	**0**	**0.00**	**0**	**0**	**0.00**	**0**	**0**	**0.00**	**0**	**0**	**0.00**
2013	Unnamed Creek Inlet to Bagsverd Creek, downstream of the road	SN-1	15-Sep-13	13:20	5277007	429416	15	7.5	2	225			0.00			0.00			0.00	6	0	0.03	6	0	0.03	10	0	0.04

Total CPUE = # of fish / m^2

Table F.1: Catch records for fish caught in Bagsverd Creek, Côté Gold Baseline Study, 2012 and 2013.

c) Large Hoop Netting

Year	Location	Hoop Net Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	Effort (trap*days)	Central Mudminnow			Northern Pike			White Sucker			Yellow Perch			Crayfish		
			Northing	Easting							Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	Lower Bagsverd Creek	HN-1	5273944	429925	8-Jul-12	9-Jul-12	14:20	10:20	20.00	0.83			0			0			0			0			0
		HN-2	5274417	430096	8-Jul-12	9-Jul-12	14:50	10:38	19.80	0.83			0	1	0	1.21			0			0			0
		HN-3	5274667	429890	8-Jul-12	9-Jul-12	15:15	11:00	19.75	0.82			0	1	0	1.22			0			0			0
		HN-4	5275042	429999	8-Jul-12	9-Jul-12	15:40	11:20	19.67	0.82			0	1	0	1.22			0			0			0
		HN-5	5276196	429750	9-Jul-12	10-Jul-12	12:08	11:40	23.53	0.98			0			0			0			0			0
		HN-6	5276853	429363	9-Jul-12	10-Jul-12	12:35	11:10	22.58	0.94			0			0			0	1	0	1			0
		HN-7	5277304	429314	9-Jul-12	10-Jul-12	14:15	10:36	20.35	0.85			0			0			0	2	0	2.36			0
		HN-8	5277563	429512	9-Jul-12	10-Jul-12	14:40	10:10	19.50	0.81			0			0			0	1	0	1	1	0	1.23
		HN-9	5274564	430051	8-Jul-12	9-Jul-12	15:30	10:45	19.25	0.80			0	1	0	1.25			0	8	0	9.97			0
		HN-10	5274774	429948	8-Jul-12	9-Jul-12	16:00	11:05	19.08	0.80			0	1	0	1.26			0			0			0
		HN-11	5276740	429468	9-Jul-12	10-Jul-12	12:45	11:20	22.58	0.94			0			0	1	0	1.06	2	0	2.13			0
		HN-12	5277534	429434	9-Jul-12	10-Jul-12	16:35	10:00	17.42	0.73			0	3	0	4.13			0			0			0
		Total							**243.52**	**10.15**	**0**	**0**	**0.00**	**8**	**0**	**0.79**	**1**	**0**	**0.10**	**14**	**0**	**1.38**	**1**	**0**	**0.10**
	Upper Bagsverd Creek	HN-1	5272956	430013	7-Jul-12	8-Jul-12	11:10	10:04	22.91	0.95	1	0	1.05	1	0	1.05			0			0			0
		HN-2	5273359	430214	7-Jul-12	8-Jul-12	10:30	7:55	21.42	0.89			0	1	0	1.12			0			0	1	0	1.12
		HN-3	5273368	430433	7-Jul-12	8-Jul-12	10:50	7:55	21.09	0.88			0	7	0	7.97	1	0	1.14	1	1	1.14	1	0	1.14
		HN-4	5272896	429915	7-Jul-12	8-Jul-12	11:30	7:55	20.42	0.85			0	7	0	8.23	1	0	1.18			0			0
		Total							**85.84**	**3.58**	**1**	**0**	**0.28**	**16**	**0**	**4.47**	**2**	**0**	**0.56**	**1**	**1**	**0.28**	**2**	**0**	**0.56**
	Total								**329.36**	**13.72**	**1**	**0**	**0.07**	**24**	**0**	**1.75**	**3**	**0**	**0.22**	**15**	**1**	**1.09**	**3**	**0**	**0.22**

Total CPUE = # of fish / trap*day

Table F.1: Catch records for fish caught in Bagsverd Creek, Côté Gold Baseline Study, 2012 and 2013.

d) Backpack Electrofishing

Year	Location	Electrofishing Station	Location (17n, NAD83)		Date	Effort (hrs)	Northern Pike			Burbot			Iowa Darter			White Sucker			Central Mudminnow			Longnose Dace		
			Northing	Easting			Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	Lower Bagsverd Creek	EF-1	5277436	430455	15-Jul-12	0.18	2	0	11.43	4	0	22.86	1	0	5.71			0			0	16	0	91.43
	Upper Bagsverd Creek	EF-1	5271459	431105	13-Jul-12	0.24			0	1	0	4.26			0	1	0	4.26	1	0	4.26	32	0	136.17
	TOTAL					**0.24**	**2**	**0**	**8.51**	**5**	**0**	**21.28**	**1**	**0**	**4.26**	**1**	**0**	**4.26**	**1**	**0**	**4.26**	**48**	**0**	**204.26**

Total CPUE = # of fish / hour

Table F.2: Catch records for fish caught in Bagsverd Lake, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Location	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/100 m of gill net)	Yellow Perch					Walleye					Northern Pike					Lake Whitefish					White Sucker				
			Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE
2012	South Arm	GN-1	5268600	429848	45.7	11-Jul-12	11-Jul-12	14:30	18:30	4.00	1	0.30	1	1			3.3																				
											1.5	0.30	2	2			6.6						1	1			3.3										
											2	0.30	1		1		3.3						1	1			3.3										
											2.5	0.30											2	1	1		6.6										
											3	0.30																									
											4	0.30																					2	2			6.6
											Total	**1.83**	**4**	**3**	**1**	**0**	**2.19**	**0**	**0**	**0**	**0**	**0.00**	**4**	**3**	**1**	**0**	**2.19**	**0**	**0**	**0**	**0**	**0.00**	**2**	**2**	**0**	**0**	**1.09**
		GN-1 (2nd lift)	5268600	429848	45.7	11-Jul-12	12-Jul-12	18:30	10:25	15.92	1	1.21	5		5		4.1																				
											1.5	1.21	3		31		2.5	16		16		13.2											1		1		0.8
											2	1.21	1				0.8	6	2	3	1	4.9	3		3		2.5						10		10		8.2
											2.5	1.21						1	1		0	0.8	1		1		0.8						8		5	3	6.6
											3	1.21											4		4		3.3						4		4		3.3
											4	1.21											2		2		1.6						6		5	1	4.9
											Total	**7.27**	**9**	**0**	**36**	**0**	**1.24**	**23**	**3**	**19**	**1**	**3.16**	**10**	**0**	**10**	**0**	**1.37**	**0**	**0**	**0**	**0**	**0.00**	**29**	**0**	**25**	**4**	**3.99**
		GN-2	5268519	429533	45.7	11-Jul-12	11-Jul-12	14:50	17:05	2.25	1	0.17	17	6	11		99.2																				
											1.5	0.17	3	3			17.5						2		2		11.7										
											2	0.17											1	1			5.8										
											2.5	0.17	1		1		5.8						1				5.8										
											3	0.17											2	2			11.7										
											4	0.17																									
											Total	**1.03**	**21**	**9**	**12**	**0**	**20.42**	**0**	**0**	**0**	**0**	**0.00**	**6**	**3**	**2**	**0**	**5.84**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**
		GN-2 (2nd lift)	5268519	429533	45.7	11-Jul-12	11-Jul-12	17:05	18:10	1.08	1	0.08	9	6	3		109.1																				
											1.5	0.08	1		1		12.1						1		1		12.1										
											2	0.08																									
											2.5	0.08																									
											3	0.08																									
											4	0.08																					2	1	1		24.2
											Total	**0.50**	**10**	**6**	**4**	**0**	**20.20**	**0**	**0**	**0**	**0**	**0.00**	**1**	**0**	**1**	**0**	**2.02**	**0**	**0**	**0**	**0**	**0.00**	**2**	**1**	**1**	**0**	**4.04**
		GN-2 (3rd lift)	5268519	429533	45.7	11-Jul-12	12-Jul-12	18:10	12:00	17.83	1	1.36																									
											1.5	1.36	3		3		2.2	1				0.7											1		1		0.7
											2	1.36	2		2		1.5	1	1			0.7	1		1		0.7						3		3		2.2
											2.5	1.36						3	2			2.2	6		6		4.4						3		3		2.2
											3	1.36											3		3		2.2						1		1		0.7
											4	1.36																					1		1		0.7
											Total	**8.15**	**5**	**0**	**5**	**0**	**0.61**	**5**	**3**	**0**	**0**	**0.61**	**10**	**0**	**10**	**0**	**1.23**	**0**	**0**	**0**	**0**	**0.00**	**9**	**0**	**9**	**0**	**1.10**
		TOTAL										**18.78**	**49**	**18**	**58**	**0**	**2.61**	**28**	**6**	**19**	**1**	**1.49**	**31**	**6**	**24**	**0.00**	**1.65**	**0**	**0**	**0**	**0.00**	**0.00**	**42**	**3**	**35**	**4**	**2.24**
2013	Main	GN-1	5269608	429987	45.7	4-Jun-13	5-Jun-13	12:05	10:55	22.83	1	1.74						1		1		0.6															
											1.5	1.74	1	1			0.6						1	1			0.6	1	1			0.6					
											2	1.74						1	1			0.6	1	1			0.6										
											2.5	1.74											3	3			1.7										
											3	1.74											3	3			1.7	1	1			0.6					
											4	1.74											1	1			0.6						2		2		1.1
											Total	**10.43**	**1**	**1**	**0**	**0**	**0.10**	**2**	**1**	**1**	**0**	**0.19**	**9**	**9**	**0**	**0**	**0.86**	**2**	**2**	**0**	**2**	**0.19**	**2**	**0**	**2**	**0**	**0.19**
		GN-2	5270746	429927	45.7	4-Jun-13	5-Jun-13	12:50	9:00	20.17	1.5	1.54	1	1			0.7	1		1		0.7															
											2	1.54	1		1		0.7	2	2			1.3	1	1			0.7										
											2.5	1.54	1		1		0.7	1	1			0.7	1	1			0.7	1	1			0.7	2		2		1.3
											3	1.54						1	1			0.7											3		3		2.0
											4	1.54																2	2			1.3	3		3		2.0
											5	1.54											1	1			0.7	1	1			0.7					
											Total	**9.22**	**3**	**1**	**2**	**0**	**0.33**	**5**	**4**	**1**	**0**	**0.54**	**3**	**3**	**0**	**0**	**0.33**	**4**	**4**	**0**	**0**	**0.43**	**8**	**0**	**8**	**0**	**0.87**
		TOTAL										**19.65**	**4**	**2**	**2**	**0**	**0.20**	**7**	**5**	**2**	**0**	**0.36**	**12**	**12**	**0**	**0**	**0.61**	**6**	**6**	**0**	**2**	**0.31**	**10**	**0**	**10**	**0**	**0.51**

Total CPUE = total # of fish / 100 m of gill net / hour

Table F.2: Catch records for fish caught in Bagsverd Lake, Côté Gold Baseline Study, 2012 and 2013.

b) Minnow Trapping

Year	Location	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Yellow Perch			Iowa Darter			Northern Pike			Fathead Minnow			Crayfish		
			Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	South Arm	MT-1	5268486	429567	11-Jul-12	12-Jul-12	16:20	15:23	23.05	1	0.96			0			0			0			0			0
		MT-2	5268559	429544	11-Jul-12	12-Jul-12	16:25	14:26	22.02	1	0.92	4	0	4.36			0			0			0			0
		MT-3	5268485	429225	11-Jul-12	12-Jul-12	16:30	14:30	22.00	1	0.92			0			0			0			0			0
		MT-4	5268465	429116	11-Jul-12	12-Jul-12	16:35	14:35	22.00	1	0.92	2	0	2.18			0	1	0	1.09	1	0	1.09			0
		MT-5	5268465	429119	11-Jul-12	12-Jul-12	16:35	14:35	22.00	1	0.92			0			0			0			0			0
		MT-6	5268505	429025	11-Jul-12	12-Jul-12	16:40	14:54	22.23	1	0.93			0			0			0			0			0
		MT-7	5268534	428984	11-Jul-12	12-Jul-12	16:45	14:57	22.20	1	0.93			0			0			0			0			0
		MT-8	5268686	429110	11-Jul-12	12-Jul-12	16:55	15:15	22.33	1	0.93	1	0	1.07			0			0			0			0
		MT-9	5268664	429250	11-Jul-12	12-Jul-12	16:55	15:16	22.35	1	0.93			0			0			0			0			0
		MT-10	5268697	429413	11-Jul-12	12-Jul-12	17:00	15:20	22.33	1	0.93			0			0			0			0			0
		MT-11	5268689	429444	11-Jul-12	12-Jul-12	17:00	15:20	22.33	1	0.93			0			0			0			0			0
		MT-12	5268651	429668	11-Jul-12	12-Jul-12	17:05	15:25	22.33	1	0.93	1	0	1.07			0			0			0			0
		MT-13	5268566	429960	11-Jul-12	12-Jul-12	17:10	15:28	22.30	1	0.93			0			0			0			0			0
		MT-14	5268528	429911	11-Jul-12	12-Jul-12	17:15	15:29	22.23	1	0.93			0			0			0			0			0
	East Arm	MT-15	5269710	430987	12-Jul-12	13-Jul-12	16:15	10:15	18.00	1	0.75			0			0			0			0	2	0	2.67
		MT-16	5269753	430990	12-Jul-12	13-Jul-12	16:18	10:16	17.97	1	0.75	1	0	1.34			0			0			0	5	0	6.68
		MT-17	5269802	430980	12-Jul-12	13-Jul-12	16:19	10:17	17.97	1	0.75			0			0			0			0			0
		MT-18	5269900	431096	12-Jul-12	13-Jul-12	16:21	10:19	17.97	1	0.75			0			0			0			0	3	0	4.01
		MT-19	5269960	431106	12-Jul-12	13-Jul-12	16:22	10:20	17.97	1	0.75	3	0	4.01			0			0			0	6	0	8.01
		MT-20	5270001	431140	12-Jul-12	13-Jul-12	16:23	10:21	17.97	1	0.75			0			0			0			0	2	0	2.67
		MT-21	5270057	431207	12-Jul-12	13-Jul-12	16:26	10:22	17.93	1	0.75	4	0	5.35			0			0			0	5	0	6.69
		MT-22	5270103	431243	12-Jul-12	13-Jul-12	16:28	10:23	17.92	1	0.75			0			0			0			0	2	0	2.68
		MT-23	5270257	431476	12-Jul-12	13-Jul-12	16:30	10:26	17.93	1	0.75			0			0			0			0	3	0	4.01
		MT-24	5270212	430713	12-Jul-12	13-Jul-12	17:41	10:45	17.07	1	0.71			0			0			0			0	4	0	5.63
		MT-25	5270180	430623	12-Jul-12	13-Jul-12	17:42	10:46	17.07	1	0.71			0			0			0			0	2	0	2.81
		MT-26	5270091	430632	12-Jul-12	13-Jul-12	17:44	10:47	17.05	1	0.71			0			0			0			0			0
		MT-27	5270018	430572	12-Jul-12	13-Jul-12	17:46	10:49	17.05	1	0.71			0			0			0			0	2	0	2.82
		MT-28	5270110	430519	12-Jul-12	13-Jul-12	17:47	10:51	17.07	1	0.71			0			0			0			0			0
		Total							**558.63**	**28**	**23.28**	**16**	**0**	**0.69**	**0**	**0**	**0.00**	**1**	**0**	**0.04**	**1**	**0**	**0.04**	**36**	**0**	**1.55**
2013	Main	MT-1	5269781	429204	4-Jun-13	5-Jun-13	11:30	12:10	24.67	5	5.14			0	1	0	0.19			0			0			0
		MT-2	5269087	429859	4-Jun-13	5-Jun-13	11:45	11:30	23.75	5	4.95	6	5	1.21			0			0			0	1	0	0.20
		MT-3	5269728	430108	4-Jun-13	5-Jun-13	11:55	10:40	22.75	5	4.74			0			0			0			0	1	0	0.21
		MT-4	5270875	429685	4-Jun-13	5-Jun-13	12:15	8:50	20.58	5	4.29			0			0			0			0	1	0	0.23
		Total							**91.75**	**20**	**19.11**	**6**	**5**	**0.31**	**1**	**0**	**0.05**	**0**	**0**	**0.00**	**0**	**0**	**0.00**	**3**	**0**	**0.16**

Total CPUE = total # of fish / trap*day

Table F.2: Catch records for fish caught in Bagsverd Lake, Côté Gold Baseline Study, 2012 and 2013.

c) Seining

Year	Location	Seining Station	Date	Time	Location (17n, NAD83)		Length (m)	Distance (m)	# of Hauls	Area Seined (m^2)	Yellow Perch			Iowa Darter		
					Northing	Easting					Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2013	Main	SN-1	5-Jun-13	8:40	5270915	429501	40	8	1	320			0			0
		SN-2	5-Jun-13	10:30	5269913	430581	50	10	1	500	2	0	0.004	1	0	0.002
		SN-3	5-Jun-13	12:00	5269621	429444	50	10	1	500			0			0
		SN-4	5-Jun-13	12:30	5270165	429449	*	*	5	1670	2	0	0.001	1	0	0.001
		TOTAL								**2990**	**4**	**0**	**0.0013**	**2**	**0**	**0.0007**

Total CPUE = # of fish / m^2

* 5 separate hauls with different areas: three 30x8m, one 20x10m, and one 50x15m haul

Table F.2: Catch records for fish caught in Bagsverd Lake, Côté Gold Baseline Study, 2012 and 2013.

d) Hoop Netting

Year	Location	Hoop Net Station	Hoop Net Size	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	Effort (trap*days)	Yellow Perch			Golden Shiner			Northern Pike			Fathead Minnow			Blacknose Shiner			Spottail Shiner			White Sucker		
				Northing	Easting							Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	South Arm	HN-1	small	5268464	429147	11-Jul-12	12-Jul-12	15:15	14:40	23.42	0.98	30	0	30.75			0			0			0	2	0	2.05			0			0
		HN-2	small	5268641	429062	11-Jul-12	12-Jul-12	15:45	15:00	23.25	0.97	8	0	8.26	5	0	5.16			0			0			0			0	2	0	2.06
	East Arm	HN-3	medium	5269984	431033	12-Jul-12	13-Jul-12	12:38	10:30	21.87	0.91	10	4	10.98			0	4	0	4.39			0			0			0	2	0	2.20
		HN-4	medium	5270092	430508	12-Jul-12	13-Jul-12	13:05	11:10	22.08	0.92	3	0	3.26			0	1	0	1.09			0			0			0	7	0	7.61
		HN-5	small	5270028	430563	12-Jul-12	13-Jul-12	15:45	10:00	18.25	0.76	8	1	10.52	2	0	2.63			0			0			0			0	2	0	2.63
		HN-6	small	5269706	431043	12-Jul-12	13-Jul-12	16:15	10:55	18.67	0.78	15	0	19.29			0			0	2	0	2.57	1	0	1.29	1	0	1.29	1	0	1.29
	Total									**127.53**	**5.31**	**74**	**5**	**13.93**	**7**	**0**	**1.32**	**5**	**0**	**0.94**	**2**	**0**	**0.38**	**3**	**0**	**0.56**	**1**	**0**	**0.19**	**14**	**0**	**2.63**

Total CPUE = # of fish / trap*day

Table F.3: Catch records for fish caught in Bagsverd Pond, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/100 m of gill net)	White Sucker					Central Mudminnow				
		Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE
2012	GN-1	5268305	430359	45.7	14-Jul-12	15-Jul-12	14:15	8:40	18.42	1	1.40						1			1	0.7
										1.5	1.40	1			1	0.7					
										2	1.40										
										2.5	1.40										
										3	1.40										
										4	1.40										
										Total	**8.42**	**1**	**0**	**0**	**1**	**0.12**	**1**	**0**	**0**	**1**	**0.12**

Total CPUE = total # of fish / 100 m of gill net / hour

Table F.3: Catch records for fish caught in Bagsverd Pond, Côté Gold Baseline Study, 2012 and 2013.

b) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Fathead Minnow			Finescale Dace			Northern Redbelly Dace			Central Mudminnow			Iowa Darter			Eastern Newt		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	MT-1	5268434	430465	14-Jul-12	15-Jul-12	15:35	9:02	17.45	1	0.73	2	0	2.75			0	4	0	5.50	2	0	2.75			0			0
	MT-2	5268484	430417	14-Jul-12	15-Jul-12	15:40	9:04	17.40	1	0.72	1	0	1.38			0	1	0	1.38	4	0	5.52			0	5	0	6.90
	MT-3	5268467	430375	14-Jul-12	15-Jul-12	15:45	9:08	17.38	1	0.72			0	1	0	1.38	1	0	1.38	2	0	2.76			0			0
	MT-4	5268404	430344	14-Jul-12	15-Jul-12	15:50	9:11	17.35	1	0.72	14	0	19.37	18	0	24.90	35	0	48.41	14	0	19.37	2	0	2.77			0
	MT-5	5268289	430274	14-Jul-12	15-Jul-12	15:50	9:25	17.58	1	0.73	5	0	6.82	3	0	4.09	4	0	5.46	5	0	6.82			0			0
	MT-6	5268262	430322	14-Jul-12	15-Jul-12	15:55	8:50	16.92	1	0.70			0	12	0	17.02			0	2	0	2.84			0			0
	MT-7	5268226	430404	14-Jul-12	15-Jul-12	15:58	8:54	16.93	1	0.71			0	3	0	4.25	1	0	1.42	1	0	1.42			0			0
	MT-8	5268250	430444	14-Jul-12	15-Jul-12	16:00	8:55	16.92	1	0.70	11	0	15.61			0	40	0	56.75			0			0			0
	Total							**137.93**	**8**	**5.75**	**33**	**0**	**5.74**	**37**	**0**	**6.44**	**86**	**0**	**14.96**	**30**	**0**	**5.22**	**2**	**0**	**0.35**	**5**	**0**	**0.87**

Total CPUE = total # of fish / trap * day

Table F.3: Catch records for fish caught in Bagsverd Pond, Côté Gold Baseline Study, 2012 and 2013.

c) Mini Hoop Netting

Year	Hoop Net Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	Effort (trap*days)	Fathead Minnow			Finescale Dace			Northern Redbelly Dace			Central Mudminnow			Iowa Darter		
		Northing	Easting							Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	HN-1	5268408	430371	14-Jul-12	15-Jul-12	14:35	9:30	18.92	0.79	>1,000		1,268.72	>1,000		1,268.72	>1,000		1,268.72	20		25	1		1.27
	HN-2	5268321	430411	14-Jul-12	15-Jul-12	14:45	10:35	19.83	0.83			0			0			0			0			0
	Total							**38.75**	**1.61**	**1000**	**0**	**619.35**	**1000**	**0**	**619.35**	**1000**	**0**	**619.35**	**20**	**0**	**12.39**	**1**	**0**	**0.62**

Total CPUE = # of fish / trap*day

Table F.4: Catch records for fish caught in Beaver Pond, Côté Gold Baseline Study, 2012 and 2013.

a) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Fathead Minnow			Finescale Dace			Northern Redbelly Dace			Pearl Dace			Iowa Darter		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	MT-1	5266225	429632	10-Jul-12	11-Jul-12	15:12	8:56	17.73	1	0.74			0			0			0			0			0
	MT-2	5266217	429632	10-Jul-12	11-Jul-12	15:13	8:58	17.75	2	1.48			0			0	15		10.14	5	0	3.38			0
	MT-3	5266222	429648	10-Jul-12	11-Jul-12	15:15	9:07	17.87	1	0.74	1	0	1.34			0	11		14.78	2	0	2.69	1	0	1.34
	MT-4	5266225	429658	10-Jul-12	11-Jul-12	15:17	9:15	17.97	1	0.75	204	8	272.50	6	2	8.01	21	0	28.05			0			0
	MT-5	5266223	429690	10-Jul-12	11-Jul-12	15:20	9:49	18.48	2	1.54	44	5	28.57	15	0	9.74	34	6	22.07	4	0	2.60	2	0	1.30
	MT-6	5266215	429668	10-Jul-12	11-Jul-12	15:27	10:20	18.88	2	1.57	78	2	49.57	10	2	6.35	41	0	26.05	1	0	0.64			0
	MT-7	5266215	429666	10-Jul-12	11-Jul-12	15:30	10:30	19.00	2	1.58	29	1	18.32	19	0	12.00	72	3	45.47			0			0
	TOTAL							**127.68**	**11**	**8.41**	**356**	**16**	**42.34**	**50**	**4**	**5.95**	**194**	**9**	**23.07**	**12**	**0**	**1.43**	**3**	**0**	**0.36**

Total CPUE = total # of fish / trap*day

Table F.4: Catch records for fish caught in Beaver Pond, Côté Gold Baseline Study, 2012 and 2013.

b) Small (24' Long) Hoop Netting

Year	Hoop Net Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	Effort (trap* days)	Fathead Minnow			Finescale Dace			Northern Redbelly Dace			Pearl Dace		
		Northing	Easting							Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	HN-1	5266217	429648	10-Jul-12	11-Jul-12	15:45	10:50	19.08	0.80	>10,000	6	12,576	>10,000	1	12,576	>10,000	5	12,576	>10,000	0	12,576

Total CPUE = # of fish / trap*day

Table F.5: Catch records for fish caught in Chester Lake, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/100 m of gill net)	Yellow Perch					Northern Pike					Lake Whitefish					White Sucker					Golden Shiner					Trout-Perch					Spottail Shiner				
		Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE
2013	GN-1	5263616	429622	45.7	6-Jun-13	7-Jun-13	18:08	9:19	15.18	1	1.16	2				1.7	2															1				0.9	1				0.9	1				0.9
										1.5	1.16	2				1.7											1				0.9															
										2	1.16	4				3.5	1					1				0.9																				
										2.5	1.16	2				1.7	3																													
										3	1.16											3				2.6																				
										4	1.16											3				2.6	4																			
										Total	**6.94**	**10**	**5**	**5**	**0**	**1.44**	**6**	**2**	**4**	**0**	**0.86**	**7**	**7**	**0**	**0**	**1.01**	**5**	**0**	**4**	**1**	**0.72**	**1**	**0**	**1**	**0**	**0.14**	**1**	**0**	**1**	**0**	**0.14**	**1**	**0**	**1**	**0**	**0.14**
	GN-2	5264161	429465	45.7	6-Jun-13	7-Jun-13	18:20	10:37	16.28	1	1.24	10				8.1	1				0.8																									
										1.5	1.24	2				1.6																														
										2	1.24	4				3.2	2				1.6						3				2.4															
										2.5	1.24	1				0.8	2				1.6	2				1.61																				
										3	1.24						1				0.8	2				1.61	2				1.6															
										4	1.24											6				4.84	2				1.6															
										Total	**7.44**	**17**	**1**	**2**	**0**	**2.28**	**6**	**2**	**4**	**0**	**0.81**	**10**	**0**	**0**	**10**	**1.34**	**7**	**0**	**7**	**0**	**0.94**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**
	TOTAL										**14.38**	**27**	**6**	**7**	**0**	**1.88**	**12**	**4**	**8**	**0**	**0.83**	**17**	**7**	**0**	**10**	**1.18**	**12**	**0**	**11**	**1**	**0.83**	**1**	**0**	**1**	**0**	**0.07**	**1**	**0**	**1**	**0**	**0.07**	**1**	**0**	**1**	**0**	**0.07**

Total CPUE = total # of fish / 100 m of gill net / hour

Note - fish fates (processed, released, and additional mortalities) were not separated by mesh size

Table F.5: Catch records for fish caught in Chester Lake, Côté Gold Baseline Study, 2012 and 2013.

b) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Yellow Perch			Crayfish		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2013	MT-1	5263851	429411	6-Jun-13	7-Jun-13	17:54	12:15	18.35	5	3.82			0			0
	MT-2	5263400	429662	6-Jun-13	7-Jun-13	17:59	12:39	18.67	5	3.89	4	4	1.03	1	0	0.26
	MT-3	5264178	429505	6-Jun-13	7-Jun-13	18:17	13:07	18.83	5	3.92	1	1	0.25			0
	MT-4	5264684	429262	6-Jun-13	7-Jun-13	18:30	13:24	18.90	5	3.94	1	1	0.25	1	0	0.25
	TOTAL							**74.75**	**20**	**15.57**	**6**	**6**	**0.39**	**2**	**0**	**0.13**

Total CPUE = total # of fish / trap*day

Table F.5: Catch records for fish caught in Chester Lake, Côté Gold Baseline Study, 2012 and 2013.

c) Seining

Year	Seining Station	Date	Time	Location (17n, NAD83)		Length (m)	Distance (m)	# of Hauls	Area Seined (m^2)	Yellow Perch			Blacknose Shiner (adult) [a]			Blacknose Shiner (juvenile) [a]			Iowa Darter			Crayfish			Comments
				Northing	Easting					Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	
2013	SN-1	7-Jun-13	14:18	5263240	429527	15	5	1	75	72	4	0.96	4	0	0.05			0	3	0	0.04			0	purse was half folded over
	SN-2	7-Jun-13	15:06	5263662	429468	8	3	1	24	49	0	2.04	5	0	0.21	8	0	0.33	17	0	0.71			0	
	SN-3	7-Jun-13	15:37	5264164	429474	8	4	1	32			0			0			0	2	1	0.06	1	0	0.03	seine caught on some rocks
	SN-4	7-Jun-13	16:01	5265090	429460	8	4	1	32			0			0			0	2	0	0.06			0	
	TOTAL								**163**	**121**	**4**	**0.74**	**9**	**0**	**0.06**	**8**	**0**	**0.05**	**24**	**1**	**0.15**	**1**	**0**	**0.01**	

Total CPUE = # of fish / m^2

[a] Fish were classified as adults unless otherwise specified in the field to be juveniles.

Table F.6: Catch records for fish caught in Clam Lake, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/100 m of gill net)	Northern Pike					Smallmouth Bass				
		Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE
2013	GN-1	5266565	428204	45.7	7-Jun-13	8-Jun-13	18:03	8:35	14.53	1	1.11										
										1.5	1.11										
										2	1.11										
										2.5	1.11										
										3	1.11										
										4	1.11										
										Total	**6.64**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**
	GN-2	5267019	428131	45.7	7-Jun-13	8-Jun-13	18:32	8:45	14.22	1	1.08										
										1.5	1.08										
										2	1.08										
										2.5	1.08										
										3	1.08										
										4	1.08										
										Total	**6.50**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**
	GN-3	5266843	428311	45.7	8-Jun-13	9-Jun-13	10:40	8:20	21.67	1	1.65										
										1.5	1.65										
										2	1.65										
										2.5	1.65	1	0	1	0	0.6					
										3	1.65	1	1	0	0						
										4	1.65										
										Total	**9.90**	**2**	**1**	**1**	**0**	**0.20**	**0**	**0**	**0**	**0**	**0.00**
	GN-4	5267109	428437	45.7	8-Jun-13	9-Jun-13	10:49	8:39	21.83	1	1.66						1			1	0.6
										1.5	1.66										
										2	1.66	1		1		0.6					
										2.5	1.66	5	3		2	3.0					
										3	1.66										
										4	1.66						1			1	0.6
										Total	**9.98**	**6**	**3**	**1**	**2**	**0.60**	**2**	**0**	**0**	**2**	**0.09**
	TOTAL										**33.02**	**8**	**4**	**2**	**2**	**0.24**	**2**	**0**	**0**	**2**	**0.06**

Total CPUE = total # of fish / 100 m of gill net / hour

Table F.6: Catch records for fish caught in Clam Lake, Côté Gold Baseline Study, 2012 and 2013.

b) Minnow Trapping

Year	Location	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Yellow Perch			Smallmouth Bass			Iowa Darter			Crayfish			Eastern Newt			Comments
			Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	
2012	East Clam Lake	MT-1	5267282	428601	4-Jul-12	5-Jul-12	17:10	9:03	15.88	1	0.66	1	0	1.51			0	1	0	1.51			0	1	0	1.51	
		MT-2	5267216	428606	4-Jul-12	5-Jul-12	17:15	9:06	15.85	2	1.32			0			0			0			0	1	0	0.76	
		MT-3	5267191	428641	4-Jul-12	5-Jul-12	17:17	9:08	15.85	2	1.32			0			0			0			0			0	
		MT-4	5267130	428638	4-Jul-12	5-Jul-12	17:19	9:10	15.85	1	0.66			0			0			0	2	0	3.03	1	0	1.51	
		MT-5	5267110	428701	4-Jul-12	5-Jul-12	17:20	9:13	15.88	1	0.66			0			0			0			0			0	
		MT-6	5267076	428804	4-Jul-12	5-Jul-12	17:22	9:15	15.88	1	0.66			0			0			0			0	2	0	3.02	
		MT-7	5267305	428685	4-Jul-12	5-Jul-12	17:30	8:56	15.43	2	1.29			0			0			0	1	0	0.78	1	0	0.78	
		MT-8	5267247	428710	4-Jul-12	5-Jul-12	17:31	9:27	15.93	1	0.66			0			0			0	1	0	1.51			0	
		MT-9	5267210	428725	4-Jul-12	5-Jul-12	17:33	9:26	15.88	2	1.32			0			0			0			0			0	
		MT-10	5267168	428737	4-Jul-12	5-Jul-12	17:35	9:25	15.83	2	1.32	2	0	1.52			0			0			0			0	
		MT-11	5267033	428839	4-Jul-12	5-Jul-12	17:41	9:17	15.60	1	0.65			0			0			0			0			0	
		MT-12	5266917	428913	4-Jul-12	5-Jul-12	17:45	9:19	15.57	2	1.30	1	0	0.77			0			0			0			0	
	Clam Lake	MT-1	5267141	428438	6-Jul-12	7-Jul-12	14:00	9:19	19.32	2	1.61	24	0	14.91			0			0	1	0	0.62			0	
		MT-2	5267124	428620	6-Jul-12	7-Jul-12	14:02	9:17	19.25	2	1.60	6	0	3.74	2	0	1.25			0	8	0	4.99			0	
		MT-3	5266902	428480	6-Jul-12	7-Jul-12	14:07	9:13	19.10	1	0.80			0			0			0	3	0	3.77			0	
		MT-4	5266843	428346	6-Jul-12	7-Jul-12	14:13	9:11	18.97	1	0.79			0			0			0	1	0	1.27			0	
		MT-5	5266723	428363	6-Jul-12	7-Jul-12	14:17	9:08	18.85	2	1.57			0			0			0	3	0	1.91			0	
		MT-6	5266547	428328	6-Jul-12	7-Jul-12	14:19	9:06	18.78	2	1.57	5	0	3.19	2	0	1.28			0	1	0	0.64			0	
		MT-7	5266400	428624	6-Jul-12	7-Jul-12	14:22	9:04	18.70	1	0.78	4	0	5.13			0			0	1	0	1.28	1	0	1.28	
		MT-8	5266241	428808	6-Jul-12	7-Jul-12	14:25	9:02	18.62	1	0.78			0			0			0			0			0	
		MT-9	5265794	428852	6-Jul-12	7-Jul-12	14:27	8:53	18.43	1	0.77	14	0	18.23			0			0			0	1	0	1.30	
		MT-10	5265876	428973	6-Jul-12	7-Jul-12	14:30	8:51	18.35	2	1.53	8	0	5.23			0			0	2	0	1.31			0	
		MT-11	5265655	429000	6-Jul-12	7-Jul-12	14:36	8:49	18.22	2	1.52			0			0			0			0			0	
		MT-12	5265703	429239	6-Jul-12	7-Jul-12	14:39	8:46	18.12	2	1.51			0			0			0			0			0	
		TOTAL							**414.15**	**37**	**26.64**	**65**	**0**	**2.44**	**4**	**0**	**0.15**	**1**	**0**	**0.04**	**24**	**0**	**0.90**	**8**	**0**	**0.30**	
2013	Clam Lake	MT-1	5266137	428233	7-Jun-13	8-Jun-13	18:10	10:00	15.83	5	3.30	1	1	0.30	1	1	0.30			0			0			0	
		MT-2	5266521	427969	7-Jun-13	8-Jun-13	18:16	10:05	15.82	5	3.30	2	2	0.61	2	2	0.61			0	1	0	0.30			0	
		MT-3	5266854	428360	7-Jun-13	8-Jun-13	18:23	10:13	15.83	5	3.30	7	7	2.12	7	7	2.12			0			0			0	
		MT-4	5267257	428429	7-Jun-13	8-Jun-13	18:37	10:21	15.73	5	3.28	5	5	1.53	5	5	1.53			0	3	0	0.92			0	crayfish ate one yellow perch
		TOTAL							**63.22**	**20**	**13.17**	**15**	**15**	**1.14**	**15**	**15**	**1.14**	**0**	**0**	**0.00**	**4**	**0**	**0.30**	**0**	**0**	**0.00**	

Total CPUE = total # of fish / trap*day

Table F.6: Catch records for fish caught in Clam Lake, Côté Gold Baseline Study, 2012 and 2013.

c) Seining

Year	Location	Seining Station	Date	Time	Location (17n, NAD83)		Length (m)	Distance (m)	# of Hauls	Area Seined (m^2)	Yellow Perch			Blacknose Shiner			Golden Shiner			Iowa Darter			Spottail Shiner			Johnny Darter			Northern Pike (adult) [a]			Northern Pike (YOY) [a]			Smallmouth Bass			Eastern Newt		
					Northing	Easting					Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	East Clam Lake	SN-1	5-Jul-12	-	5267241	428720	15.24	15.24	1	232.3	21	0	0.09	258	0	1.11	7	0	0.03	5	0	0.02			0	4	0	0.02			0			0			0			0
	Clam Lake	SN-1	5-Jul-12	17:05	5267096	428409	15.24	15.24	1	232.3	563	498	2.42	22	22	0.09			0			0			0			0			0			0	21	0	0.09			0
		SN-2	6-Jul-12	16:00	5266807	428320	15.24	15.24	1	232.3			0			0			0			0			0			0			0			0	1	0	0.004			0
		SN-3	6-Jul-12	16:20	5266295	428920	15.24	15.24	1	232.3			0			0			0			0			0			0			0			0	7	0	0.03			0
		SN-4	6-Jul-12	16:40	5266028	428849	15.24	15.24	1	232.3			0			0			0			0			0			0			0			0			0			0
		SN-5	6-Jul-12	16:30	5266963	427992	13	6	1	78.0	8	0	0.10			0			0	22	0	0.28			0			0			0			0	24	0	0.31	5	0	0.06
		TOTAL								**1239.3**	**592**	**498**	**4.35**	**280**	**22**	**2.06**	**7**	**0**	**0.05**	**27**	**0**	**0.20**	**0**	**0**	**0.00**	**4**	**0**	**0.03**	**0**	**0**	**0.00**	**0**	**0**	**0.00**	**53**	**0**	**0.39**	**5**	**0**	**0.04**
2013	Clam Lake	SN-1	8-Jun-13	9:15	5266335	428157	8	5	1	40.0			0			0			0			0			0			0			0			0			0			0
		SN-2	8-Jun-13	9:55	5266165	428069	8	4	2	64.0	2	1	0.03			0			0			0	39	0	0.61			0	1	1	0.02	2	0	0.03			0			0
		SN-3	8-Jun-13	11:45	5267241	428405	8	4	1	32.0			0			0			0	4	0	0.13						0			0	1	0	0.03			0			0
		TOTAL								**136.0**	**2**	**1**	**0.01**	**0**	**0**	**0.00**	**0**	**0**	**0.00**	**4**	**0**	**0.03**	**39**	**0**	**0.29**	**0**	**0**	**0.00**	**1**	**1**	**0.01**	**3**	**0**	**0.02**	**0**	**0**	**0.00**	**0**	**0**	**0.00**

Total CPUE = # of fish / m^2

[a] Fish were classified as adults unless otherwise specified in the field to be young-of-the-year (YOY).

Table F.6: Catch records for fish caught in Clam Lake, Côté Gold Baseline Study, 2012 and 2013.

d) Hoop Netting

Year	Location	Hoop Net Station	Hoop Net Size	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	Effort (trap*days)	Burbot			Northern Pike			Smallmouth Bass			White Sucker			Yellow Perch			Golden Shiner			Blacknose Shiner			Spottail Shiner			Eastern Newt		
				Northing	Easting							Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	East Clam Lake	HN-1	small	5267097	428758	4-Jul-12	5-Jul-12	18:25	9:45	15.33	0.64			0	2	1	3.13			0			0			0	24	1	37.57	2	0	3.13			0			0
		HN-2	small	5267064	428803	5-Jul-12	6-Jul-12	13:40	9:20	19.67	0.82			0	2	0	2.44			0			0	3	0	3.66	9	0	11	14	0	17.08			0	25	0	30.51
	Clam Lake	HN-1	medium	5267114	428395	5-Jul-12	6-Jul-12	15:20	12:35	21.25	0.89			0			0	6	0	6.78			0			0			0			0			0			0
		HN-2	medium	5266274	428774	5-Jul-12	6-Jul-12	16:25	10:30	18.08	0.75			0	1	0	1.33	57	0	75.65			0			0			0			0			0			0
		HN-3	small	5265818	428879	6-Jul-12	7-Jul-12	10:20	9:00	22.67	0.94			0	3	0	3.18	8	2	8.47	2	0	2.12			0			0			0	3	2	3.18			0
		HN-4	medium	5266743	428199	6-Jul-12	7-Jul-12	12:30	9:20	20.83	0.87	1	1	1.15	0		0			0	1	0	1.15	1	0	1.15			0			0			0			0
		HN-5	medium	5266427	428630	6-Jul-12	7-Jul-12	13:10	9:35	20.42	0.85			0			0	11	2	12.93			0	1	0	1.18			0			0			0			0
		HN-6	small	5266345	427863	6-Jul-12	7-Jul-12	15:35	9:30	17.92	0.75			0			0	11	0	14.73			0	1	0	1.34			0			0			0			0
		TOTAL								**156.17**	**6.51**	**1**	**1**	**0.15**	**8**	**1**	**1.23**	**93**	**4**	**14.29**	**3**	**0**	**0.46**	**6**	**0**	**0.92**	**33**	**1**	**5.07**	**16**	**0**	**2.46**	**3**	**2**	**0.46**	**25**	**0**	**3.84**

Total CPUE = # of fish / trap*day

Table F.7: Catch records for fish caught in Côté Lake, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/ 100 m of gill net)	Northern Pike					Lake Whitefish					White Sucker					Yellow Perch				
		Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE
2012	GN-1	5267229	430157	45.7	6-Jul-12	6-Jul-12	13:30	16:40	3.17	1	0.24																				
										1.5	0.24																				
										2	0.24																				
										2.5	0.24																				
										3	0.24						1	1			4.1										
										4	0.24											3		3		12.4					
										Total	**1.45**	**0**	**0**	**0**	**0**	**0.00**	**1**	**1**	**0**	**0**	**0.69**	**3**	**0**	**3**	**0**	**2.07**	**0**	**0**	**0**	**0**	**0.00**
	GN-2	5267136	430198	45.7	6-Jul-12	6-Jul-12	13:40	16:45	3.08	1	0.23																				
										1.5	0.23																				
										2	0.23																				
										2.5	0.23						1	1													
										3	0.23	1		1		4.3						1		1		4.3					
										4	0.23											3		3		12.8					
										Total	**1.41**	**1**	**0**	**1**	**0**	**0.71**	**1**	**1**	**0**	**0**	**0.71**	**4**	**0**	**4**	**0**	**2.84**	**0**	**0**	**0**	**0**	**0.00**
	GN-3	5267262	430032	45.7	6-Jul-12	6-Jul-12	14:00	17:15	3.25	1	0.25																				
										1.5	0.25																				
										2	0.25																				
										2.5	0.25																				
										3	0.25						1	1													
										4	0.25						2	2				1		1		4.04					
										Total	**1.49**	**0**	**0**	**0**	**0**	**0.00**	**3**	**3**	**0**	**0**	**2.02**	**1**	**0**	**1**	**0**	**0.67**	**0**	**0**	**0**	**0**	**0.00**
	GN-4	5267199	430136	45.7	6-Jul-12	6-Jul-12	14:15	17:30	3.25	1	0.25																				
										1.5	0.25	1		1		4.0															
										2	0.25																				
										2.5	0.25																				
										3	0.25						1	1			4.0	2		2		8.1					
										4	0.25											2		2		8.1					
										Total	**1.49**	**1**	**0**	**1**	**0**	**0.67**	**1**	**1**	**0**	**0**	**0.67**	**4**	**0**	**4**	**0**	**2.69**	**0**	**0**	**0**	**0**	**0.00**
	GN-5	5267073	430343	45.7	7-Jul-12	7-Jul-12	9:00	11:50	2.83	1	0.22																				
										1.5	0.22																				
										2	0.22																				
										2.5	0.22	2		1	1	9.3															
										3	0.22						2		2		9.3										
										4	0.22											4		4		18.5					
										Total	**1.29**	**2**	**0**	**1**	**1**	**1.54**	**2**	**0**	**2**	**0**	**1.54**	**4**	**0**	**4**	**0**	**3.09**	**0**	**0**	**0**	**0**	**0.00**
	GN-6	5267353	430158	45.7	7-Jul-12	7-Jul-12	9:05	12:15	3.17	1	0.24	1		1		4.1															
										1.5	0.24	3	1	1	1	12.4											1		1		4.1
										2	0.24	2		1	1	8.3											2	2			8.3
										2.5	0.24																				
										3	0.24																				
										4	0.24																				
										Total	**1.45**	**6**	**1**	**3**	**2**	**4.15**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**3**	**2**	**1**	**0**	**2.07**
	GN-7	5267013	430133	45.7	7-Jul-12	7-Jul-12	9:15	12:40	3.42	1	0.26																5		5		19.2
										1.5	0.26	3		2	1	11.5											2		1	1	7.7
										2	0.26																				
										2.5	0.26																				
										3	0.26																				
										4	0.26																				
										Total	**1.56**	**3**	**0**	**2**	**1**	**1.92**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**7**	**0**	**6**	**1**	**4.48**
	GN-8	5266951	430216	45.7	7-Jul-12	7-Jul-12	9:20	12:50	3.50	1	0.27	1			1	3.8															
										1.5	0.27																				
										2	0.27																				
										2.5	0.27																				
										3	0.27																				
										4	0.27																				
										Total	**1.60**	**1**	**0**	**0**	**1**	**0.63**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**
	GN-9	5267012	430217	45.7	8-Jul-12	8-Jul-12	10:25	12:50	2.42	1	0.18	1		1		5.4											4	4			21.7
										1.5	0.18																				
										2	0.18	1		1		5.4											1	1			5.4
										2.5	0.18																				
										3	0.18																				
										4	0.18																				
										Total	**1.10**	**2**	**0**	**2**	**0**	**1.81**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**5**	**5**	**0**	**0**	**4.53**
	GN-10	5267073	430322	45.7	8-Jul-12	8-Jul-12	10:30	13:00	2.50	1	0.19																				
										1.5	0.19																				
										2	0.19																				
										2.5	0.19																				
										3	0.19						1			1	5.3										
										4	0.19																				
										Total	**1.14**	**0**	**0**	**0**	**0**	**0.00**	**1**	**0**	**0**	**1**	**0.88**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**
	GN-11	5267229	430199	45.7	8-Jul-12	8-Jul-12	10:40	13:10	2.50	1	0.19																				
										1.5	0.19																				
										2	0.19																				
										2.5	0.19	1		1		5.3						1		1		5.3					
										3	0.19																				
										4	0.19																				
										Total	**1.14**	**1**	**0**	**1**	**0**	**0.88**	**0**	**0**	**0**	**0**	**0.00**	**1**	**0**	**1**	**0**	**0.88**	**0**	**0**	**0**	**0**	**0.00**
	GN-12	5267231	430032	45.7	8-Jul-12	8-Jul-12	10:45	13:40	2.92	1	0.22																				
										1.5	0.22																				
										2	0.22																				
										2.5	0.22											1		1		4.5					
										3	0.22																				
										4	0.22						1			1	4.5										
										Total	**1.33**	**0**	**0**	**0**	**0**	**0.00**	**1**	**0**	**0**	**1**	**0.75**	**1**	**0**	**1**	**0**	**0.75**	**0**	**0**	**0**	**0**	**0.00**
	GN-13	5267041	430364	45.7	8-Jul-12	8-Jul-12	13:30	15:35	2.08	1	0.16																16		13	3	100.8
										1.5	0.16																				
										2	0.16																				
										2.5	0.16																				
										3	0.16																				
										4	0.16																				
										Total	**0.95**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**16**	**0**	**13**	**3**	**16.81**

Table F.7: Catch records for fish caught in Côté Lake, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/ 100 m of gill net)	Northern Pike					Lake Whitefish					White Sucker					Yellow Perch				
		Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE
2012	GN-14	5267228	430220	45.7	8-Jul-12	8-Jul-12	13:35	15:50	2.25	1	0.17																				
										1.5	0.17																				
										2	0.17																				
										2.5	0.17						1			1	5.8										
										3	0.17																				
										4	0.17											1		1		5.8					
										Total	**1.03**	**0**	**0**	**0**	**0**	**0.00**	**1**	**0**	**0**	**1**	**0.97**	**1**	**0**	**1**	**0**	**0.97**	**0**	**0**	**0**	**0**	**0.00**
	GN-15	5267011	430363	45.7	8-Jul-12	8-Jul-12	13:40	15:35	1.92	1	0.15																2		2		13.7
										1.5	0.15	1			1	6.8															
										2	0.15																				
										2.5	0.15																1		1		6.8
										3	0.15																				
										4	0.15																				
										Total	**0.88**	**1**	**0**	**0**	**1**	**1.14**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**3**	**0**	**3**	**0**	**3.42**
	GN-16	5267136	430177	45.7	8-Jul-12	8-Jul-12	13:45	16:00	2.25	1	0.17																				
										1.5	0.17																				
										2	0.17																				
										2.5	0.17																				
										3	0.17																				
										4	0.17	1		1		5.8						1		1		5.8					
										Total	**1.03**	**1**	**0**	**1**	**0**	**0.97**	**0**	**0**	**0**	**0**	**0.00**	**1**	**0**	**1**	**0**	**0.97**	**0**	**0**	**0**	**0**	**0.00**
	TOTAL										**1.90**	**19**	**1**	**12**	**6**	**9.98**	**11**	**6**	**2**	**3**	**5.78**	**20**	**0**	**20**	**0**	**###**	**34**	**7**	**23**	**4**	**17.86**

Total CPUE = total # of fish / 100 m of gill net / hour

Table F.7: Catch records for fish caught in Côté Lake, Côté Gold Baseline Study, 2012 and 2013.

b) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Yellow Perch			Crayfish		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	MT-1[a]	5267307	430364	4-Jul-12	5-Jul-12	16:45	10:50	18.08	30	22.60			0	16	0	0.71
	MT-2[a]	5266979	430409	5-Jul-12	6-Jul-12	11:15	9:30	22.25	30	27.81	2	0	0.07	8	0	0
	MT-3[a]	5267201	429948	6-Jul-12	7-Jul-12	9:15	8:40	23.42	15	14.64	5	0	0	10	0	0.68
	Total							**63.75**	**75**	**65.05**	**7**	**0**	**0.11**	**34**	**0**	**0.52**

[a] Thirty minnow traps deployed in series beginning at stated start points and all ending at UTM 17n 5267139 430411.

Total CPUE = total # of fish / trap*day

Table F.7: Catch records for fish caught in Côté Lake, Côté Gold Baseline Study, 2012 and 2013.

c) Seining

Year	Seining Station	Date	Time	Location (17n, NAD83)		Length (m)	Distance (m)	# of Hauls	Area Seined (m^2)	Yellow Perch			Northern Pike			Blacknose Shiner			Golden Shiner		
				Northing	Easting					Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	SN-1	7-Jul-12	14:30	5267332	430348	10	6	1	60	111	0	1.85	2	0	0.03			0	82	0	1.37
	SN-2	7-Jul-12	15:23	5267048	430604	8	8	1	60	223	0	3.72	6	0	0.10	2	0	0.03	1	0	0.02
	SN-3	7-Jul-12	15:43	5266988	430160	8	8	1	60	195	0	3.25			0	8	0	0.13	8	0	0.13
	SN-4	7-Jul-12	16:05	5267176	429958	8	8	1	64	40	0	0.63			0			0			0
	SN-5	7-Jul-12	16:20	5267382	429992	8	8	1	64	262	0	4	1	0	0			0	1	0	0.02
	SN-6	7-Jul-12	16:36	5267359	430154	8	8	1	64	113	0	2	4	0	0	4	0	0	4	0	0.06
	TOTAL								**372**	**944**	**0**	**2.54**	**13**	**0**	**0.03**	**14**	**0**	**0.04**	**96**	**0**	**0.26**

Total CPUE = # of fish / m^2

Table F.7: Catch records for fish caught in Côté Lake, Côté Gold Baseline Study, 2012 and 2013.

d) Large Hoop Netting

Year	Hoop Net Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	Effort (trap* days)	Burbot			Northern Pike			White Sucker			Yellow Perch		
		Northing	Easting							Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	HN-1	5267339	429983	4-Jul-12	5-Jul-12	17:50	11:45	17.92	0.75			0	3	1	4.02	2	0	2.68	1	0	1.34
	HN-2	5267309	430152	4-Jul-12	5-Jul-12	18:25	13:10	18.75	0.78			0	2	0	2.56	1	0	1.28			0
	HN-3	5267295	430344	4-Jul-12	5-Jul-12	18:45	13:45	19.00	0.79			0			0			0			0
	HN-4	5266981	430221	5-Jul-12	6-Jul-12	10:15	9:30	23.25	0.97			0	1	0	1.03			0	3	0	3.10
	HN-5	5266989	430332	5-Jul-12	6-Jul-12	9:30	10:00	24.50	1.02			0	4	1	3.92			0	13	4	12.73
	HN-6	5267028	430169	5-Jul-12	6-Jul-12	9:50	10:45	24.92	1.04			0	5	1	4.82	1	0	0.96	6	1	5.78
	HN-7	5267216	430462	5-Jul-12	6-Jul-12	12:45	11:30	22.75	0.95			0	1	0	1.05	3	0	3.16			0
	HN-8	5267238	430402	5-Jul-12	6-Jul-12	13:35	12:00	22.42	0.93			0			0			0			0
	HN-9	5267125	430070	5-Jul-12	6-Jul-12	14:00	12:25	22.42	0.93			0			0			0	1	0	1.07
	HN-10	5267228	429983	6-Jul-12	7-Jul-12	9:45	9:25	23.67	0.99			0			0			0	1	1	1.01
	HN-11	5267066	430132	6-Jul-12	7-Jul-12	10:35	9:45	23.17	0.97			0	3	0	3.11	2	0	2.07	1	1	1.04
	HN-12	5267280	429978	6-Jul-12	7-Jul-12	11:10	10:30	23.33	0.97			0	4	1	4.11	4	0	4.11	2	2	2.06
	HN-13	5266946	430363	6-Jul-12	7-Jul-12	11:50	11:15	23.42	0.98			0	4	1	4.10			0	1	0	1.02
	HN-14	5266985	430196	6-Jul-12	7-Jul-12	12:15	13:45	25.50	1.06			0			0			0	1	0	0.94
	HN-15	5267307	430089	6-Jul-12	7-Jul-12	12:30	13:45	25.25	1.05	1	0	0.95			0			0	2	0	1.90
	HN-16	5267372	430056	7-Jul-12	7-Jul-12	9:20	17:30	8.17	0.34			0			0			0	1	1	2.94
	HN-17	5267185	430518	7-Jul-12	8-Jul-12	10:15	8:45	22.50	0.94			0	3	0	3.20			0	6	2	6.40
	HN-18	5267213	430464	7-Jul-12	8-Jul-12	10:50	9:00	22.17	0.92			0	4	2	4.33			0	4	0	4.33
	HN-19	5267115	430108	7-Jul-12	8-Jul-12	11:40	9:40	22.00	0.92			0	1	0	1.09			0	1	1	1.09
	HN-20	5267034	430163	7-Jul-12	8-Jul-12	13:50	10:00	20.17	0.84			0			0	2	0	2.38	1	1	1.19
	HN-21	5267156	430024	7-Jul-12	7-Jul-12	14:10	17:00	2.83	0.12			0			0			0	1	1	8.47
	HN-22	5267076	430521	8-Jul-12	9-Jul-12	9:05	9:00	23.92	1.00			0	5	0	5.02	5	0	5.02	18	0	18.06
	HN-23	5266931	430258	8-Jul-12	9-Jul-12	9:30	10:40	25.17	1.05			0	4	1	3.81	4	0	3.81	5	1	4.77
	HN-24	5266952	430348	8-Jul-12	9-Jul-12	9:55	10:10	24.25	1.01			0			0	2	0	1.98			0
	HN-25	5267034	430163	8-Jul-12	9-Jul-12	10:10	10:25	24.25	1.01			0			0			0			0
	HN-26	5267279	430337	9-Jul-12	10-Jul-12	9:25	14:45	29.33	1.22			0	3	0	2.45	1	0	0.82	1	0	0.82
	HN-27	5267147	430020	9-Jul-12	10-Jul-12	10:00	15:00	29.00	1.21			0	8	1	6.62	4	0	3	6	0	4.97
	HN-28	5267203	430504	9-Jul-12	10-Jul-12	10:30	15:30	29.00	1.21			0	2	0	1.66	8	0	6.62	1	0	0.83
	HN-29	5267357	430269	9-Jul-12	10-Jul-12	10:50	15:45	28.92	1.20			0			0	3	0	2.49			0
	Total							**651.92**	**27.16**	**1**	**0**	**0.04**	**57**	**9**	**2.10**	**42**	**0**	**1.55**	**77**	**16**	**2.83**

Total CPUE = # of fish / trap*day

Table F.7: Catch records for fish caught in Côté Lake, Côté Gold Baseline Study, 2012 and 2013.

e) Boat Electrofishing

Year	Electrofishing Station	Location (17n, NAD83)		Date	Time	Effort (hrs)	Northern Pike			White Sucker			Golden Shiner			Blacknose Shiner			Yellow Perch		
		Northing	Easting				Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	EF-1[a]	5267332	430350	5-Jul-12	13:30	2.46	24	1	9.77	3	0	1.22			0			0	118	0	48.04
	EF-2[a]	5267332	430350	6-Jul-12	14:30	1.12	3	1	2.69	1	0	0.90	1	0	0.90	1	0	0.90	48	0	43.00
	EF-3[a]	5267341	430349	8-Jul-12	-	1.51	6	0	3.98			0			0			0	119	0	78.98
	EF-4[a]	5267341	430349	9-Jul-12	11:30	5.43	40	0	7.37	7	0	1.29			0			0	41	0	7.55
	EF-5[a]	5267341	430349	9-Jul-12	21:45	3.48	7	0	2.01			0			0			0	7	0	2.01
	Total					**13.99**	**80**	**2**	**5.72**	**11**	**0**	**0.79**	**1**	**0**	**0.07**	**1**	**0**	**0.07**	**333**	**0**	**23.81**

[a] Stated UTM is both the start and end location as the entire lake was covered on each day.

Total CPUE = # of fish / hour

Table F.8: Catch records for fish caught in Delaney Lake, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/100 m of gill net)	Yellow Perch					Northern Pike					White Sucker					Golden Shiner				
		Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE
2013	GN-1	5262676	431279	45.7	7-Jun-13	8-Jun-13	16:30	9:00	16.50	1	1.26	3				2.4											4				3.2
										1.5	1.26	2				1.6	1				0.8										
										2	1.26	2				1.6	1				0.8										
										2.5	1.26																				
										3	1.26	1				0.8	1				0.8										
										4	1.26											4									
										Total	**7.54**	**8**	**8**	**0**	**0**	**1.06**	**3**	**1**	**2**	**0**	**0.40**	**4**	**0**	**4**	**0**	**0.53**	**4**	**0**	**4**	**0**	**0.53**
	GN-2	5262390	431353	45.7	7-Jun-13	8-Jun-13	16:57	9:30	16.55	1	1.26	2				1.6											2				1.6
										1.5	1.26																				
										2	1.26						1				0.8										
										2.5	1.26	2				1.6	5				4.0										
										3	1.26																				
										4	1.26																				
										Total	**7.56**	**4**	**3**	**1**	**0**	**0.53**	**6**	**4**	**2**	**0**	**0.79**						**2**	**0**	**2**	**0**	**0.26**
	TOTAL										**15.10**	**12**	**11**	**1**	**0**	**0.79**	**9**	**5**	**4**	**0**	**0.60**	**4**	**0**	**4**	**0**	**0.26**	**6**	**0**	**6**	**0**	**0.40**

Total CPUE = total # of fish / 100 m of gill net / hour

Note - fish fates (processed, released, and additional mortalities) were not separated by mesh size

Table F.8: Catch records for fish caught in Delaney Lake, Côté Gold Baseline Study, 2012 and 2013.

b) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Yellow Perch		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE
2013	MT-1	5262881	430744	7-Jun-13	8-Jun-13	16:15	8:28	16.22	5	3.38	1	1	0.30
	MT-2	5262976	431017	7-Jun-13	8-Jun-13	16:30	8:35	16.08	5	3.35			0
	MT-3	5262534	431162	7-Jun-13	8-Jun-13	16:50	8:37	15.78	5	3.29			0
	MT-4	5261969	431408	7-Jun-13	8-Jun-13	17:05	8:45	15.67	5	3.26			0
	TOTAL							**63.75**	**20**	**13.28**	**1**	**1**	**0.08**

Total CPUE = total # of fish / trap*day

Table F.8: Catch records for fish caught in Delaney Lake, Côté Gold Baseline Study, 2012 and 2013.

c) Seining

Year	Seining Station	Date	Time	Location (17n, NAD83)		Length (m)	Distance (m)	# of Hauls	Area Seined (m^2)	Yellow Perch			Golden Shiner			Northern Pike		
				Northing	Easting					Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2013	SN-1	8-Jun-13	11:15	5262738	430974	20	15	1	300	169	8	0.56	15	0	0.05			0
	SN-2	8-Jun-13	11:41	5262770	431267	20	10	1	200	68	0	0.34	1,253	0	6.27	2	0	0
	SN-3	8-Jun-13	12:08	5262297	431239	15	5	1	75	12	0	0.16	6	0	0.08			0
	SN-4	8-Jun-13	12:30	5262243	431628	20	10	1	200	44	0	0.22	117	0	0.59	1	0	0.01
	TOTAL								**775**	**293**	**8**	**0.38**	**1,391**	**0**	**1.79**	**3**	**0**	**0.00**

Total CPUE = # of fish / m^2

Table F.9: Catch records for fish caught in East Beaver Pond, Côté Gold Baseline Study, 2012 and 2013.

a) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Fathead Minnow			Finescale Dace			Northern Redbelly Dace		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	MT-1	5265526	430534	13-Jul-12	14-Jul-12	16:24	12:35	20.18	1	0.84	48	4	57.08	142	23	168.85	110	23	130.80
	MT-2	5265481	430542	13-Jul-12	14-Jul-12	16:27	12:40	20.22	1	0.84	78	0	92.60	57	0	67.67	18	0	21.37
	MT-3	5265466	430557	13-Jul-12	14-Jul-12	16:30	12:45	20.25	1	0.84	9	0	10.67	2	0	2.37	3	0	3.56
	MT-4	5265529	430530	13-Jul-12	14-Jul-12	16:36	12:30	19.90	1	0.83	132	0	159.20	155	0	186.93	64	0	77.19
	MT-5	5265541	430534	13-Jul-12	14-Jul-12	16:37	12:24	19.78	1	0.82	125	0	151.64	95	0	115.25	40	0	48.53
	MT-6	5265553	430548	13-Jul-12	14-Jul-12	16:38	12:15	19.62	1	0.82	172	0	210.43	73	0	89.31	27	0	33.03
	MT-7	5265559	430542	13-Jul-12	14-Jul-12	16:39	12:12	19.55	1	0.81	50	0	61.38	29	0	35.60	2	0	2.46
	MT-8	5265577	430550	13-Jul-12	14-Jul-12	16:40	12:05	19.42	1	0.81	275	0	339.91	125	0	154.51	20	0	24.72
	MT-9	5265608	430550	13-Jul-12	14-Jul-12	16:41	11:50	19.15	2	1.60	198	0	124.07	57	0	35.72	8	0	5.01
	MT-10	5265582	430538	13-Jul-12	14-Jul-12	16:45	10:40	17.92	1	0.75	6	0	8.04	54	0	72.33	25	0	33.49
	MT-11	5265594	430539	13-Jul-12	14-Jul-12	16:46	11:30	18.73	1	0.78			0			0			0
	MT-12	5265601	430539	13-Jul-12	14-Jul-12	16:47	11:35	18.80	1	0.78	4	0	5.11	54	0	68.94	40	0	51.06
	MT-13	5265615	430543	13-Jul-12	14-Jul-12	16:48	11:47	18.98	1	0.79	4	0	5.06	1	0	1.26	3	0	3.79
	Total							**252.50**	**14**	**11.32**	**1,101**	**4**	**97.27**	**844**	**23**	**74.57**	**360**	**23**	**31.81**

Total CPUE = total # of fish / trap*day

Table F.10: Catch records for fish caught in Little Clam Lake, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/100 m of gill net)	Yellow Perch					Northern Pike				
		Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE
2012										1	1.9	3			3	1.6					
										1.5	1.9	3			3	1.6	1			1	0.5
										2	1.9						1			1	0.5
	GN-1	5267414	428231	45.7	5-Jul-12	6-Jul-12	9:20	10:15	24.92	2.5	1.9						5		1	4	2.6
										3	1.9						5			5	2.6
										4	1.9										
										Total	**11.39**	**6**	**0**	**0**	**6**	**0.53**	**12**	**0**	**1**	**11**	**1.05**
										1	1.8										
										1.5	1.8	7			7	3.9					
										2	1.8	3			3	1.7					
	GN-2	5267690	428469	45.7	5-Jul-12	6-Jul-12	9:40	9:00	23.33	2.5	1.8						8			8	4.5
										3	1.8										
										4	1.8										
										Total	**10.66**	**10**	**0**	**0**	**10**	**0.94**	**8**	**0**	**0**	**8**	**0.75**
	TOTAL										**22.05**	**16**	**0**	**0**	**16**	**0.73**	**20**	**0**	**1**	**19**	**0.91**

Total CPUE = total # of fish / 100 m of gill net / hour

Table F.10: Catch records for fish caught in Little Clam Lake, Côté Gold Baseline Study, 2012 and 2013.

b) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Yellow Perch			Golden Shiner			Eastern Newt			Crayfish		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
	MT-1	5267380	428400	5-Jul-12	6-Jul-12	12:05	11:15	23.17	2	1.93			0			0			0			0
	MT-2	5267380	428400	5-Jul-12	6-Jul-12	12:05	11:15	23.17	2	1.93			0	2	0	1.04			0			0
	MT-3	5267378	428291	5-Jul-12	6-Jul-12	12:20	11:10	22.83	2	1.90			0			0			0	3	0	1.58
	MT-4	5267381	428300	5-Jul-12	6-Jul-12	12:20	11:10	22.83	1	0.95			0			0			0	3	0	3.15
	MT-5	5267351	428262	5-Jul-12	6-Jul-12	12:25	10:10	21.75	1	0.91			0			0	1	0	1			0
	MT-6	5267410	428173	5-Jul-12	6-Jul-12	12:30	10:50	22.33	2	1.86	1	0	0.54			0	1	0	0.54	1	0	0.54
2012	MT-7	5267486	428333	5-Jul-12	6-Jul-12	12:40	10:00	21.33	2	1.78	5	0	2.81			0			0	1	0	0.56
	MT-8	5267615	428446	5-Jul-12	6-Jul-12	12:45	10:00	21.25	1	0.89			0			0			0			0
	MT-9	5267694	428424	5-Jul-12	6-Jul-12	12:50	9:05	20.25	1	0.84			0			0			0	10	0	11.85
	MT-10	5267729	428442	5-Jul-12	6-Jul-12	12:50	8:55	20.08	2	1.67			0			0	1	0	0.60			0
	MT-11	5267764	428496	5-Jul-12	6-Jul-12	13:00	8:50	19.83	2	1.65			0			0			0	3	0	1.82
	MT-12	5267775	428489	5-Jul-12	6-Jul-12	13:00	8:50	19.83	1	0.83			0			0			0.00	3	0	3.63
	TOTAL							**258.67**	**19**	**17.14**	**6**	**0**	**0.35**	**2**	**0**	**0.12**	**3**	**0**	**0.18**	**24**	**0**	**1.40**

Total CPUE = total # of fish / trap*day

Table F.10: Catch records for fish caught in Little Clam Lake, Côté Gold Baseline Study, 2012 and 2013.

c) Seining

Year	Seining Station	Date	Time	Location (17n, NAD83)		Length (m)	Distance (m)	# of Hauls	Area Seined (m^2)	Yellow Perch			Blacknose Shiner			Golden Shiner			Iowa Darter			Northern Pike		
				Northing	Easting					Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	SN-1	5-Jun-13	10:40	5267377	428399	8	6	1	48	6	0	0.13	1	0	0.02	92	0	1.92	1	0	0.02	1	0	0.02
	SN-2	5-Jun-13	13:00	5267775	428488	10	13	1	130	163	0	1.25			0			0	4	0	0.03			0
	SN-3	5-Jun-13	13:20	5267692	428545	13	10	1	130	1	0	0.01			0			0	5	0	0			0
	TOTAL								**308**	**170**	**0**	**0.55**	**1**	**0**	**0.003**	**92**	**0**	**0.30**	**10**	**0**	**0.03**	**1**	**0**	**0.003**

Total CPUE = # of fish / m^2

Table F.10: Catch records for fish caught in Little Clam Lake, Côté Gold Baseline Study, 2012 and 2013.

d) Hoop Netting

Year	Hoop Net Station	Hoop Net Size	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	Effort (trap*days)	Northern Pike			Yellow Perch			Golden Shiner			Blacknose Shiner			Iowa Darter			Eastern Newt		
			Northing	Easting							Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	HN-1	mini	5267414	428181	5-Jul-12	6-Jul-12	10:15	11:00	24.75	1.03	2	1	1.94	2	0	1.94	4	0	3.88	33	0	32.00	1	0	0.97	5	0	4.85

Total CPUE = # of fish / trap*day

Table F.11: Catch records for fish caught in Lower Three Duck Lake, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/ 100 m of gill net)	Walleye					Northern Pike					Lake Whitefish					White Sucker				
		Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE
										1	1.28						2				1.6										
										1.5	1.28	2				1.6	2				1.6										
										2	1.28																				
	GN-1	5264547	432430	45.7	5-Jun-13	6-Jun-13	16:15	9:05	16.83	2.5	1.28	1				0.8	4				3.1						2				1.6
										3	1.28	1				0.8						1				0.8					
										4	1.28																3				2.3
										Total	**7.69**	**4**	**4**	**0**	**0**	**0.52**	**8**	**4**	**4**	**0**	**1.04**	**1**	**0**	**0**	**1**	**0.13**	**5**	**0**	**0**	**0**	**0.65**
2013										1	1.35																				
										1.5	1.35						1				0.7										
										2	1.35																				
	GN-2	5263865	432717	45.7	5-Jun-13	6-Jun-13	15:00	8:45	17.75	2.5	1.35																				
										3	1.35																				
										4	1.35																				
										Total	**8.11**						**1**	**1**	**0**	**0**	**0.12**										
	TOTAL										**15.80**	**4**	**4**	**0**	**0**	**0.25**	**9**	**5**	**4**	**0**	**0.57**	**1**	**0**	**0**	**1**	**0.06**	**5**	**0**	**0**	**0**	**0.32**

Total CPUE = total # of fish / 100 m of gill net / hour

Note - fish fates (processed, released, and additional mortalities) were not separated by mesh size

Table F.11: Catch records for fish caught in Lower Three Duck Lake, Côté Gold Baseline Study, 2012 and 2013.

b) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Yellow Perch		
		Northing	Easting								Catch	mortalities/ sacrificed	CPUE
2013	MT-1	5263722	433036	5-Jun-13	6-Jun-13	15:47	8:55	17.13	5	3.57	1	0	0.28
	MT-2	5264338	432806	5-Jun-13	6-Jun-13	16:00	9:01	17.02	5	3.55	1	0	0.28
	MT-3	5264818	432275	5-Jun-13	6-Jun-13	16:25	10:32	18.12	5	3.77			0
	MT-4	5265235	431840	5-Jun-13	6-Jun-13	16:30	10:41	18.18	5	3.79			0
	TOTAL							**70.45**	**20**	**14.68**	**2**	**0**	**0.14**

Total CPUE = total # of fish / trap*day

Table F.11: Catch records for fish caught in Lower Three Duck Lake, Côté Gold Baseline Study, 2012 and 2013.

c) Seining

Year	Seining Station	Date	Time	Location (17n, NAD83)		Length (m)	Distance (m)	# of Hauls	Area Seined (m^2)	Yellow Perch			Blacknose Shiner (adult) [a]			Blacknose Shiner (juvenile) [a]			Iowa Darter			Slimy Sculpin			Northern Pike (YOY) [a]		
				Northing	Easting					Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2013	SN-1	5-Jun-13	17:15	5265417	432097	30	10	1	300	8	8	0.03			0	33	0	0.11	3	0	0.01			0	2	0	0.01
	SN-2	6-Jun-13	13:06	5264330	432805	15	3	1	45	17	2	0.38	9	0		200	0	4.44			0						0
	SN-3	6-Jun-13	14:09	5264325	432499	8	8	1	64	1	0	0.02			0			0			0	1	0	0.02			0
	SN-4	6-Jun-13	12:00	5264664	432486	15	6	1	90	23	2	0.26	138	0	1.53	17	0	0.19	1 *	0	0.01			0			0
	TOTAL								**499**	**49**	**12**	**0.10**	**147**	**0**	**0.29**	**250**	**0**	**0.50**	**4**	**0**	**0.01**	**1**	**0**	**0.002**	**2**	**0**	**0.004**

Total CPUE = # of fish / m^2

[a] Fish were classified as adults unless otherwise specified in the field to be juveniles or young-of-the-year (YOY)

* The Iowa darter counted may have been a johnny darter.

Table F.12: Catch records for fish caught in Mesomikenda Lake, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/100 m of gill net)	Walleye					Northern Pike					Lake Whitefish					White Sucker					Trout-Perch					Spottail Shiner					Comments
		Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	
2013	GN-1	5274110	433718	45.7	7-Jun-13	8-Jun-13	15:15	13:42	22.45	1	1.71																															
										1.5	1.71																															
										2	1.71	1				0.6	2				1.2																					
										3	1.71											1				0.6																
										4	1.71	2				1.2	1				0.6	3				1.8																
										5	1.71											1				0.6																loon caught in 5" mesh
										Total	**10.26**	**3**	**3**	**0**	**0**	**0.29**	**3**	**0**	**1**	**2**	**0.29**	**5**	**0**	**0**	**5**	**0.49**																
	GN-2	5273189	432835	45.7	7-Jun-13	8-Jun-13	15:45	14:45	23.00	1	1.75																					1				0.6	1				0.6	small mesh set deeper
										1.5	1.75																															
										2	1.75																1				0.6											
										3	1.75	1				0.6																										
										4	1.75	1				0.6	1				0.6																					
										5	1.75																1				0.6											
										Total	**10.51**	**2**	**2**	**0**	**0**	**0.19**	**1**	**0**	**1**	**0**	**0.10**						**2**	**0**	**2**	**0**	**0.19**	**1**	**0**	**0**	**1**	**0.10**	**1**	**0**	**0**	**1**	**0.10**	
	TOTAL										**20.77**	**5**	**5**	**0**	**0**	**0.24**	**4**	**0**	**2**	**2**	**0.19**	**5**	**0**	**0**	**5**	**0.24**	**2**	**0**	**2**	**0**	**0.10**	**1**	**0**	**0**	**1**	**0.05**	**1**	**0**	**0**	**1**	**0.05**	

Total CPUE = total # of fish / 100 m of gill net / hour

Note - fish fates (processed, released, and additional mortalities) were not separated by mesh size

Table F.12: Catch records for fish caught in Mesomikenda Lake, Côté Gold Baseline Study, 2012 and 2013.

b) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Golden Shiner			Crayfish		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2013	MT-1	5274477	433345	7-Jun-13	8-Jun-13	15:25	15:56	24.52	5	5.11	1	0	0.20	2	0	0.39
	MT-2	5273877	433226	7-Jun-13	8-Jun-13	15:34	15:34	24.00	5	5.00			0	4	0	0.80
	MT-3	5273037	432971	7-Jun-13	8-Jun-13	15:50	17:00	25.17	5	5.24			0			0
	MT-4	5272969	432780	7-Jun-13	8-Jun-13	10:00	17:05	31.08	5	6.48			0	2	0	0.31
	TOTAL							**104.77**	**20**	**21.83**	**1**	**0**	**0.05**	**8**	**0**	**0.37**

Total CPUE = total # of fish / trap*day

Table F.12: Catch records for fish caught in Mesomikenda Lake, Côté Gold Baseline Study, 2012 and 2013.

c) Seining

Year	Seining Station	Date	Time	Location (17n, NAD83)		Length (m)	Distance (m)	# of Hauls	Area Seined (m^2)	Yellow Perch			Blacknose Shiner			Golden Shiner			Iowa Darter			Spottail Shiner			Brook Stickleback		
				Northing	Easting					Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2013	SN-1	7-Jun-13	16:05	5273118	432699	10	10	1	100			0			0			0	2	0	0.02			0	3	0	0.03
	SN-2	7-Jun-13	16:30	5273247	432905	10	10	1	100			0			0			0			0			0			0
	SN-3	7-Jun-13	16:50	5274236	434259	7	10	1	70			0			0			0			0			0			0
	SN-4	7-Jun-13	17:10	5274492	433173	8	24	1	192	1	0	0.01	1	0	0.01	1	0	0.01				31	0	0.16			0
	TOTAL								**462**	**1**	**0**	**0.002**	**1**	**0**	**0.002**	**1**	**0**	**0.002**	**2**	**0**	**0.004**	**31**	**0**	**0.07**	**3**	**0**	**0.01**

Total CPUE = # of fish / m^2

Table F.13: Catch records for fish caught in Middle Three Duck Lake, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/100 m of gill net)	Yellow Perch					Walleye					Northern Pike					Lake Whitefish					White Sucker				
		Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE
2013	GN-1	5266412	431786	45.7	5-Jun-13	6-Jun-13	17:48	8:49	15.02	1	1.14																									
										1.5	1.14						1		1		0.9	1			1	0.9										
										2	1.14											1		1		0.9										
										2.5	1.14						5	5			4.4	2			2	1.7										
										3	1.14																1			1	0.9	1		1		0.9
										4	1.14																2			2	1.7					
										Total	**6.86**						**6**	**5**	**1**	**0**	**0.87**	**4**	**0**	**1**	**3**	**0.58**	**3**	**0**	**0**	**3**	**0.44**	**1**	**0**	**1**	**0**	**0.15**
	GN-2	5266878	431458	45.7	5-Jun-13	6-Jun-13	18:00	10:09	16.15	1	1.23	4	4			3.3																				
										1.5	1.23																					3		3		2.4
										2	1.23						1			1	0.8	1		1		0.8										
										2.5	1.23						2		2		1.6	3		1	2	2.4										
										3	1.23											1		1		0.8	1			1	0.8	1		1		0.8
										4	1.23						1	1														3		3		2.4
										Total	**7.38**	**4**	**4**	**0**	**0**	**0.54**	**5**	**1**	**3**	**1**	**0.68**	**5**	**0**	**3**	**2**	**0.68**	**1**	**0**	**0**	**1**	**0.14**	**7**	**0**	**7**	**0**	**0.95**
	TOTAL										**14.24**	**4**	**4**	**0**	**0**	**0.28**	**11**	**6**	**4**	**1**	**0.77**	**9**	**0**	**4**	**5**	**0.63**	**4**	**0**	**0**	**4**	**0.28**	**8**	**0**	**8**	**0**	**0.56**

Total CPUE = total # of fish / 100 m of gill net / hour

Table F.13: Catch records for fish caught in Middle Three Duck Lake, Côté Gold Baseline Study, 2012 and 2013.

b) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Yellow Perch			Crayfish		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2013	MT-1	5266298	432124	5-Jun-13	6-Jun-13	16:36	15:33	22.95	5	4.78			0			0
	MT-2	5265731	431610	5-Jun-13	6-Jun-13	17:10	15:17	22.12	5	4.61	2	0	0.43			0
	MT-3	5266280	431881	5-Jun-13	6-Jun-13	17:27	15:25	21.97	5	4.58			0	3	0	0.66
	MT-4	5266403	431290	5-Jun-13	6-Jun-13	18:05	10:57	16.87	5	3.51			0			0
	TOTAL							**83.90**	**20**	**17.48**	**2**	**0**	**0.11**	**3**	**0**	**0.17**

Total CPUE = total # of fish / trap*day

Table F.13: Catch records for fish caught in Middle Three Duck Lake, Côté Gold Baseline Study, 2012 and 2013.

c) Seining

Year	Seining Station	Date	Time	Location (17n, NAD83)		Length (m)	Distance (m)	# of Hauls	Area Seined (m^2)	Yellow Perch			Blacknose Shiner			Common Shiner			Iowa Darter			Spottail Shiner			Northern Pike		
				Northing	Easting					Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2013	SN-1	9-Jun-13	11:04	5265768	431640	15	10	1	150			0	10	0	0.07			0	59	0	0.39			0			0
	SN-2	9-Jun-13	11:25	5266038	432005	8	5	1	40			0			0			0	5	0	0.13			0			0
	SN-3	9-Jun-13	12:10	5266943	431986	15	10	1	150	143	8	0.95	316	0	2.11	1	0	0.01	41	0	0.27	27	0	0	1	0	0.01
	SN-4	9-Jun-13	12:40	5266403	431290	15	8	1	120	339	0	2.83	19	0	0			0	1	0	0.01	3	0	0			0
	TOTAL								**460**	**482**	**8**	**1.05**	**345**	**0**	**0.75**	**1**	**0**	**0.002**	**106**	**0**	**0.23**	**30**	**0**	**0.07**	**1**	**0**	**0.002**

Total CPUE = # of fish / m^2

Table F.14: Catch records for fish caught in Mollie River and Clam Creek, Côté Gold Baseline Study, 2013.

a) Minnow Trapping

Year	Location	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Tadpole		
			Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE
2013	Clam Creek	MT-1	5266602	429443	15-Sep-13	16-Sep-13	15:55	11:05	19.17	2	1.60	1	0	0.63
		MT-2	5266607	429497	15-Sep-13	16-Sep-13	14:08	11:00	20.87	2	1.74	1	0	0.58
		Total							**40.03**	**4**	**3.34**	**2**	**0**	**0.60**

Total CPUE = total # of fish / trap*day

Table F.14: Catch records for fish caught in Mollie River and Clam Creek, Côté Gold Baseline Study, 2012 and 2013.

b) Boat Electrofishing

Year	Location	Electrofishing Station	Start Location (17n, NAD83)		End Location (17n, NAD83)		Pass Number	Effort (hrs)	Northern Pike			White Sucker			Yellow Perch			Golden Shiner			Blacknose Shiner			Iowa Darter			Comments
			Northing	Easting	Northing	Easting			Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	
2012	Mollie River	EF-1	5267238	429954	5267735	430213	1	1.13	25	0	22.10	10	0	8.84	209	0	185	10	0	9	1	0	1	0	0	0	Numerous perch observed, not all captured, fished to upstream extent, moslty along West side, then back to Côté Lake along East side
							2	0.80	13	0	16.20	10	0	12.46	197	0	245.48	12	0	14.95	4	0	4.98	1	0	1.25	
							Total	**1.93**	**38**	**0**	**19.65**	**20**	**0**	**10.34**	**406**	**0**	**209.97**	**22**	**0**	**11.38**	**5**	**0**	**2.59**	**1**	**0**	**0.52**	

Total CPUE = # of fish / second

Table F.15: Catch records for fish caught in Neville Lake, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/100 m of gill net)	Yellow Perch					Walleye					Northern Pike					Lake Whitefish					White Sucker					Smallmouth Bass				
		Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE
2013	GN-1	5277648	431456	45.7	5-Jun-13	6-Jun-13	14:00	9:45	19.75	1	1.50	1				0.7						1				0.7															
										1.5	1.50											5				3.3															
										2	1.50						1				0.7	1				0.7															
										3	1.50						2				1.3						4				2.7						1				0.7
										4	1.50																2				1.3	7				4.7					
										5	1.50																					1				0.7					
										Total	**9.03**	**1**	**0**	**1**	**0**	**0.11**	**3**	**3**	**0**	**0**	**0.33**	**7**	**2**	**0**	**5**	**0.78**	**6**	**0**	**0**	**6**	**0.66**	**8**	**0**	**8**	**0**	**0.89**	**1**	**0**	**1**	**0**	**0.11**
	GN-2	5277405	431563	45.7	5-Jun-13	6-Jun-13	14:10	10:00	19.83	1	1.51	1				0.7																									
										1.5	1.51																														
										2	1.51																														
										2.5	1.51																														
										3	1.51																														
										4	1.51																1				0.7										
										Total	**9.06**	**1**	**0**	**1**	**0**	**0.11**											**2**	**0**	**0**	**2**	**0.22**										
	TOTAL										**18.09**	**2**	**0**	**2**	**0**	**0.11**	**3**	**3**	**0**	**0**	**0.17**	**7**	**2**	**0**	**5**	**0.39**	**8**	**0**	**0**	**8**	**0.44**	**8**	**0**	**8**	**0**	**0.44**	**1**	**0**	**1**	**0**	**0.06**

Total CPUE = total # of fish / 100 m of gill net / hour

Note - fish fates (processed, released, and additional mortalities) were not separated by mesh size

Table F.15: Catch records for fish caught in Neville Lake, Côté Gold Baseline Study, 2012 and 2013.

b) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Yellow Perch			Spottail Shiner			Crayfish		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2013	MT-1	5277424	431772	5-Jun-13	6-Jun-13	14:20	9:05	18.75	5	3.91			0			0	2	0	0.51
	MT-2	5277314	431456	5-Jun-13	6-Jun-13	14:25	9:10	18.75	5	3.91			0			0	1	0	0.26
	MT-3	5277546	431283	5-Jun-13	6-Jun-13	14:30	9:15	18.75	5	3.91	1	0	0.26	1	0	0.26	1	0	0.26
	MT-4	5277623	431583	5-Jun-13	6-Jun-13	14:35	9:20	18.75	5	3.91	1	0	0.26			0	3	0	0.77
	TOTAL							**75.00**	**20**	**15.63**	**2**	**0**	**0.13**	**1**	**0**	**0.06**	**7**	**0**	**0.45**

Total CPUE = total # of fish / trap*day

Table F.15: Catch records for fish caught in Neville Lake, Côté Gold Baseline Study, 2012 and 2013.

c) Seining

Year	Seining Station	Date	Time	Location (17n, NAD83)		Length (m)	Distance (m)	# of Hauls	Area Seined (m^2)	Yellow Perch			Blacknose Shiner			Golden Shiner			Spottail Shiner			White Sucker		
				Northing	Easting					Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2013	SN-1	5-Jun-13	16:45	5277441	431184	10	10	1	100			0			0			0			0			0
	SN-2	5-Jun-13	17:00	5277665	431331	10	10	1	100	125	0	1.25	250	0	2.50	45	0	0.45	1,200	0	12.00	1	0	0.01
	SN-3	6-Jun-13	8:45	5277508	431564	10	10	1	100			0			0			0			0			0
	SN-4	6-Jun-13	9:00	5277263	431547	10	10	1	100			0			0			0			0			0
	TOTAL								**400**	**125**	**0**	**0.31**	**250**	**0**	**0.63**	**45**	**0**	**0.11**	**1,200**	**0**	**3.00**	**1**	**0**	**0.003**

Total CPUE = # of fish / m^2

Table F.16: Catch records for fish caught in North Beaver Pond, Côté Gold Baseline Study, 2012 and 2013.

a) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Finescale Dace			Northern Redbelly Dace		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	MT-1	5267867	430311	14-Jul-12	15-Jul-12	16:45	14:20	21.58	1	0.90	60	0	66.72	95	0	105.64
	MT-2	5267864	430319	14-Jul-12	15-Jul-12	16:50	14:30	21.67	1	0.90	41	0	45.42	90	0	99.69
	MT-3	5267879	430301	14-Jul-12	15-Jul-12	16:50	14:40	21.83	1	0.91	11	0	12.09	20	0	21.98
	MT-4	5267879	430300	14-Jul-12	15-Jul-12	16:50	14:40	21.83	1	0.91			0			0
	Total							**86.92**	**4**	**3.62**	**112**	**0**	**30.93**	**205**	**0**	**56.61**

Total CPUE = total # of fish / trap*day

Table F.17: Catch records for fish caught in Schist Lake, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/100 m of gill net)	Yellow Perch					Walleye					Northern Pike					Lake Whitefish					White Sucker					Spottail Shiner				
		Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE
2013	GN-1	5270692	426201	45.7	6-Jun-13	7-Jun-13	15:50	9:53	18.05	1	1.37	10				7.3	1				0.7																6				4.4
										1.5	1.37						1				0.7	2				1.5															
										2	1.37						1				0.7	1				0.7						1				0.7					
										2.5	1.37											3				2.2															
										3	1.37											5				3.6															
										4	1.37						1										1				0.7	2				1.5					
										Total	**8.25**	**10**	**10**	**0**	**0**	**1.21**	**4**	**0**	**1**	**3**	**0.48**	**11**	**0**	**8**	**3**	**1.33**	**1**	**0**	**0**	**1**	**0.12**	**3**	**0**	**3**	**0**	**0.36**	**6**	**0**	**6**	**0**	**0.73**
	GN-2	5270486	426809	45.7	6-Jun-13	7-Jun-13	16:00	9:30	17.50	1	1.33											1				0.8															
										1.5	1.33						7				5.3	1				0.8						2				1.5					
										2	1.33						1				0.8	1				0.8															
										2.5	1.33						1				0.8						1					1				0.8					
										3	1.33						4				3.0	1				0.8	1														
										4	1.33																					10									
										Total	**8.00**						**13**	**5**	**2**	**6**	**1.63**	**5**	**0**	**5**	**0**	**0.63**	**2**	**0**	**0**	**2**	**0.25**	**13**	**0**	**13**	**0**	**1.63**					
	TOTAL										**16.25**	**10**	**10**	**0**	**0**	**0.62**	**17**	**5**	**3**	**9**	**1.05**	**16**	**0**	**13**	**3**	**0.98**	**3**	**0**	**0**	**3**	**0.18**	**16**	**0**	**16**	**0**	**0.98**	**6**	**0**	**6**	**0**	**0.37**

Total CPUE = total catch of each species (for all sites) / total effort for all sites

Table F.17: Catch records for fish caught in Schist Lake, Côté Gold Baseline Study, 2012 and 2013.

b) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Yellow Perch			Blacknose shiner			Iowa Darter			Eastern Newt		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2013	MT-1	5270245	427826	6-Jun-13	7-Jun-13	13:45	9:16	19.52	5	4.07	9	0	2.21	1	0	0.25			0			0
	MT-2	5270968	426570	6-Jun-13	7-Jun-13	14:35	12:20	21.75	5	4.07	2	0	0.49			0	3	0	0.74			0
	MT-3	5271643	424609	6-Jun-13	7-Jun-13	15:05	12:35	21.50	5	4.07			0			0	4	0	0.98	2	0	0.49
	MT-4	5269765	425778	6-Jun-13	7-Jun-13	15:28	12:55	21.45	5	4.07	8	0	1.97			0			0			0
	TOTAL							**84.22**	**20**	**16.26**	**19**	**0**	**1.17**	**1**	**0**	**0.06**	**7**	**0**	**0.43**	**2**	**0**	**0.12**

Total CPUE = total # of fish / trap*day

Table F.17: Catch records for fish caught in Schist Lake, Côté Gold Baseline Study, 2012 and 2013.

c) Seining

Year	Seining Station	Date	Time	Location (17n, NAD83)		Length (m)	Distance (m)	# of Hauls	Area Seined (m^2)	Yellow Perch			Blacknose Shiner (adult) [a]			Blacknose Shiner (juvenile) [a]			Golden Shiner			Iowa Darter			Spottail Shiner			Finescale Dace			White Sucker		
				Northing	Easting					Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2013	SN-1	6-Jun-13	16:15	5270976	426570	60	15	1	900			0			0			0			0			0			0			0			0
	SN-2	6-Jun-13	16:51	5271583	424685	20	15	1	300			0	5	0	0.02	1	0	0.00			0	1	0	0.00			0			0			0
	SN-3	6-Jun-13	17:15	5271665	424612	15	15	1	225	72	10	0.32	249	0	1.11			0	62	0	0.28	1	0	0.00	158	0	0.70	2	0	0.01	8	0	0.04
	SN-4	6-Jun-13	17:40	5270373	424749	10	10	1	100	29	0	0.29	92	0	0.92	300	0	3.00	58	0	0.58	3	0	0.03	31	0	0.31			0			0
	TOTAL								**1,525**	**101**	**10**	**0.07**	**346**	**0**	**0.23**	**301**	**0**	**0.20**	**120**	**0**	**0.08**	**5**	**0**	**0.003**	**189**	**0**	**0.12**	**2**	**0**	**0.001**	**8**	**0**	**0.01**

Total CPUE = # of fish / m^2

[a] Fish were classified as adults unless otherwise specified in the field to be juveniles

Table F.18: Catch records for fish caught in Unnamed Lake #1, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83) Northing	Easting	Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/100 m of gill net)	Northern Pike Caught	Processed	Released	Additional Mortalities	CPUE	Walleye Caught	Processed	Released	Additional Mortalities	CPUE	White Sucker Caught	Processed	Released	Additional Mortalities	CPUE	Yellow Perch Caught	Processed	Released	Additional Mortalities	CPUE
2012	GN-1	5273629	429510	45.7	12-Jul-12	12-Jul-12	11:15	14:40	3.42	1	0.26	1		1		3.8											1		1		3.8
										1.5	0.26						1		1		3.8						8		8		30.7
										2	0.26																				
										2.5	0.26																				
										3	0.26																				
										4	0.26																				
										Total	**1.56**	**1**	**0**	**1**	**0**	**0.64**	**1**	**0**	**1**	**0**	**0.64**	**0**	**0**	**0**	**0**	**0.00**	**9**	**0**	**9**	**0**	**5.76**
	GN-2	5273805	429784	45.7	12-Jul-12	12-Jul-12	14:20	15:00	0.67	1	0.05																1		1		19.7
										1.5	0.05																2		2		39.4
										2	0.05																				
										2.5	0.05	3		3		59.1															
										3	0.05	1			1	19.7															
										4	0.05																				
										Total	**0.30**	**4**	**0**	**3**	**1**	**13.13**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**3**	**0**	**3**	**0**	**9.85**
	GN-3	5273733	429189	45.7	12-Jul-12	12-Jul-12	11:30	15:25	3.92	1	0.30																1		1		3.4
										1.5	0.30																1		1		3.4
										2	0.30																2		2		6.7
										2.5	0.30																				
										3	0.30																				
										4	0.30																				
										Total	**1.79**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**4**	**0**	**4**	**0**	**2.23**
	GN-4	5273650	429320	45.7	12-Jul-12	12-Jul-12	11:35	15:45	4.17	1	0.32																1		1		3.2
										1.5	0.32																				
										2	0.32																				
										2.5	0.32	1		1		3.2															
										3	0.32																				
										4	0.32						1		1		3.2										
										Total	**1.90**	**1**	**0**	**1**	**0**	**0.53**	**1**	**0**	**1**	**0**	**0.53**	**0**	**0**	**0**	**0**	**0.00**	**1**	**0**	**1**	**0**	**0.53**
	GN-5	5273794	429533	45.7	13-Jul-12	13-Jul-12	9:50	13:20	3.50	1	0.27																3		3		
										1.5	0.27																				
										2	0.27	1		1		3.8															
										2.5	0.27	1		1		3.8															
										3	0.27																				
										4	0.27																				
										Total	**1.60**	**2**	**0**	**2**	**0**	**1.25**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**3**	**0**	**3**	**0**	**1.88**
	GN-6	5273770	429723	45.7	13-Jul-12	13-Jul-12	9:55	13:35	3.67	1	0.28																				
										1.5	0.28	1		1		3.6											1		1		3.6
										2	0.28																				
										2.5	0.28	2		2		7.2															
										3	0.28																				
										4	0.28																				
										Total	**1.68**	**3**	**0**	**3**	**0**	**1.79**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**1**	**0**	**1**	**0**	**0.60**
	GN-7	5273650	429407	45.7	13-Jul-12	13-Jul-12	10:05	13:45	3.67	1	0.28											1			1	3.6					
										1.5	0.28																				
										2	0.28																				
										2.5	0.28																				
										3	0.28																				
										4	0.28																				
										Total	**1.68**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**1**	**0**	**0**	**1**	**0.60**	**0**	**0**	**0**	**0**	**0.00**
	GN-8	5273778	429297	45.7	13-Jul-12	13-Jul-12	10:10	13:00	2.83	1	0.22																2		2		9.3
										1.5	0.22																2		2		9.3
										2	0.22											1		1		4.6					
										2.5	0.22																				
										3	0.22																				
										4	0.22																				
										Total	**1.29**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**1**	**0**	**1**	**0**	**0.77**	**4**	**0**	**4**	**0**	**3.09**
	GN-9	5273635	429146	45.7	13-Jul-12	13-Jul-12	12:50	16:00	3.17	1	0.24																				
										1.5	0.24																				
										2	0.24																				
										2.5	0.24																				
										3	0.24																				
										4	0.24																				
										Total	**1.45**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**
	GN-10	5273552	429210	45.7	13-Jul-12	13-Jul-12	13:10	16:10	3.00	1	0.23																				
										1.5	0.23	1		1		4.4											3		3		13.1
										2	0.23																				
										2.5	0.23																				
										3	0.23																				
										4	0.23																				
										Total	**1.37**	**1**	**0**	**1**	**0**	**0.73**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**3**	**0**	**3**	**0**	**2.19**
	GN-11	5273846	429678	45.7	13-Jul-12	13-Jul-12	13:30	16:35	3.08	1	0.23	1		1		4.3															
										1.5	0.23																2		2		8.5
										2	0.23																				
										2.5	0.23																				
										3	0.23																				
										4	0.23																				
										Total	**1.41**	**1**	**0**	**1**	**0**	**0.71**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**2**	**0**	**2**	**0**	**1.42**
	GN-12	5273720	429578	45.7	13-Jul-12	13-Jul-12	13:45	16:20	2.58	1	0.20																				
										1.5	0.20																				
										2	0.20																				
										2.5	0.20																				
										3	0.20																				
										4	0.20																				
										Total	**1.18**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**
	GN-13	5273837	429781	45.7	14-Jul-12	14-Jul-12	9:35	12:10	2.58	1	0.20																				
										1.5	0.20																3		3		15.2
										2	0.20																				
										2.5	0.20																				
										3	0.20																				
										4	0.20																				
										Total	**1.18**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**3**	**0**	**3**	**0**	**2.54**
	GN-14	5273772	429742	45.7	14-Jul-12	14-Jul-12	9:40	12:25	2.75	1	0.21																2		2		9.5
										1.5	0.21																3		3		14.3
										2	0.21	1		1		4.8						1		1		4.8					
										2.5	0.21																				
										3	0.21																				
										4	0.21																				
										Total	**1.26**	**1**	**0**	**1**	**0**	**0.80**	**0**	**0**	**0**	**0**	**0.00**	**1**	**0**	**1**	**0**	**0.80**	**5**	**0**	**5**	**0**	**3.98**
	GN-15	5273745	429497	45.7	14-Jul-12	14-Jul-12	9:45	12:35	2.83	1	0.22																				
										1.5	0.22																				
										2	0.22																				
										2.5	0.22																				
										3	0.22																				
										4	0.22																				
										Total	**1.29**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**
	GN-16	5273727	429646	45.7	14-Jul-12	14-Jul-12	9:50	12:45	2.92	1	0.22																				
										1.5	0.22	2		2		9.0											2		2		9.0
										2	0.22																3		3		13.5
										2.5	0.22																				
										3	0.22																				
										4	0.22																				
										Total	**1.33**	**2**	**0**	**2**	**0**	**1.50**	**0**	**0**	**0**	**0**	**0.00**	**0**	**0**	**0**	**0**	**0.00**	**5**	**0**	**5**	**0**	**3.75**
	TOTAL										**22.28**	**16**	**0**	**15**	**1**	**0.72**	**2**	**0**	**2**	**0**	**0.09**	**3**	**0**	**2**	**1**	**0.13**	**43**	**0**	**43**	**0**	**1.93**

Total CPUE = total # of fish / 100 m of gill net / hour

Table F.18: Catch records for fish caught in Unnamed Lake #1, Côté Gold Baseline Study, 2012 and 2013.

b) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Yellow Perch			Slimy Sculpin			Crayfish		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	MT-1	5273756	429811	13-Jul-12	14-Jul-12	9:15	8:50	23.58	17	16.70	3	2	0.18	1	1	0.06	16	16	0.96
	MT-2	5273697	429028	14-Jul-12	15-Jul-12	9:15	11:05	25.83	17	18.30	4	3	0.22			0.00	15	15	0.82
	TOTAL							**49.42**	**34**	**35.00**	**7**	**5**	**0.20**	**1**	**1**	**0.03**	**31**	**31**	**0.89**

Total CPUE = total # of fish / trap*day

Table F.18: Catch records for fish caught in Unnamed Lake #1, Côté Gold Baseline Study, 2012 and 2013.

c) Seining

Year	Seining Station	Date	Time	Location (17n, NAD83)		Haul #1		Haul #2		Haul #2		Area Seined (m^2)	Northern Pike			Yellow Perch			Golden Shiner			Blacknose Shiner			Central Mudminnow			Iowa Darter		
				Northing	Easting	Length (m)	Distance (m)	Length (m)	Distance (m)	Length (m)	Distance (m)		Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	SN-1	13-Jul-12	14:50	5273672	429629	8	8					64	3	0	0.05	33	0	0.52	7	0	0.11			0			0			0
	SN-2	13-Jul-12	15:15	5273482	429237	6	6	6	8	6	8	36			0	8	0	0.22			0			0			0			0
	SN-3	13-Jul-12	15:45	5273595	429052	10	4					40			0	95	0	2.38	4	0	0.10	20	0	0.50			0	3	0	0.08
	SN-4	15-Jul-12	11:30	5273837	429253	15	5					75			0	61	0	0.81			0			0			0			0
	SN-5	15-Jul-12	12:00	5273804	429510	8	6					48	1	0	0.02	21	0	0			0	24	0	0.50			0			0
	SN-6	15-Jul-12	12:40	5273768	429824	6	6					36	1	0	0.03	68	0	1.89	1	0	0			0	1	0	0.03			0
	TOTAL											**299**	**5**	**0**	**0.02**	**286**	**0**	**0.96**	**12**	**0**	**0.04**	**44**	**0**	**0.15**	**1**	**0**	**0.003**	**3**	**0**	**0.01**
2013	SN-1*	6-Jun-13	-	5273660	429625	10	10					100			0	1	1	0.01			0			0			0			0
	SN-2*	6-Jun-13	-	5273562	429493	10	10	10	10	10	10	300			0	5	5	0.02			0			0			0			0
	TOTAL											**400**	**0**	**0**	**0.00**	**6**	**6**	**0.02**	**0**	**0**	**0.00**	**0**	**0**	**0.00**	**0**	**0**	**0.00**	**0**	**0**	**0.00**

Total CPUE = # of fish / m^2

* Note: Seining was conducted in 2013 in order to collect perch for tissue samples. Total catches including all other species were not recorded.

Table F.18: Catch records for fish caught in Unnamed Lake #1, Côté Gold Baseline Study, 2012 and 2013.

d) Hoop Netting

Year	Hoop Net Station	Hoop Net Size	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	Effort (trap*days)	Northern Pike			Walleye			White Sucker			Yellow Perch			Blacknose Shiner		
			Northing	Easting							Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
	HN-1	small	5273730	429633	11-Jul-12	12-Jul-12	14:03	11:45	21.70	0.90	1	0	1.11			0			0.00	4	0	4.42	2	2	2.21
	HN-2	small	5273818	429223	11-Jul-12	12-Jul-12	14:45	12:30	21.75	0.91	1	0	1.10			0			0	3	0	3.31			0
	HN-3	medium	5273787	429795	11-Jul-12	12-Jul-12	15:30	13:30	22.00	0.92	5	0	5.45			0			0	6	1	6.55			0
	HN-4	medium	5273722	429187	11-Jul-12	12-Jul-12	15:50	14:00	22.17	0.92			0	1	0	1.08	3	0	3.25	3	0	3.25			0
	HN-5	large	5273771	429470	12-Jul-12	13-Jul-12	10:10	10:15	24.08	1.00	1	0	1.00	2	1	1.99	7	0	6.98	1	0	1.00			0
	HN-6	large	5273842	429326	12-Jul-12	13-Jul-12	11:00	10:55	23.92	1.00	1	0	1.00			0			0	6	1	6.02			0
	HN-7	small	5273555	428935	12-Jul-12	13-Jul-12	12:10	11:30	23.33	0.97	1	0	1.03			0			0			0	1	1	1.03
	HN-8	medium	5273854	429760	12-Jul-12	13-Jul-12	13:15	11:55	22.67	0.94	1	1	1.06	1	0	1.06	1	0	1.06	15	0	15.88			0
	HN-9	small	5273646	429352	12-Jul-12	13-Jul-12	13:40	13:50	24.17	1.01			0			0			0			0			0
	HN-10	medium	5273660	429625	12-Jul-12	13-Jul-12	14:25	14:05	23.67	0.99	6	0	6.08			0	4	0	4.06	4	0	4.06			0
	HN-11	large	5273802	429198	13-Jul-12	14-Jul-12	10:50	10:00	23.17	0.97	2	1	2.07			0	3	0	3.11	4	0	4.14			0
	HN-12	large	5273610	429305	13-Jul-12	14-Jul-12	11:15	10:35	23.33	0.97			0	1	1	1.03	2	0	2.06			0			0
2012	HN-13	small	5273853	429599	13-Jul-12	14-Jul-12	11:45	14:00	26.25	1.09	1	0	0.91			0	1	0	0.91	10	0	9.14			0
	HN-14	medium	5273562	429493	13-Jul-12	14-Jul-12	12:20	11:10	22.83	0.95	3	2	3.15	2	0	2.10	6	1	6.31	4	4	4.20			0
	HN-15	small	5273673	429148	13-Jul-12	14-Jul-12	14:00	13:50	23.83	0.99			0			0			0			0			0
	HN-16	medium	5273882	429718	13-Jul-12	14-Jul-12	14:35	13:00	22.42	0.93	4	0	4.28			0	12	0	12.85	9	2	9.64			0
	HN-17	large	5273629	429430	14-Jul-12	15-Jul-12	10:30	9:00	22.50	0.94	2	1	2.13			0	11	0	11.73	3	2	3.20			0
	HN-18	large	5273736	429155	14-Jul-12	15-Jul-12	10:55	9:50	22.92	0.95	2	1	2.09			0			0			0			0
	HN-19	medium	5273470	429220	14-Jul-12	15-Jul-12	11:35	10:20	22.75	0.95	1	0	1.05			0	2	0	2.11	6	0	6.33			0
	HN-20	medium	5273768	429365	14-Jul-12	15-Jul-12	13:40	10:40	21.00	0.88			0			0			0			0			0
	HN-21	large	5273758	429473	15-Jul-12	16-Jul-12	9:45	8:00	22.25	0.93	1	0	1.08	2	2	2.16	4	1	4.31	1	1	1.08			0
	HN-22	large	5273550	429040	15-Jul-12	16-Jul-12	10:10	7:05	20.92	0.87	2	0	2.29			0	3	1	3.44	2	1	2.29			0
	HN-23	medium	5273491	429241	15-Jul-12	16-Jul-12	10:35	7:20	20.75	0.86	3	1	3.47			0	4	1	4.63	10	2	11.57			0
	HN-24	medium	5273722	429650	15-Jul-12	16-Jul-12	10:50	8:10	21.33	0.89	2	0	2.25			0	1	0	1.12	10	2	11.25			0
	Total								**545.70**	**22.74**	**40**	**7**	**1.76**	**9**	**4**	**0.40**	**64**	**4**	**2.81**	**101**	**16**	**4.44**	**3**	**3**	**0.13**

Total CPUE = # of fish / trap*day

Table F.19: Catch records for fish caught in Unnamed Lake #2, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/100 m of gill net)	Yellow Perch					Walleye					Northern Pike					White Sucker				
		Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE
2013	GN-1	5273184	427411	45.7	6-Jun-13	7-Jun-13	12:05	12:00	23.92	1	1.82																				
										1.5	1.82	3				1.6	1				0.5	1				0.5					
										2	1.82	1		1		0.5	3				1.6	3				1.6					
										2.5	1.82						2				1.1	1				0.5					
										3	1.82						4				2.2										
										4	1.82						1				0.5						2		2		1.1
										Total	**10.93**	**4**	**3**	**1**	**0**		**13**	**5**	**3**	**5**		**5**	**0**	**2**	**3**		**2**	**0**	**2**	**0**	
	GN-2	5273055	426977	45.7	6-Jun-13	7-Jun-13	12:10	10:10	22.00	1.5	0.61																1		1		
										2	0.61	2		1		3.3						1				1.6					
										2.5	0.61											3				4.9					
										3	0.61						1	0	0	1	1.6	2				3.3					
										4	0.61																6		6		9.8
										Total	**3.67**	**2**	**2**	**1**	**0**	**0.55**	**1**	**0**	**0**	**0**	**0.27**	**6**	**0**	**1**	**5**	**1.64**	**7**	**0**	**7**	**0**	**1.91**
	TOTAL										**14.60**	**6**	**5**	**2**	**0**	**0.41**	**14**	**5**	**3**	**5**	**0.96**	**11**	**0**	**3**	**8**	**0.75**	**9**	**0**	**9**	**0**	**0.62**

Total CPUE = total # of fish / 100 m of gill net / hour

Table F.19: Catch records for fish caught in Unnamed Lake #2, Côté Gold Baseline Study, 2012 and 2013.

b) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Crayfish		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE
2013	MT-1	5273359	427974	6-Jun-13	7-Jun-13	11:50	13:15	25.42	5	5.30			0
	MT-2	5273193	427629	6-Jun-13	7-Jun-13	11:55	12:50	24.92	5	5.19			0
	MT-3	5272824	427060	6-Jun-13	7-Jun-13	12:15	10:15	22.00	5	4.58			0
	MT-4	5273255	427073	6-Jun-13	7-Jun-13	12:20	9:40	21.33	5	4.44	2	0	0.45
	TOTAL							**93.67**	**20**	**19.51**	**2**	**0**	**0.10**

Total CPUE = total # of fish / trap*day

Table F.19: Catch records for fish caught in Unnamed Lake #2, Côté Gold Baseline Study, 2012 and 2013.

c) Seining

Year	Seining Station	Date	Time	Location (17n, NAD83)		Length (m)	Distance (m)	# of Hauls	Area Seined (m^2)	Blacknose Shiner (adult) [a]			Blacknose Shiner (juvenile) [a]			Iowa Darter			Spottail Shiner			Northern Pike			Crayfish		
				Northing	Easting					Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2013	SN-1	7-Jun-13	8:55	5273233	428026	25	6	1	150			0	2	0	0.01			0			0			0			0
	SN-2	7-Jun-13	9:05	5273332	427509	30	6	1	180	55	0	0.31			0			0	2	0	0.01	2	0	0.01			0
	SN-3	7-Jun-13	9:20	5273223	427171	40	10	1	400	1	0	0.00			0	2	0	0.01			0			0	3	0	0.01
	SN-4	7-Jun-13	9:35	5272834	426879	20	5	1	100			0			0			0			0			0			0
	TOTAL								**830**	**56**	**0**	**0.067**	**2**	**0**	**0.002**	**2**	**0**	**0.002**	**2**	**0**	**0.002**	**2**	**0**	**0.002**	**3**	**0**	**0.004**

Total CPUE = # of fish / m^2

[a] Fish were classified as adults unless otherwise specified in the field to be juveniles

Table F.20: Catch records for fish caught in Unnamed Lake #3, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/100 m of gill net)	Yellow Perch					Northern Pike					Golden Shiner				
		Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE
2013	GN-1	5263576	431740	45.7	8-Jun-13	9-Jun-13	14:50	8:46	17.93	1	1.37	1				0.7	1				0.7	8				5.9
										1.5	1.37	1				0.7										
										2	1.37															
										2.5	1.37						1				0.7					
										3	1.37															
										4	1.37						1				0.7					
										Total	**8.20**	**2**				**0.24**	**3**				**0.37**	**8**				**0.98**
	GN-2	5263444	431713	45.7	8-Jun-13	9-Jun-13	15:03	8:36	17.55	1	1.34						1				0.7					
										1.5	1.34															
										2	1.34															
										2.5	1.34						2				1.5					
										3	1.34						1				0.7					
										4	1.34															
										Total	**8.02**						**4**				**0.50**					
	TOTAL										**16.22**	**2**	**0**	**0**	**0**	**0.12**	**7**	**0**	**0**	**0**	**0.43**	**8**	**0**	**0**	**0**	**0.49**

Total CPUE = total # of fish / 100 m of gill net / hour

Table F.20: Catch records for fish caught in Unnamed Lake #3, Côté Gold Baseline Study, 2012 and 2013.

b) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Yellow Perch			Eastern Newt		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2013	MT-1	5263301	431710	8-Jun-13	9-Jun-13	14:20	8:30	18.17	5	3.78			0			0
	MT-2	5263589	431556	8-Jun-13	9-Jun-13	14:25	8:26	18.02	5	3.75	1	0	0.27	1	0	0.27
	MT-3	5263696	431691	8-Jun-13	9-Jun-13	14:30	8:19	17.82	5	3.71			0			0
	MT-4	5263634	431950	8-Jun-13	9-Jun-13	14:35	8:15	17.67	5	3.68			0	1	0	0.27
	TOTAL							**71.67**	**20**	**14.93**	**1**	**0**	**0.07**	**2**	**0**	**0.13**

Total CPUE = total # of fish / trap*day

Table F.20: Catch records for fish caught in Unnamed Lake #3, Côté Gold Baseline Study, 2012 and 2013.

c) Seining

Year	Seining Station	Date	Time	Location (17n, NAD83)		Length (m)	Distance (m)	# of Hauls	Area Seined (m^2)	Yellow Perch			Golden Shiner			Iowa Darter			Northern Pike		
				Northing	Easting					Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2013	SN-1	8-Jun-13	16:45	5263587	431934	30	5	1	150	25	9	0.17	84	0	0.56			0	2	0	0.01
	SN-2	8-Jun-13	18:00	5263517	431595	20	5	1	100			0			0	1	0	0.01	2	0	0.02
	SN-3	8-Jun-13	18:20	5263476	431858	20	5	1	100			0	1	0	0.01			0			0
	SN-4	8-Jun-13	18:30	5263288	431753	20	5	1	100			0	1	0	0.01			0	1	0	0.01
	TOTAL								**450**	**25**	**9**	**0.06**	**86**	**0**	**0.19**	**1**	**0**	**0.002**	**5**	**0**	**0.01**

Total CPUE = # of fish / m^2

Table F.21: Catch records for fish caught in Unnamed Pond, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/100 m of gill net)	Northern Pike					White Sucker					Yellow Perch				
		Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE
2012	GN-1	5265720	429640	45.72	10-Jul-12	11-Jul-12	12:45	10:30	21.75	1	1.66											1			1	0.6
										1.5	1.66											3		1	2	1.8
										2	1.66															
										2.5	1.66	1	1			0.6										
										3	1.66															
										4	1.66						2	1	1		1.2					
										Total	**9.94**	**1**	**1**	**0**	**0**	**0.10**	**2**	**1**	**1**	**0**	**0.20**	**4**	**0**	**1**	**3**	**0.40**
	GN-2	5265711	429676	45.72	10-Jul-12	10-Jul-12	12:55	16:45	3.83	1.5	0.29															
										2	0.29	1		1		3.4										
										2.5	0.29															
										3	0.29															
										4	0.29															
										5	0.29															
										Total	**1.75**	**1**	**0**	**1**	**0**	**0.57**		**0**	**0**	**0**	**0.00**		**0**	**0**	**0**	**0.00**
	GN-2 (2nd lift)	5265711	429676	45.72	10-Jul-12	11-Jul-12	17:00	9:30	16.50	1	1.26											6			6	4.8
										1.5	1.26	1		1		0.8						3			3	2.4
										2	1.26	1	1			0.8										
										2.5	1.26	2	2			1.6										
										3	1.26						1	1			**0.8**					
										4	1.26						1		1		**0.8**					
										Total	**7.54**	**5**	**3**	**1**	**0**	**0.66**	**2**	**1**	**1**	**0**	**0.27**	**9**	**0**	**0**	**9**	**1.19**
	TOTAL										**19.24**	**7**	**4**	**2**	**0**	**0.36**	**4**	**2**	**2**	**0**	**0.21**	**13**	**0**	**1**	**12**	**0.68**

Total CPUE = total # of fish / 100 m of gill net / hour

Table F.21: Catch records for fish caught in Unnamed Pond, Côté Gold Baseline Study, 2012 and 2013.

b) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Yellow Perch			Eastern Newt		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	MT-1	5265756	429730	10-Jul-12	11-Jul-12	13:45	11:15	21.50	1	0.90			0	1	0	1.12
	MT-2	5265702	429721	10-Jul-12	11-Jul-12	13:50	11:15	21.42	1	0.89			0	1	0	1.12
	MT-3	5265699	429720	10-Jul-12	11-Jul-12	13:50	11:15	21.42	1	0.89			0	1	0	1.12
	MT-4	5265656	429677	10-Jul-12	11-Jul-12	14:00	11:20	21.33	1	0.89	1	0	1.13			0
	MT-5	5265702	429656	10-Jul-12	11-Jul-12	14:00	11:20	21.33	1	0.89			0			0
	MT-6	5265690	429579	10-Jul-12	11-Jul-12	14:00	11:22	21.37	1	0.89			0	2	0	2.25
	MT-7	5265762	429566	10-Jul-12	11-Jul-12	14:05	11:25	21.33	1	0.89	2	0	2.25	1	0	1.12
	MT-8	5265832	429583	10-Jul-12	11-Jul-12	14:05	11:25	21.33	1	0.89			0	1	0	1.12
	MT-9	5265857	429588	10-Jul-12	11-Jul-12	14:10	11:00	20.83	1	0.87			0	2	0	2.30
	MT-10	5265852	429656	10-Jul-12	11-Jul-12	14:15	11:30	21.25	1	0.89			0			0
	TOTAL							**213.12**	**10**	**8.88**	**3**	**0**	**0.34**	**9**	**0**	**1.01**

Total CPUE = total # of fish / trap*day

Table F.21: Catch records for fish caught in Unnamed Pond, Côté Gold Baseline Study, 2012 and 2013.

c) Seining

Year	Seining Station	Date	Time	Location (17n, NAD83)		Length (m)	Distance (m)	# of Hauls	Area Seined (m^2)	Northern Pike			Yellow Perch			Iowa Darter		
				Northing	Easting					Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	SN-1	10-Jul-12	15:40	5265769	429731	16	8	1	128	1	0	0.01	136	110	1.06	3	3	0.02

Total CPUE = # of fish / m^2

Table F.21: Catch records for fish caught in Unnamed Pond, Côté Gold Baseline Study, 2012 and 2013.

d) Mini Hoop Netting

Year	Hoop Net Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	Effort (trap*days)	Yellow Perch			Eastern Newt			Crayfish		
		Northing	Easting							Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	HN-1	5265853	429598	10-Jul-12	11-Jul-12	13:15	10:45	21.50	0.90	4	1	4.47	2	0	2.23	1	0	1.12
	HN-2	5265801	429718	10-Jul-12	11-Jul-12	13:35	11:00	21.42	0.89	3	0	3.36			0			0
	Total							**42.92**	**1.79**	**7**	**1**	**3.91**	**2**	**0**	**1.12**	**1**	**0**	**0.56**

Total CPUE = # of fish / trap*day

Table F.22: Catch records for fish caught in Upper Three Duck Lake, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/100 m of gill net)	Yellow Perch					Walleye					Northern Pike					Lake Whitefish					White Sucker				
		Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE
2013	GN-1	5267958	431990	45.7	4-Jun-13	5-Jun-13	16:16	8:10	15.90	1	1.21	1				0.8	2				1.7	2				1.7						1				0.8
										1.5	1.21						1				0.8	3				2.5										
										2	1.21						1				0.8															
										2.5	1.21						1				0.8	4				3.3										
										3	1.21																					2				1.7
										4	1.21																					3				2.5
										Total	**7.27**	**1**	**0**	**1**	**0**	**0.14**	**5**	**5**	**0**	**0**	**0.69**	**9**	**0**	**0**	**9**	**1.24**	**0**	**0**	**0**	**0**	**0.00**	**6**	**0**	**6**	**0**	**0.83**
	GN-2	5267554	431113	45.7	4-Jun-13	5-Jun-13	16:25	8:39	16.23	1.5	1.24											1				0.8										
										2	1.24											3				2.4						1				0.8
										2.5	1.24											3				2.4	1				0.8					
										3	1.24																1				0.8					
										4	1.24											1				0.8	1				0.8					
										Total	**1.24**											**8**	**0**	**7**	**1**	**6.47**	**3**	**0**	**0**	**3**	**2.43**	**1**	**0**	**1**	**0**	
	TOTAL										**8.50**	**1**	**0**	**1**	**0**	**0.12**	**5**	**5**	**0**	**0**	**0.59**	**17**	**0**	**7**	**10**	**2.00**	**3**	**0**	**0**	**3**	**0.35**	**7**	**0**	**7**	**0**	**0.82**

Total CPUE = total # of fish / 100 m of gill net / hour

Note - fish fates (processed, released, and additional mortalities) were not separated by mesh size

Table F.22: Catch records for fish caught in Upper Three Duck Lake, Côté Gold Baseline Study, 2012 and 2013.

b) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Yellow Perch		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE
2013	MT-1	5267556	430209	4-Jun-13	5-Jun-13	16:45	10:19	17.57	5	3.66			0
	MT-2	5267051	431065	4-Jun-13	5-Jun-13	17:00	10:27	17.45	5	3.64	1	0	0.28
	MT-3	5267536	431170	4-Jun-13	5-Jun-13	17:11	10:50	17.65	5	3.68			0
	MT-4	5267221	432081	4-Jun-13	5-Jun-13	17:26	10:37	17.18	5	3.58			0
	TOTAL							**69.85**	**20**	**14.55**	**1**	**0**	**0.07**

Total CPUE = total # of fish / trap*day

Table F.22: Catch records for fish caught in Upper Three Duck Lake, Côté Gold Baseline Study, 2012 and 2013.

c) Seining

Year	Seining Station	Date	Time	Location (17n, NAD83)		Length (m)	Distance (m)	# of Hauls	Area Seined (m^2)	Yellow Perch (adult) [a]			Yellow Perch (juvenile) [a]			Blacknose Shiner (adult) [a]			Blacknose Shiner (juvenile) [a]			Iowa Darter			Spottail Shiner			Northern Pike (YOY) [a]		
				Northing	Easting					Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2013	SN-1	4-Jun-13	18:00	5268140	431457	35	20	1	700	713	20	1.02			0	263	0	0.38			0	1	0	0.00	9	0	0.01			0
	SN-2	5-Jun-13	11:30	5267505	430198	25	20	1	500			0			0	3	0	0.01			0	3	0	0.01			0	1	0	0.00
	SN-3	5-Jun-13	11:55	5267037	431055	15	20	1	300			0	15	0	0.05			0			0	6	0	0.02			0			0
	SN-4	5-Jun-13	12:15	5267529	431797	30	20	1	600			0	19	0	0.03	30	0	0.05	550	0	0.92	1	0	0.00			0	23	0	0.04
	TOTAL								**2100**	**713**	**20**	**0.34**	**34**	**0**	**0.02**	**296**	**0**	**0.14**	**550**	**0**	**0.26**	**11**	**0**	**0.005**	**9**	**0**	**0.004**	**24**	**0**	**0.01**

Total CPUE = # of fish / m^2

[a] Fish were classified as adults unless otherwise specified in the field to be juveniles or young-of-the-year (YOY)

Table F.23: Catch records for fish caught in Weeduck Lake, Côté Gold Baseline Study, 2012 and 2013

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/100 m of gill net)	Yellow Perch					Northern Pike					Lake Whitefish					White Sucker				
		Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE
2013	GN-1	5268290	431419	45.7	4-Jun-13	5-Jun-13	17:20	9:57	16.62	1	1.27	1	1	0	0	0.8															
										1.5	1.27	1	1	0	0	0.8						2	0	1	1	1.6					
										2	1.27						1	0	1	0	0.8	3	0	1	2	2.4	1	0	0	1	0.8
										2.5	1.27											5	0	1	4	4.0					
										3	1.27											7	0	0	7	5.5					
										4	1.27											9	0	1	8	7.1					
										Total	**7.59**	**2**	**0**	**2**	**0**	**0.26**	**1**	**0**	**1**	**0**	**0.13**	**26**	**0**	**4**	**22**	**3.42**	**1**	**0**	**0**	**1**	**0.13**
	GN-2	5268277	430994	45.7	4-Jun-13	5-Jun-13	17:30	9:10	15.67	1	1.19																				
										1.5	1.19						1	1	0	0	0.8						1	0	0	1	0.8
										2	1.19						1	1	0	0	0.8						2			2	1.7
										2.5	1.19						3	3	0	0	2.5										
										3	1.19											1			1	0.8					
										4	1.19											1			1	0.8					
										Total	**7.16**						**5**	**5**	**0**	**0**	**0.70**	**2**	**0**	**0**	**2**	**0.28**	**3**	**0**	**0**	**3**	**0.42**
	TOTAL										**14.75**	**2**	**0**	**2**	**0**	**0.14**	**6**	**5**	**1**	**0**	**0.41**	**28**	**0**	**4**	**24**	**1.90**	**4**	**0**	**0**	**4**	**0.27**

Total CPUE = total # of fish / 100 m of gill net / hour

Table F.23: Catch records for fish caught in Weeduck Lake, Côté Gold Baseline Study, 2012 and 2013.

b) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Yellow Perch			Spottail Shiner			Slimy Sculpin			Crayfish			Comments
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	
2013	MT-1	5268551	431111	4-Jun-13	5-Jun-13	11:53	8:18	20.42	5	4.25	2	2	0.47			0			0			0	
	MT-2	5268584	431426	4-Jun-13	5-Jun-13	12:23	8:25	20.03	5	4.17	6	6	1.44	2	0	0.48			0	1	0	0.24	caught 1 giant water beetle
	MT-3	5268040	431252	4-Jun-13	5-Jun-13	13:18	8:42	19.40	5	4.04			0			0	1	0	0.25			0	
	MT-4	5268619	430894	4-Jun-13	5-Jun-13	14:00	8:34	18.57	5	3.87			0			0			0			0	caught 1 giant water beetle
	TOTAL							**78.42**	**20**	**16.34**	**8**	**8**	**0.49**	**2**	**0**	**0.12**	**1**	**0**	**0.06**	**1**	**0**	**0.06**	

Total CPUE = total # of fish / trap*day

Table F.23: Catch records for fish caught in Weeduck Lake, Côté Gold Baseline Study, 2012 and 2013.

c) Seining

Year	Seining Station	Date	Time	Location (17n, NAD83)		Haul #1		Haul #2		Haul #3		Area Seined (m^2)	Yellow Perch			Blacknose Shiner (adult) [a]			Blacknose Shiner (juvenile) [a]			Golden Shiner			Iowa Darter		
				Northing	Easting	Length (m)	Distance (m)	Length (m)	Distance (m)	Length (m)	Distance (m)		Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2013	SN-1	4-Jun-13	15:07	5268154	431230	13	4	15	5	-	-	127			0			0			0			0	5	0	0.04
	SN-2	4-Jun-13	16:00	5268576	431374	4	4	15	6	8	4	134	6	6	0.04	25	0	0.19	231	0	1.72	106	0	0.79	3	0	0.02
	SN-3	4-Jun-13	16:00	5268156	431508	8	2	8	3	-	-	40			0			0			0			0	5	0	0.13
	TOTAL											**301**	**6**	**6**	**0.02**	**25**	**0**	**0.08**	**231**	**0**	**0.77**	**106**	**0**	**0.35**	**13**	**0**	**0.04**

Total CPUE = # of fish / m^2

[a] Fish were classified as adults unless otherwise specified in the field to be juveniles

Table F.24: Catch records for fish caught in West Beaver Pond, Côté Gold Baseline Study, 2012 and 2013.

a) Gill Netting

Year	Gill Netting Station	Location (17n, NAD83)		Net Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hrs)	Mesh (in)	Effort (m*hr/100 m of gill net)	White Sucker					Pearl Dace				
		Northing	Easting									Caught	Processed	Released	Additional Mortalities	CPUE	Caught	Processed	Released	Additional Mortalities	CPUE
2012	GN-1	5267765	427734	45.72	15-Jul-12	16-Jul-12	16:25	9:20	16.92	1	1.29						71			71	55.1
										1.5	1.29										
										2	1.29										
										2.5	1.29	1		1		0.8					
										3	1.29										
										4	1.29										
										Total	**7.73**	**1**	**0**	**1**	**0**	**0.13**	**71**	**0**	**0**	**71**	**9.18**

Total CPUE = total # of fish / 100 m of gill net / hour

Table F.24: Catch records for fish caught in West Beaver Pond, Côté Gold Baseline Study, 2012 and 2013

b) Minnow Trapping

Year	Minnow Trapping Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*days)	Fathead Minnow			Finescale Dace			Northern Redbelly Dace			Pearl Dace			Central Mudminnow			Iowa Darter		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	MT-1	5267839	427639	15-Jul-12	16-Jul-12	14:00	8:45	18.75	2	1.56			0	3	0	1.92			0	1	0	0.64	3	0	1.92			0
	MT-2	5267931	427743	15-Jul-12	16-Jul-12	14:05	8:50	18.75	2	1.56	2	0	1.28	38	0	24.32			0			0			0			0
	MT-3	5267844	427758	15-Jul-12	16-Jul-12	14:05	8:55	18.83	2	1.57			0			0			0			0	4	0	2.55	1	0	0.64
	MT-4	5267806	427828	15-Jul-12	16-Jul-12	14:10	9:00	18.83	2	1.57	2	0	1.27	19	0	12.11	1	0	0.64			0	1	0	0.64			0
	MT-5	5267766	427764	15-Jul-12	16-Jul-12	14:15	9:10	18.92	2	1.58			0	1	0	0.63	1	0	0.63	1	0	0.63	4	0	2.54			0
	MT-6	5267717	427725	15-Jul-12	16-Jul-12	14:20	9:15	18.92	2	1.58	5	0	3.17	43	0	27.28	20	0	12.69			0	1	0	0.63	1	0	0.63
	Total							**113.00**	**12**	**9.42**	**9**	**0**	**0.96**	**104**	**0**	**11.04**	**22**	**0**	**2.34**	**2**	**0**	**0.21**	**13**	**0**	**1.38**	**2**	**0**	**0.21**

Total CPUE = total # of fish / trap*day

Table F.24: Catch records for fish caught in West Beaver Pond, Côté Gold Baseline Study, 2012 and 2013.

c) Seining

Year	Seining Station	Date	Time	Location (17n, NAD83)		Length (m)	Distance (m)	# of Hauls	Area Seined (m^2)	Fathead Minnow			Finescale Dace			Northern Redbelly Dace			Pearl Dace			Juvenile Dace Spp.			Golden Shiner			Central Mudminnow			Iowa Darter		
				Northing	Easting					Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	SN-1	15-Jul-12	15:15	5267857	427671	6	6	1	36	1	0	0.03	11	0	0.31	1	0	0.03	28	0	0.78	~200	0	5.56	2	0	0.06	1	0	0.03	1	0	0.03
	SN-2	15-Jul-12	15:30	5267878	427757	6	6	1	36	2	0	0.06	3	0	0.08	1	0	0.03			0.00	~100	0	2.78			0	6	0	0.17	10	0	0.28
	SN-3	15-Jul-12	15:40	5267791	427836	6	6	1	36	17	0	0.47	30	0	0.83	6	0	0.17	7	0	0.19	~300	0	8.33			0	25	0	0.69	1	0	0.03
	SN-4	15-Jul-12	16:15	5267884	427537	5	8	1	40	35	0	0.88	30	0	0.75	18	0	0.45	21	0	0.53	~200	0	5.00	2	0	0.05		0	0	3	0	0.08
	TOTAL								**148**	**55**	**0**	**0.37**	**74**	**0**	**0.50**	**26**	**0**	**0.18**	**56**	**0**	**0.38**	**800**	**0**	**5.41**	**4**	**0**	**0.03**	**32**	**0**	**0.22**	**15**	**0**	**0.10**

Total CPUE = # of fish / m^2

Table F.24: Catch records for fish caught in West Beaver Pond, Côté Gold Baseline Study, 2012 and 2013.

d) Small Hoop Netting

Year	Hoop Net Station	Location (17n, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	Effort (trap*days)	Fathead Minnow			Finescale Dace			Northern Redbelly Dace			Pearl Dace			Golden Shiner			Central Mudminnow		
		Northing	Easting							Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
2012	HN-1	5267845	427744	15-Jul-12	16-Jul-12	14:30	9:35	19.08	0.80	54	0	67.91	64	0	80.49	24	0	30.18	49	0	61.62	6	0	7.55	19	0	23.90

Total CPUE = # of fish / trap*day

Table F.25: Individual fish data for fish caught in Bagsverd Creek (upper), Côté Gold Baseline Study, 2012 and 2013.

Year	Location	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Notes
2012	Lower Bagsverd Creek	Northern Pike	9-Jul-12	BagC-NP-01	34.6	32.1	>100	pezola broken
			9-Jul-12	BagC-NP-02	41.2	38.6	>100	pezola broken
			10-Jul-12	BagC-NP-03	25	23	>100	pezola broken
			10-Jul-12	BagC-NP-04	44.5	42	>100	pezola broken
			10-Jul-12	BagC-NP-05	38.5	40	>100	pezola broken
		White Sucker	10-Jul-12	BagC-WS-01	23.8	22.5	131	
		Yellow Perch	9-Jul-12	BagC-YP-01	22	20.9	>100	pezola broken
			9-Jul-12	BagC-YP-02	14.3	30.6	36	
			9-Jul-12	BagC-YP-03	15.6	14.7	42	
			9-Jul-12	BagC-YP-04	14.8	13.8	40	
			9-Jul-12	BagC-YP-05	14.2	13.5	33	
			9-Jul-12	BagC-YP-06	15.7	14.8	44	
			9-Jul-12	BagC-YP-07	11.5	10.9	18	
			9-Jul-12	BagC-YP-08	11.7	11.1	19	
			10-Jul-12	BagC-YP-09	9.7	9.1	-	
			10-Jul-12	BagC-YP-10	10.9	10.4	15	
			10-Jul-12	BagC-YP-11	11	10.4	13	
			10-Jul-12	BagC-YP-12	10.7	10.2	13.5	
			10-Jul-12	BagC-YP-13	10.4	10.1	14	

Table F.26: Individual fish data for fish caught in Bagsverd Lake, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Notes
2012	Northern Pike	11-Jul-12	BL-NP-01	44.1	41.3	495				blackspot
		11-Jul-12	BL-NP-02	46.5	43	540				blackspot
		11-Jul-12	BL-NP-03	59.3	55.8	1,050				
		11-Jul-12	BL-NP-04	54.6	52.1	875				blackspot
		11-Jul-12	BL-NP-05	64.9	60	1,460				
		11-Jul-12	BL-NP-06	45.4	42.5	490				blackspot
		11-Jul-12	BL-NP-07	44.3	41.5	470				blackspot
		11-Jul-12	BL-NP-08	49.1	45.8	650				
		12-Jul-12	BL-NP-09	69.8	65.8	-				partly eaten, no weight was recorded
		12-Jul-12	BL-NP-16	59.4	56	1,140				
		12-Jul-12	BL-NP-17	51.6	48.2	910				
		12-Jul-12	BL-NP-18	51.9	48.6	760				
		12-Jul-12	BL-NP-19	40.3	37.6	335				
		12-Jul-12	BL-NP-20	55.7	52.8	1,030	✓			
		12-Jul-12	BL-NP-21	56.2	52.8	925	✓			
		12-Jul-12	BL-NP-22	62.7	59.1	1,300	✓			
		12-Jul-12	BL-NP-23	54.1	50.6	990	✓			
	Walleye	12-Jul-12	BL-WA-01	23.1	21.7	105				
		12-Jul-12	BL-WA-02	23.5	21.9	105				
		12-Jul-12	BL-WA-03	23.8	22.2	120				
		12-Jul-12	BL-WA-04	22.3	20.8	95				
		12-Jul-12	BL-WA-05	23	21.5	105				
		12-Jul-12	BL-WA-06	41.4	39	630	✓			
		12-Jul-12	BL-WA-07	40	37.4	585	✓			
		12-Jul-12	BL-WA-08	32.8	30.6	310	✓			
		12-Jul-12	BL-WA-09	36	34	415	✓			
		12-Jul-12	BL-WA-10	32.8	30.4	285	✓			
	White Sucker	12-Jul-12	BL-WS-01	46.2	42.6	970				female
		12-Jul-12	BL-WS-02	44.2	40.6	860				male
		12-Jul-12	BL-WS-03	33	31.2	440				
		12-Jul-12	BL-WS-04	48.5	44.6	1,120				
		12-Jul-12	BL-WS-05	45.9	42.1	1,020				female
		12-Jul-12	BL-WS-06	47.2	42.9	1,040				female
		12-Jul-12	BL-WS-07	44.8	40.8	-				partly eaten, no weight was recorded
		12-Jul-12	BL-WS-08	33.4	31	430				juvenile
		12-Jul-12	BL-WS-09	-	-	-				lost
		12-Jul-12	BL-WS-10	32.7	29.8	380				
		12-Jul-12	BL-WS-11	33	30.2	335				
		12-Jul-12	BL-WS-12	34.9	31.8	415				
		12-Jul-12	BL-WS-13	38.3	35.5	615				
		12-Jul-12	BL-WS-14	31.2	28.8	295				
		12-Jul-12	BL-WS-15	32.5	29.8	340				
		12-Jul-12	BL-WS-16	38.6	35.3	620				juvenile
		12-Jul-12	BL-WS-17	29.6	27.2	260				
		12-Jul-12	BL-WS-18	34.4	32.2	425				
		12-Jul-12	BL-WS-19	-	-	-				lost
		12-Jul-12	BL-WS-20	23.5	21.5	140				
		12-Jul-12	BL-WS-21	24.5	22.6	155				
		12-Jul-12	BL-WS-22	28.5	26.6	260				
		12-Jul-12	BL-WS-23	19.3	17.8	75				
		12-Jul-12	BL-WS-24	48	44.2	1,040				female
	Yellow Perch	11-Jul-12	BL-YP-01	10.2	9.6	12	✓			
		11-Jul-12	BL-YP-02	10.4	9.9	13				
		11-Jul-12	BL-YP-03	10.9	10.4	15				
		11-Jul-12	BL-YP-04	9.4	9.1	11				broken tail
		11-Jul-12	BL-YP-05	10.6	9.4	11				
		11-Jul-12	BL-YP-06	11	10.4	15				
		11-Jul-12	BL-YP-07	10	9.5	20				
		11-Jul-12	BL-YP-08	11.1	10.5	15				
		11-Jul-12	BL-YP-09	12.5	11.8	22				
		11-Jul-12	BL-YP-10	11.5	10.9	16				
		11-Jul-12	BL-YP-11	10.6	9.9	13				
		11-Jul-12	BL-YP-12	10.1	9.6	12				
		11-Jul-12	BL-YP-13	9.9	9.4	11				
		11-Jul-12	BL-YP-14	10.2	9.5	11				
		11-Jul-12	BL-YP-15	10.3	9.6	13				
		11-Jul-12	BL-YP-16	11.6	10.9	18				
		11-Jul-12	BL-YP-17	10.8	10	15				
		11-Jul-12	BL-YP-18	15.2	14.4	33				
		11-Jul-12	BL-YP-19	16.4	15.5	45				
		11-Jul-12	BL-YP-20	18.3	17.4	74				
		11-Jul-12	BL-YP-21	18.7	17.8	70				
		11-Jul-12	BL-YP-22	10.6	9.9	12				
		11-Jul-12	BL-YP-23	11.8	11.3	19				
		11-Jul-12	BL-YP-24	10.9	10.4	15				
		11-Jul-12	BL-YP-25	11.2	10.5	16				
		11-Jul-12	BL-YP-26	12.4	11.8	22				
		11-Jul-12	BL-YP-27	10	9.4	11				
		11-Jul-12	BL-YP-28	10.4	9.7	12				
		11-Jul-12	BL-YP-29	10.4	9.8	11				
		11-Jul-12	BL-YP-30	10.5	9.7	12				
		11-Jul-12	BL-YP-31	16	15.1	41				
		11-Jul-12	BL-YP-32	10.6	10.9	16				
		11-Jul-12	BL-YP-33	18.5	17.6	84				
		11-Jul-12	BL-YP-34	20.9	20.1	100				
		12-Jul-12	BL-YP-25	23.5	22.5	160				

Table F.26: Individual fish data for fish caught in Bagsverd Lake, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Notes
2013	Northern Pike	5-Jun-13	BagL-NP01	44.3	41.5	520				
		5-Jun-13	BagL-NP02	40.6	38.0	390				
		5-Jun-13	BagL-NP03	93.0	89.0	>5,000				
		5-Jun-13	BagL-NP04	63.6	60.5	1,700		Sc	6	
		5-Jun-13	BagL-NP05	54.0	50.7	865		Sc	3	
		5-Jun-13	BagL-NP06	54.5	51.1	1,010		Sc	3	
		5-Jun-13	BagL-NP07	65.3	61.5	1,680		Sc	7	
		5-Jun-13	BagL-NP08	43.0	40.2	440		Sc	2	
		5-Jun-13	BagL-NP09	53.3	52.1	910				
		5-Jun-13	BagL-NP10	48.2	45.4	715				
		5-Jun-13	BagL-NP11	51.7	48.8	740				
		5-Jun-13	BagL-NP12	52.8	49.4	860				
	Walleye	5-Jun-13	BagL-WA01	29.0	27.2	215	✓	Sc, Ds	2	
		5-Jun-13	BagL-WA02	37.8	35.8	460	✓	Sc, Ds	3	
		5-Jun-13	BagL-WA03	38.1	36.0	530	✓	Sc, Ds	3	
		5-Jun-13	BagL-WA04	27.6	25.9	170	✓	Sc, Ds	2	
		5-Jun-13	BagL-WA05	34.7	33.7	330	✓	Sc, Ds	3	
	Whitefish	5-Jun-13	BagL-WF01	49.7	44.4	1,230				
		5-Jun-13	BagL-WF02	43.2	38.2	900				
		5-Jun-13	BagL-WF03	33.3	29.5	360				
		5-Jun-13	BagL-WF04	48.8	44.1	1,450				
		5-Jun-13	BagL-WF05	41.1	36.7	690				
	Yellow Perch	5-Jun-13	BagL-YP01	4.7	4.4	1.0				
		5-Jun-13	BagL-YP02	6.0	5.6	1.3				
		5-Jun-13	BagL-YP03	7.8	7.4	4.3	✓ Comp1	Sc, Ds	2	
		5-Jun-13	BagL-YP04	5.3	5.1	1.2	✓ Comp1	Sc, Ds	1	
		5-Jun-13	BagL-YP05	6.9	6.6	2.4	✓ Comp2	Sc, Ds	1	
		5-Jun-13	BagL-YP06	6.6	6.3	2.4	✓ Comp2	Sc, Ds	1	
		5-Jun-13	BagL-YP07	5.5	5.2	1.2	✓ Comp2	Sc, Ds	1	
		5-Jun-13	BagL-YP08	5.7	5.4	1.4				

Table F.27: Individual fish data for fish caught in Bagsverd Pond, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)
2012	Fathead Minnow	15-Jul-12	FHM-01	*	*	1.885
		15-Jul-12	FHM-02	*	*	2.613
		15-Jul-12	FHM-03	*	*	3.848
		15-Jul-12	FHM-04	*	*	3.600
		15-Jul-12	FHM-05	*	*	3.152
		15-Jul-12	FHM-06	*	*	3.503
		15-Jul-12	FHM-07	*	*	2.536
		15-Jul-12	FHM-08	*	*	3.299
		15-Jul-12	FHM-09	*	*	4.144
		15-Jul-12	FHM-10	*	*	2.540
	Northern Redbelly Dace	15-Jul-12	RBD-01	*	*	1.273
		15-Jul-12	RBD-02	*	*	2.322
		15-Jul-12	RBD-03	*	*	1.420
		15-Jul-12	RBD-04	*	*	1.225
		15-Jul-12	RBD-05	*	*	1.661
		15-Jul-12	RBD-06	*	*	1.702
		15-Jul-12	RBD-07	*	*	1.254
		15-Jul-12	RBD-08	*	*	1.290
		15-Jul-12	RBD-09	*	*	1.527
		15-Jul-12	RBD-10	*	*	0.889
	Finescale Dace	15-Jul-12	FSD-01	*	*	2.210
		15-Jul-12	FSD-02	*	*	2.812
		15-Jul-12	FSD-03	*	*	3.081
		15-Jul-12	FSD-04	*	*	2.551
		15-Jul-12	FSD-05	*	*	4.530
		15-Jul-12	FSD-06	*	*	2.642
		15-Jul-12	FSD-07	*	*	3.074
		15-Jul-12	FSD-08	*	*	2.810
		15-Jul-12	FSD-09	*	*	2.607
		15-Jul-12	FSD-10	*	*	2.747
	Central Mudminnow	15-Jul-12	CMM-01	*	*	13.053
		15-Jul-12	CMM-02	*	*	11.923
		15-Jul-12	CMM-03	*	*	6.290
		15-Jul-12	CMM-04	*	*	4.519
		15-Jul-12	CMM-05	*	*	6.426
		15-Jul-12	CMM-06	*	*	4.224
		15-Jul-12	CMM-07	*	*	4.081
		15-Jul-12	CMM-08	*	*	3.063
		15-Jul-12	CMM-09	*	*	3.293
		15-Jul-12	CMM-10	*	*	3.480

* Measurements not obtained.

Table F.28: Individual fish data for fish caught in Beaver Pond, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected
2012	Fathead Minnow	11-Jul-12	FHM-01	62.36	60.26	2.650	
		11-Jul-12	FHM-02	68.57	64.56	3.377	
		11-Jul-12	FHM-03	58.60	55.89	2.210	
		11-Jul-12	FHM-04	71.63	67.93	3.986	
		11-Jul-12	FHM-05	55.93	52.90	1.846	
		11-Jul-12	FHM-06	65.05	60.14	2.805	
		11-Jul-12	FHM-07	57.55	54.18	1.837	
		11-Jul-12	FHM-08	68.35	64.79	3.507	
		11-Jul-12	FHM-09	65.57	62.71	2.907	
		11-Jul-12	FHM-10	77.16	71.10	4.970	
	Northern Redbelly Dace	11-Jul-12	NRD-01	59.95	55.61	2.120	✓ NRBD-Comp
		11-Jul-12	NRD-02	49.67	47.56	1.278	
		11-Jul-12	NRD-03	48.72	43.94	1.096	
		11-Jul-12	NRD-04	47.63	44.39	1.125	
		11-Jul-12	NRD-05	51.25	47.37	1.348	
		11-Jul-12	NRD-06	49.25	45.67	1.283	
		11-Jul-12	NRD-07	52.37	48.93	1.415	
		11-Jul-12	NRD-08	51.60	47.27	1.490	
		11-Jul-12	NRD-09	52.12	48.13	1.222	
		11-Jul-12	NRD-10	50.97	47.40	1.284	
	Finescale Dace	11-Jul-12	FSD-01	81.64	76.45	5.507	
		11-Jul-12	FSD-02	79.81	73.45	4.610	
		11-Jul-12	FSD-03	84.57	78.44	5.828	
		11-Jul-12	FSD-04	62.23	58.72	2.646	
		11-Jul-12	FSD-05	65.46	60.56	2.953	
		11-Jul-12	FSD-06	85.90	80.25	5.729	
		11-Jul-12	FSD-07	68.44	64.59	3.515	
		11-Jul-12	FSD-08	73.34	68.83	4.278	
		11-Jul-12	FSD-09	70.91	65.54	3.550	
		11-Jul-12	FSD-10	70.30	65.63	3.730	

Table F.29: Individual fish data for fish caught in Chester Lake, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Notes
2013	Northern Pike	7-Jun-13	CheL-NP01	44.3	42.3	580		Sc		blackspot
		7-Jun-13	CheL-NP02	51.1	48.2	710		Sc		
		7-Jun-13	CheL-NP03	49.1	46.1	640		Sc, CL		blackspot
		7-Jun-13	CheL-NP04	54.1	51.2	820		Sc, CL		blackspot
		7-Jun-13	CheL-NP05	50.5	47.2	600		Sc, CL		
		7-Jun-13	CheL-NP06	53.1	50.5	840		Sc, CL		
		7-Jun-13	CheL-NP07	61.2	58.1	1,240	✓	Sc, CL	7	
		7-Jun-13	CheL-NP08	66.1	63.0	1,380	✓	Sc, CL	8	muscle duplicate
		7-Jun-13	CheL-NP09	56.2	53.1	920	✓	Sc, CL	7	
		7-Jun-13	CheL-NP10	51.8	49.2	690	✓	Sc, CL	6	
		7-Jun-13	CheL-NP11	43.4	41.0	465	✓	Sc, CL	4	
	Whitefish	7-Jun-13	CheL-WF01	48.0	43.5	1,440		Sc, PF	16	
		7-Jun-13	CheL-WF02	47.1	42.5	1,280		Sc, PF	15	
		7-Jun-13	CheL-WF03	47.2	42.5	1,440		Sc, PF		
		7-Jun-13	CheL-WF04	47.1	41.8	1,240		Sc, PF		
		7-Jun-13	CheL-WF05	45.0	40.3	1,060		Sc, PF	12	
		7-Jun-13	CheL-WF06	46.5	41.6	1,280		Sc, PF	16	
		7-Jun-13	CheL-WF07	43.5	38.7	960		Sc, PF	8	
		7-Jun-13	CheL-WF08	47.0	42.2	1,520				
		7-Jun-13	CheL-WF09	44.3	39.4	940				
		7-Jun-13	CheL-WF10	47.0	42.2	1,300				
		7-Jun-13	CheL-WF11	46.3	41.6	1,300				
		7-Jun-13	CheL-WF12	48.0	43.3	1,380				
		7-Jun-13	CheL-WF13	48.5	43.5	1,390				
		7-Jun-13	CheL-WF14	44.9	40.8	1,190				
		7-Jun-13	CheL-WF15	46.0	41.2	1,240				
		7-Jun-13	CheL-WF16	46.9	41.1	1,170				
		7-Jun-13	CheL-WF17	45.8	41.2	990				
	White Sucker	7-Jun-13	CheL-WS01	49.8	45.8	1,460				
		7-Jun-13	CheL-WS02	55.4	52.0	1,900				
		7-Jun-13	CheL-WS03	51.8	48.0	1,440				
		7-Jun-13	CheL-WS04	44.2	41.1	1,070				
		7-Jun-13	CheL-WS05	17.8	16.9	55				
		7-Jun-13	CheL-WS06	46.4	42.8	980				
		7-Jun-13	CheL-WS07	49.3	45.0	1,380				
		7-Jun-13	CheL-WS08	18.6	17.5	72				
		7-Jun-13	CheL-WS09	18.1	17.1	67				
		7-Jun-13	CheL-WS10	22.1	21.0	150				
		7-Jun-13	CheL-WS11	37.0	34.5	620				
		7-Jun-13	CheL-WS12	41.6	39.0	810				
		7-Jun-13	CheL-WS13	38.0	35.2	750				
	Yellow Perch	7-Jun-13	CheL-YP01	25.5	24.8	210		Sc, Ds	6	
		7-Jun-13	CheL-YP02	27.7	26.7	260		Sc, Ds	7	
		7-Jun-13	CheL-YP03	24.6	23.7	205		Sc, Ds		
		7-Jun-13	CheL-YP04	19.0	18.6	84		Sc, Ds	5	
		7-Jun-13	CheL-YP05	18.8	18.2	82		Sc		
		7-Jun-13	CheL-YP06	22.8	22.0	150				
		7-Jun-13	CheL-YP07	18.8	17.5	89				
		7-Jun-13	CheL-YP08	9.1	8.8	8.50	✓	Sc, Ds	3	
		7-Jun-13	CheL-YP09	10.8	10.2	14.00	✓	Sc, Ds		
		7-Jun-13	CheL-YP10	9.9	9.4	9.75	✓	Sc, Ds	2	
		7-Jun-13	CheL-YP11	10.5	10.1	13.75	✓	Sc, Ds		
		7-Jun-13	CheL-YP12	10.0	9.5	10.00	✓	Sc, Ds	3	
		7-Jun-13	CheL-YP13	23.8	23.0	165.00		Sc, Ds		
		7-Jun-13	CheL-YP14	17.5	16.6	65.00				
		7-Jun-13	CheL-YP15	20.2	19.1	115.00				
		7-Jun-13	CheL-YP16	10.8	10.3	14.25				
		7-Jun-13	CheL-YP17	13.1	12.0	29.00				
		7-Jun-13	CheL-YP18	10.9	10.4	12.25				
		7-Jun-13	CheL-YP19	10.2	9.8	13.00				
		7-Jun-13	CheL-YP20	11.7	11.2	16.25				
		7-Jun-13	CheL-YP21	7.0	6.6	3.1	✓ Comp1	Sc, Ds	1	blackspot
		7-Jun-13	CheL-YP22	6.8	5.9	2.0	✓ Comp1	Sc, Ds	1	
		7-Jun-13	CheL-YP23	6.3	6.0	2.5	✓ Comp1			
		7-Jun-13	CheL-YP24	5.1	4.7	0.75	✓ Comp2			blackspot
		7-Jun-13	CheL-YP25	4.8	4.6	0.6	✓ Comp2	Sc, Ds	1	blackspot
		7-Jun-13	CheL-YP26	4.9	4.6	0.7	✓ Comp2	Sc, Ds	1	blackspot
		7-Jun-13	CheL-YP27	4.7	4.5	0.7	✓ Comp2			blackspot
		7-Jun-13	CheL-YP28	5.0	4.7	0.6	✓ Comp2			blackspot
		7-Jun-13	CheL-YP29	5.0	4.7	0.65	✓ Comp2			
		7-Jun-13	CheL-YP30	5.5	5.2	1.6	✓ Comp2			

Table F.30: Individual fish data for fish caught in Clam Lake, Côté Gold Baseline Study, 2012 and 2013

Year	Location	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Notes
2012	Clam Lake	Burbot	7-Jul-12	BBT-01	17.0	-	30	✓			
		Northern Pike	5-Jul-12	NP-01	59.5	55.6	700	✓			skinny; lots of leeches
			5-Jul-12	NP-02	54.7	51.8	765				lots of leeches
		Smallmouth Bass	6-Jul-12	SMB-11	29.2	28.0	222				
			6-Jul-12	SMB-12	44.7	42.4	1,220				
			6-Jul-12	SMB-13	46.0	44.0	1,590				
			6-Jul-12	SMB-14	19.8	18.9	96				
			6-Jul-12	SMB-15	27.4	26.3	270				
			6-Jul-12	SMB-16	42.5	40.8	1,080				
			7-Jul-12	SMB-17	36.6	34.9	625	✓			
			7-Jul-12	SMB-18	38.1	36.0	850	✓			
			5-Jul-12	SMB-01	3.628	-	0.571				
			5-Jul-12	SMB-02	5.270	-	1.501				
			5-Jul-12	SMB-03	2.776	-	0.259				
			5-Jul-12	SMB-04	4.033	-	0.761				
			5-Jul-12	SMB-05	3.955	-	0.678				
			5-Jul-12	SMB-06	3.775	-	0.582				
			5-Jul-12	SMB-07	4.061	-	0.660				
			5-Jul-12	SMB-08	3.929	-	0.745				
			5-Jul-12	SMB-09	3.793	-	0.735				
			5-Jul-12	SMB-10	3.417	-	0.486				
		Yellow Perch	5-Jul-12	YP-01	6.495	-	2.026	✓			
			5-Jul-12	YP-02	5.646	-	1.536				
			5-Jul-12	YP-03	6.926	-	3.240				
			5-Jul-12	YP-04	5.565	-	1.330				
			5-Jul-12	YP-05	4.568	-	0.877				
			5-Jul-12	YP-06	5.547	-	1.349				
			5-Jul-12	YP-07	6.305	-	2.094				
			5-Jul-12	YP-08	4.496	-	0.512				
			5-Jul-12	YP-09	4.567	-	0.820				
			5-Jul-12	YP-10	4.554	-	1.054				
		Golden Shiner	5-Jul-12	GS-01	7.5	6.7	-				
		Blacknose Shiner	5-Jul-12	-	4.838	-	0.767	✓			
			5-Jul-12	-	4.151	-	0.632				
			5-Jul-12	-	4.640	-	0.774				
			5-Jul-12	-	4.453	-	0.796				
			5-Jul-12	-	4.264	-	0.667				
			5-Jul-12	-	5.233	-	1.233				
			5-Jul-12	-	4.347	-	0.639				
			5-Jul-12	-	4.165	-	0.571				
			5-Jul-12	-	4.377	-	0.690				
			5-Jul-12	-	4.242	-	0.695				
	East Clam Lake	Iowa Darter	5-Jul-12	-	4.982	-	-	✓			meristics obtained after samples were frozen
			5-Jul-12	-	5.038	-	-				
			5-Jul-12	-	4.964	-	-				
		Johnny Darter	5-Jul-12	-	4.370	-	-	✓			meristics obtained after samples were frozen
			5-Jul-12	-	4.579	-	-				
			5-Jul-12	-	4.571	-	-				
			5-Jul-12	-	4.556	-	-				
		Yellow Perch	5-Jul-12	-	4.15	-	-	✓			meristics obtained after samples were frozen
			5-Jul-12	-	4.62	-	-				
			5-Jul-12	-	4.42	-	-				
			5-Jul-12	-	4.19	-	-				
			5-Jul-12	-	4.06	-	-				
			5-Jul-12	-	4.54	-	-				
			5-Jul-12	-	4.27	-	-				
			5-Jul-12	-	4.24	-	-				
			5-Jul-12	-	3.92	-	-				
			5-Jul-12	-	4.34	-	-				
			5-Jul-12	-	4.70	-	-				
			5-Jul-12	-	4.11	-	-				
			5-Jul-12	-	4.16	-	-				
			5-Jul-12	-	4.25	-	-				
			5-Jul-12	-	4.01	-	-				
2013	Clam Lake	Northern Pike	8-Jun-13	ClaL-NP01	49.2	46.2	615	✓	Sc, CL	5	muscle duplicate
			9-Jun-13	ClaL-NP02	52.1	49.3	780		Sc		
			9-Jun-13	ClaL-NP03	45.8	43.1	465		Sc		
			9-Jun-13	ClaL-NP04	53.2	49.7	730		Sc		
			9-Jun-13	ClaL-NP05	54.6	52.0	1,100		Sc, CL	6	
			9-Jun-13	ClaL-NP06	47.7	45.1	580	✓	Sc, CL	4	
			9-Jun-13	ClaL-NP07	45.5	42.9	530	✓	Sc, CL	4	
			9-Jun-13	ClaL-NP08	53.0	49.9	750	✓	Sc, CL	6	
			9-Jun-13	ClaL-NP09	50.6	47.8	690	✓	Sc, CL	4	
		Smallmouth Bass	9-Jun-13	ClaL-SMB01	43.7	41.7	1,180		Sc, Ds		
			9-Jun-13	ClaL-SMB02	15.4	14.4	42		Sc, Ds		
		Yellow Perch	8-Jun-13	ClaL-YP01	5.7	5.4	1.6	✓ Comp1	Sc, Ds	1	
			8-Jun-13	ClaL-YP02	5.6	5.3	1.1	✓ Comp1	Sc, Ds	1	
			8-Jun-13	ClaL-YP03	5.8	5.5	1.45	✓ Comp1	Sc, Ds	1	blackspot
			8-Jun-13	ClaL-YP04	6.2	6.0	1.9	✓ Comp1			
			8-Jun-13	ClaL-YP05	6.1	5.8	1.6	✓ Comp1			
			8-Jun-13	ClaL-YP06	6.1	5.9	1.6	✓ Comp2	Sc, Ds	1	
			8-Jun-13	ClaL-YP07	6.3	6.0	1.8	✓ Comp2	Sc, Ds	1	blackspot
			8-Jun-13	ClaL-YP08	6.1	5.8	1.75	✓ Comp2			
			8-Jun-13	ClaL-YP09	7.1	6.8	2.7	✓ Comp3	Sc, Ds	1	
			8-Jun-13	ClaL-YP10	7.2	6.9	2.9	✓ Comp3	Sc, Ds	2	
			8-Jun-13	ClaL-YP11	7.0	6.8	2.5	✓ Comp3			
			8-Jun-13	ClaL-YP12	7.7	7.2	3.5	✓ Comp4	Sc, Ds	1	
			8-Jun-13	ClaL-YP13	7.1	6.8	3.1	✓ Comp4	Sc, Ds	1	
			8-Jun-13	ClaL-YP14	7.1	6.8	2.8	✓ Comp4			
			8-Jun-13	ClaL-YP15	6.1	5.8	1.9	✓ Comp5			
			8-Jun-13	ClaL-YP16	6.6	6.4	2.2	✓ Comp5			
			8-Jun-13	ClaL-YP17	6.7	6.4	2.3	✓ Comp5			
			8-Jun-13	ClaL-YP18	6.1	5.9	1.8				
			8-Jun-13	ClaL-YP19	7.0	6.6	2.8				
			8-Jun-13	ClaL-YP20	6.7	6.4	2.5				

Table F.31: Individual fish data for fish caught in Côté Lake, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Notes
2012	Northern Pike	5-Jul-12	CL-NP-01	44.8	42.4	410		blackspot
		5-Jul-12	CL-NP-02	57.3	53.7	1,050		
		5-Jul-12	CL-NP-03	55.6	53.0	1,050	✓	mortality
		5-Jul-12	CL-NP-04	43.8	41.6	435		blackspot
		5-Jul-12	CL-NP-05	39.6	36.5	325		
		5-Jul-12	CL-NP-06	44.9	42.2	480		skinny
		5-Jul-12	CL-NP-07	48.0	45.3	415		
		5-Jul-12	CL-NP-08	36.0	33.8	220		
		5-Jul-12	CL-NP-09	17.9	17.0	32		
		5-Jul-12	CL-NP-10	18.5	17.2	32		
		5-Jul-12	CL-NP-11	38.3	35.6	250		
		5-Jul-12	CL-NP-12	32.4	30.5	186		
		5-Jul-12	CL-NP-13	32.1	30.0	160		
		5-Jul-12	CL-NP-14	39.2	36.4	310		blackspot
		5-Jul-12	CL-NP-15	43.8	40.9	415		blackspot
		5-Jul-12	CL-NP-16	16.0	15.2	22		
		5-Jul-12	CL-NP-17	32.0	29.9	175		blackspot
		5-Jul-12	CL-NP-18	35.0	32.8	250		blackspot
		5-Jul-12	CL-NP-19	33.6	31.6	195		blackspot
		5-Jul-12	CL-NP-20	46.2	44.5	410		
		5-Jul-12	CL-NP-21	37.1	34.9	250		blackspot
		5-Jul-12	CL-NP-22	66.7	64.2	1,600		
		5-Jul-12	CL-NP-23	43.9	41.4	430		blackspot
		5-Jul-12	CL-NP-24	40.7	38.6	315		
		5-Jul-12	CL-NP-25	41.1	38.7	340		blackspot
		5-Jul-12	CL-NP-26	40.6	38.0	370		
		5-Jul-12	CL-NP-27	42.3	39.8	405		
		5-Jul-12	CL-NP-28	38.4	36.2	280		
		6-Jul-12	CL-NP-29	53.1	-	-		
		6-Jul-12	CL-NP-30	30.5	28.2	156		
		6-Jul-12	CL-NP-31	37.6	35.1	272		
		6-Jul-12	CL-NP-32	41.4	39.2	400	✓	
		6-Jul-12	CL-NP-33	18.8	18.2	40	✓	
		6-Jul-12	CL-NP-33	36.6	34.5	280		
		6-Jul-12	CL-NP-34	32.6	30.5	180		blackspot
		6-Jul-12	CL-NP-35	40.3	38.1	390		
		6-Jul-12	CL-NP-36	46.8	44.0	480		
		6-Jul-12	CL-NP-37	54.1	51.1	800		
		6-Jul-12	CL-NP-38	36.6	34.5	770		
		6-Jul-12	CL-NP-39	32.2	30.1	182		
		6-Jul-12	CL-NP-40	48.9	45.9	520	✓	
		6-Jul-12	CL-NP-41	62.3	59.4	1,325		
		6-Jul-12	CL-NP-42	48.5	45.6	670		
		7-Jul-12	CL-NP-43	21.7	20.6	47		
		7-Jul-12	CL-NP-44	25.0	23.5	74		
		7-Jul-12	CL-NP-45	62.6	59.4	1,575		
		7-Jul-12	CL-NP-46	18.7	17.6	35	✓	
		7-Jul-12	CL-NP-47	34.4	32.5	182		
		7-Jul-12	CL-NP-48	32.6	30.6	175		
		7-Jul-12	CL-NP-49	41.5	39.1	339		
		7-Jul-12	CL-NP-50	34.5	33.2	238	✓	mortality
		7-Jul-12	CL-NP-51	52.4	50.2	610		mortality
		7-Jul-12	CL-NP-52	47.0	43.5	550	✓	mortality
		7-Jul-12	CL-NP-53	38.7	35.9	280		
		7-Jul-12	CL-NP-54	36.7	34.3	280		blackspot
		7-Jul-12	CL-NP-55	38.5	36.3	290		
		7-Jul-12	CL-NP-56	31.8	29.9	170		
		7-Jul-12	CL-NP-57	39.6	37.1	355		mortality
		7-Jul-12	CL-NP-58	17.5	16.6	30		mortality
		7-Jul-12	CL-NP-59	19.2	17.4	30		mortality
		7-Jul-12	CL-NP-60	17.9	16.9	32		blackspot
		7-Jul-12	CL-NP-61	16.9	16.0	31		mortality
		7-Jul-12	CL-NP-62	10.6	10.0	7		
		7-Jul-12	CL-NP-63	10.5	9.8	6		
		7-Jul-12	CL-NP-64	10.6	9.9	5		
		7-Jul-12	CL-NP-65	11.4	10.6	5		
		7-Jul-12	CL-NP-66	17.5	16.5	27		
		7-Jul-12	CL-NP-67	16.5	15.6	26		
		7-Jul-12	CL-NP-68	10.7	10.3	6		
		7-Jul-12	CL-NP-69	11.3	10.6	7		
		8-Jul-12	CL-NP-70	51.3	47.2	700		
		8-Jul-12	CL-NP-71	17.3	16.3	28		blackspot
		8-Jul-12	CL-NP-72	19.7	18.5	37		
		8-Jul-12	CL-NP-73	50.1	47.3	780		damaged opercula
		8-Jul-12	CL-NP-74	47.5	44.5	550		
		8-Jul-12	CL-NP-75	53.2	50.4	850		
		8-Jul-12	CL-NP-76	29.4	27.6	140		blackspot
		8-Jul-12	CL-NP-77	39.5	36.8	310		
		8-Jul-12	CL-NP-78	34.3	32.9	230		
		8-Jul-12	CL-NP-79	33.0	31.9	195		
		8-Jul-12	CL-NP-80	37.1	34.3	290		
		8-Jul-12	CL-NP-81	24.9	23.5	84		
		8-Jul-12	CL-NP-82	39.0	37.5	300		
		8-Jul-12	CL-NP-83	37.5	35.1	280		
		9-Jul-12	CL-NP-84	68.6	66.6	2,300		
		9-Jul-12	CL-NP-85	36.3	34.2	290		
		9-Jul-12	CL-NP-86	36.9	34.8	260		
		9-Jul-12	CL-NP-87	38.5	36.0	320		
		9-Jul-12	CL-NP-88	42.4	40.0	390		
		9-Jul-12	CL-NP-89	35.3	32.9	220		
		9-Jul-12	CL-NP-90	39.2	36.9	290		
		9-Jul-12	CL-NP-91	43.8	41.9	490		

Table F.31: Individual fish data for fish caught in Côté Lake, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Notes
2012	Northern Pike	9-Jul-12	CL-NP-92	44.4	41.5	420		
		9-Jul-12	CL-NP-93	35.1	33.2	215		blackspot
		9-Jul-12	CL-NP-94	32.5	30.1	200		
		9-Jul-12	CL-NP-95	47.2	44.5	530		
		9-Jul-12	CL-NP-96	39.5	37.1	340		
		9-Jul-12	CL-NP-97	42.8	40.0	450		blackspot
		9-Jul-12	CL-NP-98	38.1	35.3	340		
		9-Jul-12	CL-NP-99	41.5	38.6	330		
		9-Jul-12	CL-NP-100	55.9	52.8	870		
		9-Jul-12	CL-NP-101	50.5	48.0	660		
		9-Jul-12	CL-NP-102	40.0	37.6	330		blackspot
		9-Jul-12	CL-NP-103	37.2	34.9	290		
		9-Jul-12	CL-NP-104	37.6	35.2	290		
		9-Jul-12	CL-NP-105	41.9	39.2	370		
		9-Jul-12	CL-NP-106	47.9	45.2	640		
		9-Jul-12	CL-NP-107	39.0	36.8	320		
		9-Jul-12	CL-NP-108	40.7	38.1	380		
		9-Jul-12	CL-NP-109	46.2	43.3	390		
		9-Jul-12	CL-NP-110	33.1	31.4	165		blackspot
		9-Jul-12	CL-NP-111	40.3	38.2	370		
		9-Jul-12	CL-NP-112	33.5	31.0	205		
		9-Jul-12	CL-NP-113	32.8	31.4	190		cut on belly
		9-Jul-12	CL-NP-114	45.2	43.0	390		mortality
		9-Jul-12	CL-NP-115	44.6	42.0	510		mortality
		9-Jul-12	CL-NP-116	47.2	44.4	470		
		9-Jul-12	CL-NP-117	41.9	38.9	340		
		9-Jul-12	CL-NP-118	44.6	41.6	510		
		9-Jul-12	CL-NP-119	34.0	31.9	210		
		10-Jul-12	CL-NP-120	26.9	25.5	105		mortality
		10-Jul-12	CL-NP-121	53.5	50.6	990		
		10-Jul-12	CL-NP-122	43.7	41.0	410		
		10-Jul-12	CL-NP-123	36.0	33.9	280		blackspot
		10-Jul-12	CL-NP-124	42.9	40.6	430		blackspot
		10-Jul-12	CL-NP-125	43.2	40.8	550		
		10-Jul-12	CL-NP-126	35.3	33.4	230		
		10-Jul-12	CL-NP-127	37.6	35.3	280		
		10-Jul-12	CL-NP-128	39.2	37.1	330		blackspot
	Lake Whitefish	6-Jul-12	CL-WF-01	47.1	42.2	1,150	✓	
		6-Jul-12	CL-WF-02	42.5	37.5	800	✓	
		6-Jul-12	CL-WF-03	49.0	44.0	1,375	✓	
		6-Jul-12	CL-WF-04	46.9	42.9	1,175	✓	
		6-Jul-12	CL-WF-05	50.0	44.4	1,400	✓	
		6-Jul-12	CL-WF-06	48.6	43.3	1,325	✓	
		7-Jul-12	CL-WF-07	47.7	43.8	1,400		
		7-Jul-12	CL-WF-08	48.4	43.9	1,420		mortality
	White Sucker	5-Jul-12	CL-WS-01	56.5	51.9	1,600		
		5-Jul-12	CL-WS-02	49.0	46.2	1,350		
		5-Jul-12	CL-WS-03	32.7	30.1	340		bite mark near caudal fin
		6-Jul-12	CL-WS-04	42.5	39.4	870		
		6-Jul-12	CL-WS-05	39.7	37.0	750		
		6-Jul-12	CL-WS-06	41.0	37.8	800		
		6-Jul-12	CL-WS-07	36.5	34.1	551		
		6-Jul-12	CL-WS-08	48.1	44.4	1,020		
		6-Jul-12	CL-WS-09	36.8	34.0	590		
		6-Jul-12	CL-WS-10	33.1	31.1	380		
		6-Jul-12	CL-WS-11	12.0	11.6	17		
		6-Jul-12	CL-WS-11	54.2	50.6	1,800		
		6-Jul-12	CL-WS-12	37.6	35.0	610		
		6-Jul-12	CL-WS-13	42.3	39.5	900		
		6-Jul-12	CL-WS-14	44.1	40.8	1,075		
		6-Jul-12	CL-WS-15	39.8	37.2	750		
		6-Jul-12	CL-WS-16	43.5	40.5	1,025		
		6-Jul-12	CL-WS-17	47.0	44.1	1,150		
		6-Jul-12	CL-WS-18	46.9	44.3	1,300		
		6-Jul-12	CL-WS-19	47.6	44.2	1,250		
		6-Jul-12	CL-WS-20	34.5	32.5	500		
		6-Jul-12	CL-WS-21	40.2	38.0	690	✓	
		6-Jul-12	CL-WS-22	36.9	34.5	580		
		6-Jul-12	CL-WS-23	45.5	42.6	1,075		
		7-Jul-12	CL-WS-24	49.6	46.4	1,255		
		7-Jul-12	CL-WS-25	45.4	42.7	900		
		7-Jul-12	CL-WS-26	47.1	43.5	980		
		7-Jul-12	CL-WS-27	51.6	48.4	740		
		7-Jul-12	CL-WS-28	52.5	49.2	725		
		7-Jul-12	CL-WS-29	51.4	47.5	739		
		7-Jul-12	CL-WS-30	25.0	23.5	156		
		7-Jul-12	CL-WS-31	38.7	35.8	710		
		7-Jul-12	CL-WS-32	48.6	44.9	1,240		
		7-Jul-12	CL-WS-33	50.1	46.6	1,500		
		7-Jul-12	CL-WS-34	49.6	45.9	1,440		mortality
		8-Jul-12	CL-WS-35	46.1	43.9	1,080		
		8-Jul-12	CL-WS-36	44.5	41.2	920		
		8-Jul-12	CL-WS-37	41.0	38.2	830		
		8-Jul-12	CL-WS-38	35.1	33.0	550		

Table F.31: Individual fish data for fish caught in Côté Lake, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Notes
2012	Yellow Perch	5-Jul-12	CL-YP-01	23.3	22.4	172		
		5-Jul-12	CL-YP-02	25.8	24.9	223		
		5-Jul-12	CL-YP-03	23.3	22.6	185		
		5-Jul-12	CL-YP-04	14.0	13.3	32		
		5-Jul-12	CL-YP-05	21.9	21.0	142		
		5-Jul-12	CL-YP-06	13.1	12.6	28		
		5-Jul-12	CL-YP-07	9.5	9.1	10		
		5-Jul-12	CL-YP-08	9.3	8.8	9		
		5-Jul-12	CL-YP-09	10.0	9.6	12		
		5-Jul-12	CL-YP-10	15.0	14.4	42		
		5-Jul-12	CL-YP-11	11.1	10.7	16		
		6-Jul-12	CL-YP-12	16.5	15.9	54		
		6-Jul-12	CL-YP-13	13.6	13.0	29		
		6-Jul-12	CL-YP-14	17.8	17.1	65		
		6-Jul-12	CL-YP-15	18.8	17.9	79		
		6-Jul-12	CL-YP-16	22.1	20.4	149		
		6-Jul-12	CL-YP-17	17.0	16.2	68		
		6-Jul-12	CL-YP-18	16.2	15.8	57		
		6-Jul-12	CL-YP-19	22.0	21.1	135		
		6-Jul-12	CL-YP-20	22.1	21.2	125		
		6-Jul-12	CL-YP-21	9.7	9.4	12	✓	
		6-Jul-12	CL-YP-22	11.3	-	16	✓	caudal fin damaged
		6-Jul-12	CL-YP-23	28.3	27.5	270		
		6-Jul-12	CL-YP-24	24.0	23.0	149		
		6-Jul-12	CL-YP-25	10.4	10.0	12.5		
		6-Jul-12	CL-YP-26	11.3	10.8	16		
		6-Jul-12	CL-YP-27	28.5	27.3	287		
		6-Jul-12	CL-YP-28	18.2	17.6	71	✓	
		6-Jul-12	CL-YP-29	25.9	25.2	228		
		6-Jul-12	CL-YP-30	24.2	23.3	188		
		6-Jul-12	CL-YP-31	26.2	-	-		escaped
		6-Jul-12	CL-YP-32	25.1	24.5	240		
		6-Jul-12	CL-YP-33	25.4	24.5	224		
		6-Jul-12	CL-YP-34	26.2	25.1	252		
		6-Jul-12	CL-YP-35	26.9	26.0	250		
		6-Jul-12	CL-YP-36	10.2	9.8	12.5		
		6-Jul-12	CL-YP-37	18.2	17.4	117		
		6-Jul-12	CL-YP-38	21.7	21.0	136		
		6-Jul-12	CL-YP-39	24.3	23.4	200		
		6-Jul-12	CL-YP-40	25.4	24.5	230		
		6-Jul-12	CL-YP-41	10.5	10.0	13.5		
		6-Jul-12	CL-YP-42	14.1	13.6	42		
		6-Jul-12	CL-YP-43	11.0	10.5	15		
		6-Jul-12	CL-YP-44	13.1	12.5	29		
		6-Jul-12	CL-YP-45	14.6	13.8	45		
		6-Jul-12	CL-YP-46	18.2	17.7	74		mutated dorsal
		6-Jul-12	CL-YP-47	13.2	12.6	34		
		6-Jul-12	CL-YP-48	8.0	7.7	9.5		
		6-Jul-12	CL-YP-49	9.9	9.4	10.5		
		6-Jul-12	CL-YP-50	10.2	9.6	11.5		
		7-Jul-12	CL-YP-100	3.362	3.162	0.33		
		7-Jul-12	CL-YP-101	3.473	3.221	0.35		
		7-Jul-12	CL-YP-102	3.259	3.116	0.32		
		7-Jul-12	CL-YP-103	12.800	12.100	26.00		
		7-Jul-12	CL-YP-104	9.800	9.300	12.00		
		7-Jul-12	CL-YP-105	3.608	3.523	0.39		
		7-Jul-12	CL-YP-106	3.740	3.567	0.53		
		7-Jul-12	CL-YP-107	3.720	3.564	0.47		
		7-Jul-12	CL-YP-108	3.810	3.600	0.54		
		7-Jul-12	CL-YP-109	3.431	3.280	0.32		
		7-Jul-12	CL-YP-110	3.882	3.642	0.61		
		7-Jul-12	CL-YP-111	4.436	4.265	0.86		
		7-Jul-12	CL-YP-112	5.571	5.304	0.90		
		7-Jul-12	CL-YP-113	5.357	5.215	1.84		
		7-Jul-12	CL-YP-114	4.745	4.560	1.06		
		7-Jul-12	CL-YP-115	4.633	4.396	1.01		
		7-Jul-12	CL-YP-116	4.815	4.634	1.13		
		7-Jul-12	CL-YP-117	4.465	4.235	0.88		
		7-Jul-12	CL-YP-118	3.693	3.498	0.40		
		7-Jul-12	CL-YP-119	4.459	4.274	0.86		
	Blacknose Shiner	7-Jul-12	CL-BNS-01	4.493	4.195	0.866		
		7-Jul-12	CL-BNS-02	4.694	4.167	0.731		
		7-Jul-12	CL-BNS-03	4.714	4.299	0.622		
		7-Jul-12	CL-BNS-04	4.376	3.972	0.640		
	Golden Shiner	7-Jul-12	CL-GS-01	5.621	5.112	1.40		
		7-Jul-12	CL-GS-02	5.993	5.564	1.56		
		7-Jul-12	CL-GS-03	6.208	5.719	2.13		
		7-Jul-12	CL-GS-04	5.669	5.090	1.46		
		7-Jul-12	CL-GS-05	5.709	5.079	1.48		
		7-Jul-12	CL-GS-06	7.219	6.523	2.70		
		7-Jul-12	CL-GS-07	6.624	5.976	2.24		
		7-Jul-12	CL-GS-08	6.307	5.706	1.66		
		7-Jul-12	CL-GS-09	6.452	5.921	2.13		
		7-Jul-12	CL-GS-10	5.543	4.481	1.22		
		7-Jul-12	CL-GS-11	7.810	6.984	3.62		
		7-Jul-12	CL-GS-12	5.473	4.472	1.15		
		7-Jul-12	CL-GS-13	7.840	7.116	3.57		
		7-Jul-12	CL-GS-14	5.537	4.463	1.22		
		7-Jul-12	CL-GS-15	5.304	4.838	1.10		
		7-Jul-12	CL-GS-16	5.494	4.987	1.19		
		7-Jul-12	CL-GS-17	5.905	5.309	1.52		
		7-Jul-12	CL-GS-18	5.664	5.198	1.37		
		7-Jul-12	CL-GS-19	6.140	5.523	1.72		
		7-Jul-12	CL-GS-20	6.322	5.737	1.88		

Table F.32: Individual fish data for fish caught in Delaney Lake, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)
2013	Northern Pike	8-Jun-13	DelL-NP01	72.1	69.3	2,400	✓	Sc, CL	8
		8-Jun-13	DelL-NP02	74.6	72.9	2,550		Sc	
		8-Jun-13	DelL-NP03	27.7	26.0	105	✓	Sc, CL	2
		8-Jun-13	DelL-NP04	34.1	32.0	208	✓	Sc, CL	3
		8-Jun-13	DelL-NP05	45.7	42.8	510	✓	Sc, CL	5
		8-Jun-13	DelL-NP06	46.0	38.3	395	✓	Sc, CL	6
		8-Jun-13	DelL-NP07	34.8	32.7	244		Sc, CL	
		8-Jun-13	DelL-NP08	23.9	22.4	73			
		8-Jun-13	DelL-NP09	35.2	32.8	223			
	Yellow Perch	8-Jun-13	DelL-YP01	18.7	17.7	83		Sc, Ds	
		8-Jun-13	DelL-YP02	22.3	21.4	127		Sc, Ds	6
		8-Jun-13	DelL-YP03	14.5	13.8	36	✓	Sc, Ds	3
		8-Jun-13	DelL-YP04	22.8	21.9	143		Sc, Ds	8
		8-Jun-13	DelL-YP05	15.2	14.6	46		Sc, Ds	
		8-Jun-13	DelL-YP06	25.4	24.5	189		Sc	
		8-Jun-13	DelL-YP07	15.7	15.0	45		Sc, Ds	
		8-Jun-13	DelL-YP08	11.5	10.9	16	✓	Sc, Ds	3
		8-Jun-13	DelL-YP09	17.0	16.4	59		Sc, Ds	
		8-Jun-13	DelL-YP10	10.8	10.3	13	✓	Sc, Ds	2
		8-Jun-13	DelL-YP11	14.0	13.5	38		Sc, Ds	
		8-Jun-13	DelL-YP12	6.6	5.9	3		Sc, Ds	
		8-Jun-13	DelL-YP13	10.7	10.1	12		Sc, Ds	
		8-Jun-13	DelL-YP14	5.3	5.0	1.3	✓ Comp1	Sc, Ds	
		8-Jun-13	DelL-YP15	5.1	5.0	1.1	✓ Comp1	Sc, Ds	
		8-Jun-13	DelL-YP16	5.7	5.4	1.4	✓ Comp1	Sc, Ds	1
		8-Jun-13	DelL-YP17	5.3	5.0	1.3	✓ Comp1	Sc, Ds	
		8-Jun-13	DelL-YP18	5.6	5.3	1.5	✓ Comp2	Sc, Ds	
		8-Jun-13	DelL-YP19	5.5	5.2	1.7	✓ Comp2	Sc, Ds	
		8-Jun-13	DelL-YP20	5.5	5.3	1.2	✓ Comp2	Sc, Ds	
		8-Jun-13	DelL-YP21	5.3	5.0	1.0	✓ Comp2	Sc, Ds	1

Table F.33: Individual fish data for fish caught in East Beaver Pond, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Notes
2013	Fathead Minnow	14-Jul-12	FHM-01	79.46	75.03	5.320	female - ripe
		14-Jul-12	FHM-02	90.05	84.89	8.380	male
	Northern Redbelly Dace	14-Jul-12	RBD-01	64.33	60.33	2.062	
		14-Jul-12	RBD-02	65.11	62.49	2.525	
		14-Jul-12	RBD-03	64.51	59.90	2.210	
		14-Jul-12	RBD-04	64.85	60.39	2.165	
		14-Jul-12	RBD-05	59.79	56.37	1.890	
		14-Jul-12	RBD-06	61.29	57.32	2.105	
		14-Jul-12	RBD-07	65.14	62.00	2.388	
		14-Jul-12	RBD-08	61.19	58.15	2.163	
		14-Jul-12	RBD-09	64.38	59.77	2.254	
		14-Jul-12	RBD-10	60.62	57.74	2.085	
	Finescale Dace	14-Jul-12	FSD-01	78.30	73.76	4.418	
		14-Jul-12	FSD-02	78.75	73.98	3.781	
		14-Jul-12	FSD-03	81.72	77.16	4.905	
		14-Jul-12	FSD-04	78.33	75.32	4.513	
		14-Jul-12	FSD-05	72.87	68.94	3.571	
		14-Jul-12	FSD-06	70.29	67.26	2.988	
		14-Jul-12	FSD-07	75.58	73.25	3.411	
		14-Jul-12	FSD-08	71.27	67.88	3.166	
		14-Jul-12	FSD-09	81.72	75.65	5.038	
		14-Jul-12	FSD-10	80.99	75.76	5.157	
	Fathead Minnow	14-Jul-12	FHM-03	84.18	79.12	6.435	
		14-Jul-12	FHM-04	81.09	77.33	5.217	
		14-Jul-12	FHM-05	81.24	75.44	5.660	
		14-Jul-12	FHM-06	-	-	9.068	
		14-Jul-12	FHM-07	-	-	5.083	
		14-Jul-12	FHM-08	-	-	4.352	
		14-Jul-12	FHM-09	-	-	6.202	
		14-Jul-12	FHM-10	59.78	55.43	1.890	
		14-Jul-12	FHM-11	64.30	61.24	2.956	blackspot
		14-Jul-12	FHM-12	60.06	56.63	1.983	blackspot
		14-Jul-12	FHM-13	55.25	51.62	1.582	blackspot
		14-Jul-12	FHM-14	55.57	51.33	1.589	blackspot

Table F.34: Individual fish data for fish caught in Little Clam Lake, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Notes
2012	Northern Pike	6-Jul-12	LCL-NP-01	47.5	44.7	550		blackspot
		6-Jul-12	LCL-NP-02	50.5	47.2	620	✓	
		6-Jul-12	LCL-NP-03	50.6	47.7	680	✓	blackspot
		6-Jul-12	LCL-NP-04	52.3	49.3	780	✓	blackspot
		6-Jul-12	LCL-NP-05	51.0	47.9	730	✓	
		6-Jul-12	LCL-NP-06	46.1	43.6	580	✓	blackspot
		6-Jul-12	LCL-NP-07	46.5	43.5	590	✓	blackspot
		6-Jul-12	LCL-NP-08	48.6	45.9	660	✓	blackspot
		6-Jul-12	LCL-NP-09	37.1	34.5	300		
		6-Jul-12	LCL-NP-10	32.9	31.0	190		blackspot
		6-Jul-12	LCL-NP-11	38.1	35.5	290		blackspot
		6-Jul-12	LCL-NP-12	45.1	42.7	600		blackspot
		6-Jul-12	LCL-NP-13	43.7	41.1	500		blackspot
		6-Jul-12	LCL-NP-14	51.5	48.7	740		blackspot
		6-Jul-12	LCL-NP-15	53.1	51.1	845		blackspot
		6-Jul-12	LCL-NP-16	52.0	48.6	705		blackspot
		6-Jul-12	LCL-NP-17	51.9	48.7	790		blackspot
		6-Jul-12	LCL-NP-18	52.1	49.0	690		blackspot
		6-Jul-12	LCL-NP-19	46.6	43.8	610		blackspot
		6-Jul-12	LCL-NP-20	55.5	52.5	875		blackspot
	Yellow Perch	6-Jul-12	LCL-YP-01	17.1	16.5	64		blackspot
		6-Jul-12	LCL-YP-02	16.6	15.6	50		blackspot
		6-Jul-12	LCL-YP-03	15.2	14.5	46		
		6-Jul-12	LCL-YP-04	10.6	10.2	12		
		6-Jul-12	LCL-YP-05	10.9	10.3	12		
		6-Jul-12	LCL-YP-06	10.0	9.5	11		
		6-Jul-12	LCL-YP-07	10.5	9.7	n/a		blackspot
		6-Jul-12	LCL-YP-08	11.2	10.6	13.3		blackspot
		6-Jul-12	LCL-YP-09	10.7	10.4	11		
		6-Jul-12	LCL-YP-10	10.3	9.9	12		
		6-Jul-12	LCL-YP-11	10.7	10.1	14		
		6-Jul-12	LCL-YP-12	16.1	15.3	49		blackspot
		6-Jul-12	LCL-YP-13	15.1	14.4	39		blackspot
		6-Jul-12	LCL-YP-14	15.7	15.0	43		blackspot

Table F.35: Individual fish data for fish caught in Lower Three Duck Lake, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Notes
2013	Northern Pike	6-Jun-13	LTDL-NP01	49.1	46.5	555		Sc		
		6-Jun-13	LTDL-NP02	42.9	40.4	425		Sc		
		6-Jun-13	LTDL-NP03	49.6	46.9	670		Sc		
		6-Jun-13	LTDL-NP04	50.6	48.3	630		Sc		blackspot
		6-Jun-13	LTDL-NP05	53.5	50.5	790	✓	Sc, CL	4	
		6-Jun-13	LTDL-NP06	34.6	33.5	230		Sc, CL	3	
		6-Jun-13	LTDL-NP07	43.2	41.1	440		Sc, CL	3	
		6-Jun-13	LTDL-NP08	33.7	31.5	198		Sc, CL	3	blackspot
		6-Jun-13	LTDL-NP09	43.0	42.1	445		Sc, CL	3	
	Walleye	6-Jun-13	LTDL-WA01	48.5	45.7	940	✓	Sc, Ds	6	
		6-Jun-13	LTDL-WA02	39.8	37.7	540	✓	Sc, Ds	3	
		6-Jun-13	LTDL-WA03	42.4	40.0	620	✓	Sc, Ds	4	
		6-Jun-13	LTDL-WA04	30.0	28.3	244	✓	Sc, Ds	2	
	Whitefish	6-Jun-13	LTDL-WF01	46.8	42.0	1,260		Sc		
	Yellow Perch	5-Jun-13	LTDL-YP01	6.9	6.6	3.1	✓ Comp1	Sc	1	
		5-Jun-13	LTDL-YP02	6.8	6.4	2.3	✓ Comp1	Sc		
		5-Jun-13	LTDL-YP03	5.9	5.7	1.9	✓ Comp2	Sc		
		5-Jun-13	LTDL-YP04	6.0	5.7	2.0	✓ Comp2	Sc	1	blackspot
		5-Jun-13	LTDL-YP05	6.1	5.8	1.9	✓ Comp2	Sc		
		5-Jun-13	LTDL-YP06	6.2	5.9	2.3	✓ Comp3	Sc	1	
		5-Jun-13	LTDL-YP07	6.3	6.0	2.4	✓ Comp3	Sc		
		5-Jun-13	LTDL-YP08	7.2	6.8	3.6	✓ Comp3	Sc		
		6-Jun-13	LTDL-YP09	10.2	9.6	9.1	✓	Sc	2	
		6-Jun-13	LTDL-YP10	7.6	7.1	3.6	✓ Comp4	Sc		
		6-Jun-13	LTDL-YP11	6.9	6.1	2.2	✓ Comp4	Sc	1	
		6-Jun-13	LTDL-YP12	6.5	6.2	2.3	✓ Comp4	Sc		
		6-Jun-13	LTDL-YP13	6.7	6.3	2.3				
		6-Jun-13	LTDL-YP14	10.5	9.9	11.3				
		6-Jun-13	LTDL-YP15	10.2	9.8	10.8				
		6-Jun-13	LTDL-YP16	6.0	5.8	2.0				
		6-Jun-13	LTDL-YP17	6.0	5.8	1.8				
		6-Jun-13	LTDL-YP18	8.8	8.3	7.3				
		6-Jun-13	LTDL-YP19	7.6	7.1	4.3				
		6-Jun-13	LTDL-YP20	11.0	10.6	14.5		Sc		
		6-Jun-13	LTDL-YP21	8.5	8.0	6.2				

Table F.36: Individual fish data for fish caught in Mesomikenda Lake, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Notes
2013	Northern Pike	8-Jun-13	MesL-NP01	55.0	51.8	860				
		8-Jun-13	MesL-NP02	60.3	57.1	1,320		Sc, CL	5	
		8-Jun-13	MesL-NP03	46.4	43.5	550		Sc		
		8-Jun-13	MesL-NP04	71.2	68.0	1,920		Sc, CL	6	
	Walleye	8-Jun-13	MesL-WA01	29.0	27.5	225	✓	Sc, Ds	2	
		8-Jun-13	MesL-WA02	54.1	50.6	1,200	✓	Sc, Ds	7	muscle duplicate
		8-Jun-13	MesL-WA03	52.0	49.8	1,320	✓	Sc, Ds	7	
		8-Jun-13	MesL-WA04	37.8	36.0	530	✓	Sc, Ds	3	
		8-Jun-13	MesL-WA05	53.2	50.3	1,500	✓	Sc, Ds	8	
	Whitefish	8-Jun-13	MesL-WF01	47.8	43.0	1,160		Sc, PF	11	
		8-Jun-13	MesL-WF02	47.5	43.8	1,200		Sc, PF	14	
		8-Jun-13	MesL-WF03	47.5	43.0	1,180		Sc, PF	16	
		8-Jun-13	MesL-WF04	41.0	37.2	680		Sc, PF	18	
		8-Jun-13	MesL-WF05	39.5	35.1	590		Sc, PF	7	
	White Sucker	8-Jun-13	MesL-WS01	23.4	22.4	160				
		8-Jun-13	MesL-WS02	47.5	43.4	1,320				
	Spottail Shiner	7-Jun-13	MesL-SS01	48.92	45.57	0.730	✓ Comp1	Sc	1	
		7-Jun-13	MesL-SS02	50.34	45.49	0.819	✓ Comp1			
		7-Jun-13	MesL-SS03	44.42	41.21	0.487	✓ Comp1			
		7-Jun-13	MesL-SS04	47.09	43.57	0.618	✓ Comp1	Sc		
		7-Jun-13	MesL-SS05	49.43	46.96	0.774	✓ Comp1			
		7-Jun-13	MesL-SS06	52.41	48.18	0.943	✓ Comp1			
		7-Jun-13	MesL-SS07	53.70	49.97	0.980	✓ Comp1			
		7-Jun-13	MesL-SS08	82.04	76.02	4.655	✓	Sc	2	
		7-Jun-13	MesL-SS09	48.23	44.30	0.760	✓ Comp2			
		7-Jun-13	MesL-SS10	54.56	50.90	1.001	✓ Comp2	Sc	1	
		7-Jun-13	MesL-SS11	50.74	47.46	0.754	✓ Comp2			
		7-Jun-13	MesL-SS12	45.14	42.56	0.574	✓ Comp2	Sc	1	
		7-Jun-13	MesL-SS13	50.35	47.36	0.923	✓ Comp2			
		7-Jun-13	MesL-SS14	49.15	44.55	0.764	✓ Comp2			
		7-Jun-13	MesL-SS15	42.72	39.97	0.566	✓ Comp2			
		7-Jun-13	MesL-SS16	49.98	44.64	0.921	✓ Comp3	Sc	1	
		7-Jun-13	MesL-SS17	50.47	46.78	0.896	✓ Comp3			
		7-Jun-13	MesL-SS18	48.72	45.31	0.732	✓ Comp3			
		7-Jun-13	MesL-SS19	50.07	47.15	0.768	✓ Comp3			
		7-Jun-13	MesL-SS20	45.79	41.59	0.640	✓ Comp3			
		7-Jun-13	MesL-SS21	54.16	49.60	0.996	✓ Comp3			
		7-Jun-13	MesL-SS22	41.25	38.72	0.532	✓ Comp3			
		7-Jun-13	MesL-SS23	49.55	44.56	0.735	✓ Comp4			
		7-Jun-13	MesL-SS24	47.96	43.79	0.752	✓ Comp4			
		7-Jun-13	MesL-SS25	48.96	44.50	0.784	✓ Comp4			
		7-Jun-13	MesL-SS26	46.58	43.72	0.635	✓ Comp4			
		7-Jun-13	MesL-SS27	46.82	42.67	0.724	✓ Comp4			
		7-Jun-13	MesL-SS28	44.60	40.74	0.607	✓ Comp4			

Table F.37: Individual fish data for fish caught in Middle Three Duck Lake, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Notes
2013	Northern Pike	6-Jun-13	MTDL-NP01	52.8	49.4	730		Sc		
		6-Jun-13	MTDL-NP02	48.0	45.4	650		Sc, CL	3	blackspot
		6-Jun-13	MTDL-NP03	44.3	41.3	520		Sc, CL	3	blackspot
		6-Jun-13	MTDL-NP04	47.2	44.5	610		Sc, CL	3	blackspot
		6-Jun-13	MTDL-NP05	53.9	51.0	870		Sc		
		6-Jun-13	MTDL-NP06	60.1	56.4	1,020		Sc		blackspot
		6-Jun-13	MTDL-NP07	44.5	41.7	490		Sc		
		6-Jun-13	MTDL-NP08	42.5	40.0	-		Sc, Cl	3	blackspot, weight not recorded
		6-Jun-13	MTDL-NP09	47.2	44.8	600		Sc, Cl		
	Walleye	6-Jun-13	MTDL-WA01	30.0	28.2	250	✓	Sc, Ds	2	muscle duplicate MTDL-WA01X
		6-Jun-13	MTDL-WA02	30.6	28.7	258	✓	Sc, Ds	2	
		6-Jun-13	MTDL-WA03	31.3	29.8	264	✓	Sc, Ds	2	
		6-Jun-13	MTDL-WA04	30.1	28.4	242	✓	Sc, Ds		
		6-Jun-13	MTDL-WA05	29.4	27.8	240	✓	Sc, Ds	2	
		6-Jun-13	MTDL-WA06	19.0	17.7	58		Sc, Ds		
		6-Jun-13	MTDL-WA07	46.3	43.5	1,000	✓	Sc, Ds	4	
		6-Jun-13	MTDL-WA08	30.5	29.0	264		Sc		
		6-Jun-13	MTDL-WA09	29.8	28.3	236				
		6-Jun-13	MTDL-WA10	27.9	26.4	206				
		6-Jun-13	MTDL-WA11	30.0	28.5	250				
	Whitefish	6-Jun-13	MTDL-WF01	44.3	39.3	1,150		Sc, PF	10	
		6-Jun-13	MTDL-WF02	40.5	36.4	900		Sc, PF	6	
		6-Jun-13	MTDL-WF03	44.2	39.5	1,080		Sc, PF	11	
		6-Jun-13	MTDL-WF04	46.2	41.5	1,190		Sc, PF	11	
	White Sucker	6-Jun-13	MTDL-WS01	33.5	31.5	480		Sc		
		6-Jun-13	MTDL-WS02	45.4	42.5	1,180		Sc		
		6-Jun-13	MTDL-WS03	42.0	39.3	920		Sc		
		6-Jun-13	MTDL-WS04	48.5	45.4			Sc		weight taken erroneous
		6-Jun-13	MTDL-WS05	45.4	41.7	1,120		Sc		
		6-Jun-13	MTDL-WS06	17.0	16.2	56		Sc		
		6-Jun-13	MTDL-WS07	17.2	16.2	58		Sc		
		6-Jun-13	MTDL-WS08	16.9	16.0	56		Sc		
	Yellow Perch	6-Jun-13	MTDL-YP01	10.6	10.0	12.3	✓	Sc, Ds		
		6-Jun-13	MTDL-YP02	9.8	9.2	10.0	✓	Sc, Ds	2	
		6-Jun-13	MTDL-YP03	9.8	9.1	10.5	✓	Sc, Ds		
		6-Jun-13	MTDL-YP04	9.9	9.4	10.3	✓	Sc, Ds	3	blackspot
		9-Jun-13	MTDL-YP05	11.8	11.2	17.8		Sc		
		9-Jun-13	MTDL-YP06	5.6	5.4	1.6	✓ Comp1	Sc, Ds	1	
		9-Jun-13	MTDL-YP07	5.5	5.3	1.4	✓ Comp1	Sc, Ds	1	blackspot
		9-Jun-13	MTDL-YP08	5.9	5.6	1.8	✓ Comp1			
		9-Jun-13	MTDL-YP09	6.9	6.6	3.2	✓ Comp2	Sc, Ds	1	
		9-Jun-13	MTDL-YP10	6.5	6.2	2.7	✓ Comp2	Sc, Ds	1	
		9-Jun-13	MTDL-YP11	6.3	6.0	2.3	✓ Comp3	Sc, Ds	1	
		9-Jun-13	MTDL-YP12	5.9	5.6	1.8	✓ Comp3			
		9-Jun-13	MTDL-YP13	5.8	5.6	2.0	✓ Comp3			
		9-Jun-13	MTDL-YP14	6.3	6.0	2.4		Sc		
		9-Jun-13	MTDL-YP15	6.5	6.2	2.2		Sc		
		9-Jun-13	MTDL-YP16	6.9	6.7	3.1		Sc		
		9-Jun-13	MTDL-YP17	6.5	6.3	2.4		Sc		
		9-Jun-13	MTDL-YP18	6.0	5.8	1.9		Sc		
		9-Jun-13	MTDL-YP19	6.3	6.0	2.3		Sc		
		9-Jun-13	MTDL-YP20	6.2	5.9	2.0		Sc		

Table F.38: Individual fish data for fish caught in Neville Lake, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Notes
2013	Northern Pike	6-Jun-13	NevL-NP01	47.3	44.2	440	✓	Sc, CL	5	
		6-Jun-13	NevL-NP02	44.2	41.7	410	✓	Sc, CL	5	
		6-Jun-13	NevL-NP03	35.1	33.1	232		Sc, CL	2	
		6-Jun-13	NevL-NP04	34.3	32.2	190		Sc, CL	3	
		6-Jun-13	NevL-NP05	35.9	33.4	270		Sc, CL		
		6-Jun-13	NevL-NP06	29.2	27.4	145		Sc, CL	1	
		6-Jun-13	NevL-NP07	34.7	32.5	220		Sc, CL		
	Walleye	6-Jun-13	NevL-WA01	43.1	41.0	850	✓	Sc, Ds	5	muscle duplicate NevL-WA01X
		6-Jun-13	NevL-WA02	42.1	39.6	620	✓	Sc, Ds	6	
		6-Jun-13	NevL-WA03	34.0	32.1	340	✓	Sc, Ds	3	
	Whitefish	6-Jun-13	NevL-WF01	40.3	35.9	650		Sc		
		6-Jun-13	NevL-WF02	43.4	38.6	870		Sc		
		6-Jun-13	NevL-WF03	40.3	35.6	720		Sc		
		6-Jun-13	NevL-WF04	41.4	37.0	730		Sc		
		6-Jun-13	NevL-WF05	40.6	36.0	620		Sc		
		6-Jun-13	NevL-WF06	38.0	34.0	600		Sc		
		6-Jun-13	NevL-WF07	41.9	37.1	750		Sc		
		6-Jun-13	NevL-WF08	41.2	37.0	780		Sc		
	Yellow Perch	5-Jun-13	NevL-YP01	11.174	10.646	15.0	✓	Sc, Ds	2	
		5-Jun-13	NevL-YP02	7.875	7.416	4.6	✓	Sc, Ds	1	
		5-Jun-13	NevL-YP03	8.210	7.849	5.5	✓	Sc, Ds	1	
		5-Jun-13	NevL-YP04	7.682	7.195	4.5	✓	Sc, Ds	1	
		5-Jun-13	NevL-YP05	7.140	6.776	3.9	✓ Comp1	Sc, Ds	1	
		5-Jun-13	NevL-YP06	7.212	6.668	4.7	✓ Comp1	Sc, Ds	1	
		5-Jun-13	NevL-YP07	6.956	6.660	3.6				
		5-Jun-13	NevL-YP08	6.974	6.647	3.4				
		5-Jun-13	NevL-YP09	6.914	6.555	3.1				
		5-Jun-13	NevL-YP10	7.027	6.594	3.8				
		5-Jun-13	NevL-YP11	6.867	6.565	3.2				
		5-Jun-13	NevL-YP12	7.072	6.781	3.1				
		5-Jun-13	NevL-YP13	7.053	6.722	3.5				
		5-Jun-13	NevL-YP14	7.481	7.058	3.9				
		5-Jun-13	NevL-YP15	6.196	5.906	2.2				
		5-Jun-13	NevL-YP16	7.011	6.706	3.0				
		5-Jun-13	NevL-YP17	5.497	5.290	1.8				
		5-Jun-13	NevL-YP18	6.242	5.933	2.2				
		5-Jun-13	NevL-YP19	7.205	6.877	4.0				
		5-Jun-13	NevL-YP20	7.470	7.167	4.0				

Table F.39: Individual fish data for fish caught in Schist Lake, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Notes
2013	Northern Pike	7-Jun-13	SchL-NP01	67.8	64.4	1,540		Sc, CL	8	
		7-Jun-13	SchL-NP02	60.7	57.5	1,270		Sc		
		7-Jun-13	SchL-NP03	45.8	43.0	563		Sc, CL	3	
		7-Jun-13	SchL-NP04	57.2	54.1	1,009		Sc		
		7-Jun-13	SchL-NP05	43.8	41.3	515		Sc, CL	3	
		7-Jun-13	SchL-NP06	60.0	56.9	1,021		Sc, CL	5	
		7-Jun-13	SchL-NP07	57.6	54.1	1,017		Sc, CL	5	
		7-Jun-13	SchL-NP08	61.6	58.5	1,029		Sc		
		7-Jun-13	SchL-NP09	60.6	57.2	1,044		Sc		
		7-Jun-13	SchL-NP10	60.5	57.2	1,018		Sc		
		7-Jun-13	SchL-NP11	55.0	51.8	960		Sc		
		7-Jun-13	SchL-NP12	68.7	66.0	1,505		Sc		
		7-Jun-13	SchL-NP13	47.3	44.4	720		Sc		
		7-Jun-13	SchL-NP14	64.5	61.0	1,047		Sc		
		7-Jun-13	SchL-NP15	61.8	57.9	1,037		Sc		
		7-Jun-13	SchL-NP16	46.4	43.7	595		Sc		
	Walleye	7-Jun-13	SchL-WA01	44.6	42.3	850		Sc, Ds		
		7-Jun-13	SchL-WA02	63.3	59.6	2,140		Sc, Ds		
		7-Jun-13	SchL-WA03	54.8	51.6	1,680		Sc, Ds		
		7-Jun-13	SchL-WA04	39.0	36.9	551	✓	Sc, Ds	3	
		7-Jun-13	SchL-WA05	28.7	26.1	200	✓	Sc, Ds	2	
		7-Jun-13	SchL-WA06	63.8	60.1	2,360	✓	Sc, Ds	11	a few cysts
		7-Jun-13	SchL-WA07	17.9	16.9	52	✓	Sc, Ds	1	
		7-Jun-13	SchL-WA08	27.3	25.8	165		Sc, Ds		
		7-Jun-13	SchL-WA09	45.0	42.3	805	✓	Sc, Ds	5	
		7-Jun-13	SchL-WA10	45.7	43.2	841		Sc, Ds		
		7-Jun-13	SchL-WA11	47.2	44.6	845		Sc, Ds		
		7-Jun-13	SchL-WA12	50.7	47.6	1,240		Sc, Ds		a few cysts
		7-Jun-13	SchL-WA13	37.8	35.9	490		Sc, Ds		
		7-Jun-13	SchL-WA14	37.7	35.0	430		Sc, Ds		
		7-Jun-13	SchL-WA15	36.8	34.6	409		Sc, Ds		
		7-Jun-13	SchL-WA16	29.8	28.2	230		Sc, Ds		
		7-Jun-13	SchL-WA17	36.7	34.2	432		Sc, Ds		lower caudle missing
	Whitefish	7-Jun-13	SchL-WF01	46.3	42.0	1,036		Sc		
		7-Jun-13	SchL-WF02	45.9	41.8	1,014		Sc		
		7-Jun-13	SchL-WF03	46.9	42.5	1,024		Sc		
	Yellow Perch	6-Jun-13	SchL-YP01	9.9	9.4	9.86	✓	Sc	2	
		6-Jun-13	SchL-YP02	6.5	6.2	2.75	✓ comp1	Sc		blackspot
		6-Jun-13	SchL-YP03	6.2	5.9	2.43	✓ comp1	Sc	1	
		6-Jun-13	SchL-YP04	6.4	6.0	2.47	✓ comp2	Sc	1	
		6-Jun-13	SchL-YP05	6.2	5.8	2.13	✓ comp2	Sc		
		6-Jun-13	SchL-YP06	5.9	5.5	2.03	✓ comp2	Sc		blackspot
		6-Jun-13	SchL-YP07	10.7	10.2	11.94	✓	Sc	2	
		6-Jun-13	SchL-YP08	6.3	6.0	2.38	✓ comp3	Sc		
		6-Jun-13	SchL-YP09	5.4	5.2	1.64	✓ comp3	Sc	1	
		6-Jun-13	SchL-YP10	6.2	5.8	1.94	✓ comp3	Sc		blackspot
		6-Jun-13	SchL-YP11	10.2	9.6	9.97				
		6-Jun-13	SchL-YP12	6.5	6.1	2.75				
		6-Jun-13	SchL-YP13	6.4	6.1	2.90				
		6-Jun-13	SchL-YP14	6.4	6.1	2.57				cestode
		6-Jun-13	SchL-YP15	6.4	6.0	2.47				
		6-Jun-13	SchL-YP16	8.4	7.9	5.64				
		6-Jun-13	SchL-YP17	6.8	6.5	3.58				
		6-Jun-13	SchL-YP18	10.0	9.5	9.06				
		6-Jun-13	SchL-YP19	6.2	5.9	2.29				
		6-Jun-13	SchL-YP20	5.6	5.4	1.92				

Table F.40: Individual fish data for fish caught in Unnamed Lake #1, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)
2012	Northern Pike	12-Jul-12	UNL-NP-01	22.1	19.9	46			
		12-Jul-12	UNL-NP-02	33.5	31.6	200			
		12-Jul-12	UNL-NP-03	52.8	50.3	800			
		12-Jul-12	UNL-NP-04	70.1	66.9	1,950	✓		
		12-Jul-12	UNL-NP-05	71.1	68.2	2,350			
		12-Jul-12	UNL-NP-06	78.4	74.9	2,450	✓		
		12-Jul-12	UNL-NP-07	44.4	41.9	460			
		12-Jul-12	UNL-NP-08	39.9	37.4	390			
		12-Jul-12	UNL-NP-09	33.5	31.5	205			
		12-Jul-12	UNL-NP-10	21.2	19.9	53			
		12-Jul-12	UNL-NP-11	45.3	42.9	500			
		13-Jul-12	UNL-NP-12	58.2	55.6	1,200			
		13-Jul-12	UNL-NP-13	38.6	36.6	300			
		13-Jul-12	UNL-NP-14	31.6	30.4	220			
		13-Jul-12	UNL-NP-15	48.1	45.1	580			
		13-Jul-12	UNL-NP-16	45.4	42.5	440			
		13-Jul-12	UNL-NP-17	42.0	39.3	410			
		13-Jul-12	UNL-NP-18	35.5	32.9	270			
		13-Jul-12	UNL-NP-19	52.9	49.9	900			
		13-Jul-12	UNL-NP-20	44.0	41.5	500			
		13-Jul-12	UNL-NP-21	41.5	38.8	350			
		13-Jul-12	UNL-NP-22	35.5	33.3	255			
		13-Jul-12	UNL-NP-23	39.1	36.6	300			
		13-Jul-12	UNL-NP-24	48.4	45.7	660			
		13-Jul-12	UNL-NP-25	19.5	18.3	41			
		13-Jul-12	UNL-NP-26	19.0	18.1	39			
		13-Jul-12	UNL-NP-27	23.7	22.5	65			
		14-Jul-12	UNL-NP-28	71.9	68.3	2,300			
		14-Jul-12	UNL-NP-29	48.5	45.6	640	✓		
		14-Jul-12	UNL-NP-30	33.3	31.2	190			
		14-Jul-12	UNL-NP-31	40.6	38.3	450			
		14-Jul-12	UNL-NP-32	32.6	30.5	200			
		14-Jul-12	UNL-NP-33	38.2	35.7	250			
		14-Jul-12	UNL-NP-34	50.8	48.1	830			
		14-Jul-12	UNL-NP-35	62.0	59.0	1,300			
		14-Jul-12	UNL-NP-36	56.4	53.5	1,050			
		14-Jul-12	UNL-NP-37	42.6	40.0	470			
		15-Jul-12	UNL-NP-38	31.8	29.9	200			
		15-Jul-12	UNL-NP-39	44.4	41.9	520			
		15-Jul-12	UNL-NP-40	36.0	33.7	290			
		15-Jul-12	UNL-NP-41	43.0	40.6	430			
		15-Jul-12	UNL-NP-42	22.4	20.9	53			
	Walleye	12-Jul-12	UNL-WA-01	66.0	63.0	2,650	✓		
		12-Jul-12	UNL-WA-02	44.9	42.0	960			
		13-Jul-12	UNL-WA-03	49.0	47.7	1,150			
		13-Jul-12	UNL-WA-04	24.6	23.1	135	✓		
		13-Jul-12	UNL-WA-05	48.0	45.0	1,200			
		14-Jul-12	UNL-WA-06	57.0	54.1	1,650			
		14-Jul-12	UNL-WA-07	51.7	49.0	1,650			
	White Sucker	12-Jul-12	UNL-WS-01	49.5	46.7	1,350			
		12-Jul-12	UNL-WS-02	49.2	-	-			
		12-Jul-12	UNL-WS-03	54.5	50.2	1,550			
		13-Jul-12	UNL-WS-04	51.6	48.0	1,550			
		13-Jul-12	UNL-WS-05	47.9	44.0	1,150			
		13-Jul-12	UNL-WS-06	44.6	41.9	950			
		13-Jul-12	UNL-WS-07	53.4	49.7	1,650			
		13-Jul-12	UNL-WS-08	50.6	47.0	1,450			
		13-Jul-12	UNL-WS-09	46.1	43.6	1,100			
		13-Jul-12	UNL-WS-10	41.7	38.8	800			
		13-Jul-12	UNL-WS-11	29.0	26.9	280			
		13-Jul-12	UNL-WS-12	44.0	40.9	1,050			
		13-Jul-12	UNL-WS-13	40.2	38.0	690			
		13-Jul-12	UNL-WS-14	48.4	45.3	1,250			
		13-Jul-12	UNL-WS-15	45.1	42.1	1,050			
		14-Jul-12	UNL-WS-16	45.0	41.9	1,050			
		14-Jul-12	UNL-WS-17	42.9	39.6	900			
		14-Jul-12	UNL-WS-18	49.5	46.2	1,400			
		14-Jul-12	UNL-WS-19	50.9	47.3	1,550			
		14-Jul-12	UNL-WS-20	50.0	46.7	1,300			
		14-Jul-12	UNL-WS-21	53.7	50.4	1,500			
		14-Jul-12	UNL-WS-22	50.2	47.7	1,450			
		14-Jul-12	UNL-WS-23	52.1	48.7	1,650			
		14-Jul-12	UNL-WS-24	48.2	44.6	1,200			
		14-Jul-12	UNL-WS-25	25.5	23.6	180	✓		
		14-Jul-12	UNL-WS-26	45.2	43.1	1,050			
		14-Jul-12	UNL-WS-27	52.5	48.9	1,650			
		14-Jul-12	UNL-WS-28	44.3	41.6	1,000			
		14-Jul-12	UNL-WS-29	42.6	39.7	890			
		14-Jul-12	UNL-WS-30	46.1	42.7	1,200			
		14-Jul-12	UNL-WS-31	52.0	48.6	1,550			

Table F.40: Individual fish data for fish caught in Unnamed Lake #1, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)
2012	White Sucker	14-Jul-12	UNL-WS-32	50.9	47.6	1,500			
		14-Jul-12	UNL-WS-33	47.5	43.9	1,250			
		14-Jul-12	UNL-WS-34	48.9	45.6	1,250			
		14-Jul-12	UNL-WS-35	44.1	41.5	990			
		14-Jul-12	UNL-WS-36	45.5	42.5	1,100			
		14-Jul-12	UNL-WS-37	39.1	36.4	740			
		14-Jul-12	UNL-WS-38	33.8	31.6	410			
		15-Jul-12	UNL-WS-39	45.6	43.4	1,050			
		15-Jul-12	UNL-WS-40	48.1	44.6	1,400			
		15-Jul-12	UNL-WS-41	39.9	37.1	750			
		15-Jul-12	UNL-WS-42	31.6	29.8	350			
		15-Jul-12	UNL-WS-43	43.2	40.8	1,000			
		15-Jul-12	UNL-WS-44	52.6	48.7	1,600			
		15-Jul-12	UNL-WS-45	54.5	50.0	1,750			
2012	Yellow Perch	13-Jul-12	UNL-YP-01	17.1	16.4	65	✓		
		15-Jul-12	UNL-YP-22	2.892	2.725	0.158			
		15-Jul-12	UNL-YP-02	2.732	2.602	0.169			
		15-Jul-12	UNL-YP-03	2.777	2.618	0.152			
		15-Jul-12	UNL-YP-04	2.923	2.803	0.178			
		15-Jul-12	UNL-YP-05	3.030	2.997	0.203			
		15-Jul-12	UNL-YP-06	3.089	2.990	0.233			
		15-Jul-12	UNL-YP-07	3.428	3.228	0.364			
		15-Jul-12	UNL-YP-08	3.336	3.190	0.350			
		15-Jul-12	UNL-YP-09	3.980	3.794	0.655			
		15-Jul-12	UNL-YP-10	2.835	2.722	0.233			
		15-Jul-12	UNL-YP-11	3.058	2.921	0.281			
		15-Jul-12	UNL-YP-12	3.286	3.097	0.297			
		15-Jul-12	UNL-YP-13	2.879	2.787	0.214			
		15-Jul-12	UNL-YP-14	3.293	3.139	0.320			
		15-Jul-12	UNL-YP-15	3.982	3.759	0.574			
		15-Jul-12	UNL-YP-16	4.348	4.158	0.852			
		15-Jul-12	UNL-YP-17	4.024	3.799	0.560			
		15-Jul-12	UNL-YP-18	4.283	4.092	0.718			
		15-Jul-12	UNL-YP-19	4.654	4.433	0.983			
		15-Jul-12	UNL-YP-20	4.372	4.188	0.880			
		15-Jul-12	UNL-YP-21	4.695	4.502	1.097			
	Blacknose Shinner	15-Jul-12	UNL-BNS-01	3.490	3.216	0.238			
		15-Jul-12	UNL-BNS-02	4.612	4.410	0.609			
		15-Jul-12	UNL-BNS-03	4.640	4.410	0.621			
		15-Jul-12	UNL-BNS-04	3.893	3.676	0.350			
		15-Jul-12	UNL-BNS-05	5.008	4.496	0.776			
		15-Jul-12	UNL-BNS-06	4.455	3.989	0.596			
		15-Jul-12	UNL-BNS-07	4.491	4.095	0.650			
		15-Jul-12	UNL-BNS-08	3.595	3.260	0.286			
		15-Jul-12	UNL-BNS-09	4.763	4.347	0.744			
		15-Jul-12	UNL-BNS-10	4.731	4.395	0.725			
		15-Jul-12	UNL-BNS-11	4.675	4.349	0.671			
		15-Jul-12	UNL-BNS-12	5.178	4.706	0.902			
		15-Jul-12	UNL-BNS-13	4.824	4.438	0.709			
		15-Jul-12	UNL-BNS-14	2.514	2.331	0.113			
		15-Jul-12	UNL-BNS-15	3.083	2.910	0.249			
		15-Jul-12	UNL-BNS-16	4.559	4.233	0.713			
		15-Jul-12	UNL-BNS-17	4.505	4.168	0.617			
		15-Jul-12	UNL-BNS-18	4.502	4.176	0.668			
		15-Jul-12	UNL-BNS-19	5.267	4.998	0.992			
		15-Jul-12	UNL-BNS-20	4.506	4.215	0.631			
		15-Jul-12	UNL-BNS-21	4.446	4.092	0.611			
		15-Jul-12	UNL-BNS-22	4.991	4.607	0.837			
		15-Jul-12	UNL-BNS-23	4.735	4.283	0.664			
		15-Jul-12	UNL-BNS-24	3.150	2.954	0.258			
2013	Yellow Perch	6-Jun-13	UNL1-YP01	8.4	8.1	5.6	✓	Sc, Ds	1
		6-Jun-13	UNL1-YP02	7.8	7.4	5.0	✓	Sc, Ds	1
		6-Jun-13	UNL1-YP03	8.5	8.1	7.0	✓	Sc, Ds	1
		6-Jun-13	UNL1-YP04	8.4	8.1	6.5	✓	Sc, Ds	1
		6-Jun-13	UNL1-YP05	7.3	6.9	3.8	✓ Comp1	Sc, Ds	1
		6-Jun-13	UNL1-YP06	6.7	6.6	2.8	✓ Comp1	Sc, Ds	1

Table F.41: Individual fish data for fish caught in Unnamed Lake #2, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Notes
2013	Northern Pike	7-Jun-13	UNL2-NP01	40.3	38.0	340		Sc, CL		
		7-Jun-13	UNL2-NP02	51.2	48.2	730		Sc, CL	7	
		7-Jun-13	UNL2-NP03	37.4	35.0	280		Sc, CL	3	
		7-Jun-13	UNL2-NP04	31.2	29.5	140		Sc, CL	2	
		7-Jun-13	UNL2-NP05	54.5	51.3	800		Sc		
		7-Jun-13	UNL2-NP06	52.8	49.7	750		Sc		
		7-Jun-13	UNL2-NP07	47.6	44.4	560		Sc		
		7-Jun-13	UNL2-NP08	42.2	39.4	420		Sc, CL		
		7-Jun-13	UNL2-NP09	40.1	37.5	355		Sc, CL	4	
		7-Jun-13	UNL2-NP10	34.1	32.0	225		Sc, CL	3	
	Walleye	7-Jun-13	UNL2-WA01	43.9	41.3	770		Sc		
		7-Jun-13	UNL2-WA02	38.5	36.2	490		Sc		
		7-Jun-13	UNL2-WA03	39.0	36.5	560		Sc		
		7-Jun-13	UNL2-WA04	40.5	38.6	590	✓	Sc, Ds	4	
		7-Jun-13	UNL2-WA05	47.1	44.3	910	✓	Sc, Ds	5	
		7-Jun-13	UNL2-WA06	52.0	49.6	1160	✓	Sc, Ds	9	
		7-Jun-13	UNL2-WA07	39.1	36.8	530	✓	Sc, Ds	4	
		7-Jun-13	UNL2-WA08	39.5	37.2	550	✓	Sc, Ds	5	
		7-Jun-13	UNL2-WA09	39.2	36.8	515		Sc, Ds		
		7-Jun-13	UNL2-WA10	39.5	37.0	565		Sc, Ds		
		7-Jun-13	UNL2-WA11	38.6	36.0	490		Sc, Ds		
		7-Jun-13	UNL2-WA12	40.6	38.1	600		Sc, Ds		tapeworm
		7-Jun-13	UNL2-WA13	43.9	41.5	830		Sc, Ds		
		7-Jun-13	UNL2-WA14	40.3	37.8	590		Sc, Ds		
	Yellow Perch	7-Jun-13	UNL2-YP01	14.1	13.5	32	✓	Sc, Ds	3	
		7-Jun-13	UNL2-YP02	14.5	13.8	35	✓	Sc, Ds	3	
		7-Jun-13	UNL2-YP03	15.6	15.0	45	✓	Sc, Ds	4	
		7-Jun-13	UNL2-YP04	10.9	10.2	14	✓	Sc, Ds	2	

Table F.42: Individual fish data for fish caught in Unnamed Lake #3, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Notes
2013	Northern Pike	8-Jun-13	UNL3-NP01	39.0	37.1	333	✓	Sc, CL	3	
		8-Jun-13	UNL3-NP02	33.2	31.9	199	✓	Sc, CL	3	
		8-Jun-13	UNL3-NP03	47.4	45.0	557		Sc		
		8-Jun-13	UNL3-NP04	47.5	44.5	453		Sc		
		8-Jun-13	UNL3-NP05	-	-	-				escaped
		9-Jun-13	UNL3-NP06	41.3	38.7	340	✓	Sc, CL	4	
		9-Jun-13	UNL3-NP07	54.7	52.1	702	✓	Sc, CL	7	
		9-Jun-13	UNL3-NP08	45.4	43.0	445	✓	Sc, CL	6	
		9-Jun-13	UNL3-NP09	51.7	48.3	734		Sc		
		9-Jun-13	UNL3-NP10	45.1	42.2	454		Sc		
		9-Jun-13	UNL3-NP11	49.1	46.4	568		Sc		
	Yellow Perch	8-Jun-13	UNL3-YP01	6.3	5.9	2.1	✓ Comp1	Sc		
		8-Jun-13	UNL3-YP02	5.6	5.3	1.3	✓ Comp1			tapeworm
		8-Jun-13	UNL3-YP03	5.7	5.4	1.5	✓ Comp1	Sc	1	
		8-Jun-13	UNL3-YP04	6.0	5.7	1.7	✓ Comp1	Sc		
		8-Jun-13	UNL3-YP05	7.1	6.7	3.3	✓ Comp2	Sc	1	
		8-Jun-13	UNL3-YP06	5.9	5.6	1.7	✓ Comp2	Sc		
		8-Jun-13	UNL3-YP07	5.6	5.4	1.6	✓ Comp3	Sc		
		8-Jun-13	UNL3-YP08	7.1	6.7	3.3	✓ Comp3	Sc	1	
		8-Jun-13	UNL3-YP09	6.3	6.0	2.2	✓ Comp3	Sc	1	
		8-Jun-13	UNL3-YP10	9.1	8.6	6.5		Sc	2	
		8-Jun-13	UNL3-YP11	9.8	9.2	8.2		Sc	2	
		8-Jun-13	UNL3-YP12	5.8	5.5	1.6		Sc		
		8-Jun-13	UNL3-YP13	6.0	5.6	1.7		Sc		
		8-Jun-13	UNL3-YP14	6.1	5.8	2.1		Sc		
		8-Jun-13	UNL3-YP15	6.0	5.7	1.7		Sc		
		8-Jun-13	UNL3-YP16	5.5	5.3	1.3		Sc		
		8-Jun-13	UNL3-YP17	6.2	5.8	2.0		Sc		
		8-Jun-13	UNL3-YP18	6.0	5.7	1.9		Sc		tapeworm
		8-Jun-13	UNL3-YP19	5.6	5.4	1.4		Sc		
		8-Jun-13	UNL3-YP20	5.2	5.0	1.3		Sc		

Table F.43: Individual fish data for fish caught in Unnamed Pond, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Notes
2012	Northern Pike	10-Jul-12	UP-NP-01	12.5	13.4	11.75		
		11-Jul-12	NP-01	57.7	61.2	980		skinny
		11-Jul-12	NP-02	51.4	54.6	990	✓	
		11-Jul-12	NP-03	58.4	61.9	1,340	✓	
		11-Jul-12	NP-04	52.8	56.1	1,040	✓	
		10-Jul-12	NP-05	-	-	-		escaped
		11-Jul-12	NP-06	59	62.1	1,450	✓	
	White Sucker	11-Jul-12	WS-01	41.9	45.5	920		male
		11-Jul-12	WS-02	41.9	45.3	1,050	✓	female
		11-Jul-12	WS-03	45.1	47.8	1,430		female
		11-Jul-12	WS-04	44.6	48.1	1,180	✓	male
	Yellow Perch	10-Jul-12	UP-YP-01	7.7	8.3	5.456		
		10-Jul-12	UP-YP-02	7.9	8.6	6.417		
		10-Jul-12	UP-YP-03	9.1	9.7	9.341		
		10-Jul-12	UP-YP-04	2.4	2.5	0.175		
		10-Jul-12	UP-YP-05	3.8	4.1	0.756		
		10-Jul-12	UP-YP-06	3.9	4.2	0.874		
		10-Jul-12	UP-YP-07	2.6	2.8	0.240		
		10-Jul-12	UP-YP-08	3.9	4.1	0.739		
		10-Jul-12	UP-YP-09	2.8	3	0.276		
		10-Jul-12	UP-YP-10	2.6	2.8	0.244		
		10-Jul-12	UP-YP-11	2.9	3.1	0.35		
		10-Jul-12	UP-YP-12	2.8	3	0.308		
		10-Jul-12	UP-YP-13	2.4	2.5	0.162		
		10-Jul-12	UP-YP-14	4.4	4.7	1.328		
		10-Jul-12	UP-YP-15	3.9	4.1	0.836		
		11-Jul-12	YP-01	10.0	10.7	11.5		
		11-Jul-12	YP-02	10.0	10.6	12.5		
		11-Jul-12	YP-03	9.6	10.1	10.2		
		11-Jul-12	YP-04	9.5	10.2	12.0		
		11-Jul-12	YP-05	10.5	11.0	12.2		
		11-Jul-12	YP-06	-	-	-		partly eaten, no weight or length recorded
		11-Jul-12	YP-07	15.0	16.0	47.0		
		11-Jul-12	YP-08	14.4	15.2	42.0		
		11-Jul-12	YP-09	15.5	16.4	48.0		
		11-Jul-12	YP-10	14.0	14.7	37.0		
		11-Jul-12	YP-11	14.5	15.3	40.0		
		11-Jul-12	YP-12	-	-	-		escaped
		11-Jul-12	YP-13	9.3	9.8	10.8		
	Iowa Darter	10-Jul-12	UP-ID-01	-	3.1	0.275		
		10-Jul-12	UP-ID-02	-	3.0	0.209		
		10-Jul-12	UP-ID-03	-	2.9	0.251		

Table F.44: Individual fish data for fish caught in Upper Three Duck Lake, Côté Gold Baseline Study, 2012 and 2013.

Year	Fish species	Date	Fish ID	Total length (cm)	Fork Length (cm)	Weight (g)	Tissue collected	Aging structures collected	Age (yrs)	Notes
2013	Northern Pike	5-Jun-13	UTDL-NP01	79.9	76.4	3,200		Sc, CL	8	
		5-Jun-13	UTDL-NP02	44.4	41.7	430		Sc, CL		
		5-Jun-13	UTDL-NP03	45.2	42.3	500		Sc, CL	5	
		5-Jun-13	UTDL-NP04	41.3	38.9	405		Sc, CL		
		5-Jun-13	UTDL-NP05	37.0	34.9	270		Sc, CL	3	
		5-Jun-13	UTDL-NP06	37.4	35.0	270		Sc, CL		
		5-Jun-13	UTDL-NP07	48.2	45.5	605		Sc, CL		
		5-Jun-13	UTDL-NP08	23.7	22.5	71		Sc		blackspot
		5-Jun-13	UTDL-NP09	36.6	34.4	255		Sc, CL	3	
		5-Jun-13	UTDL-NP10	49.6	47.3	630		Sc, CL	5	
		5-Jun-13	UTDL-NP11	41.0	38.9	355				
		5-Jun-13	UTDL-NP12	50.5	47.8	740				
		5-Jun-13	UTDL-NP13	35.0	33.3	240				
		5-Jun-13	UTDL-NP14	46.8	44.8	500				
		5-Jun-13	UTDL-NP15	40.5	37.3	345				blackspot
		5-Jun-13	UTDL-NP16	51.8	48.9	760				
		5-Jun-13	UTDL-NP17	47.2	44.4	550				
	Walleye	5-Jun-13	UTDL-WA01	28.9	27.8	230	✓	Sc, Ds	3	
		5-Jun-13	UTDL-WA02	31.0	29.4	280	✓	Sc, Ds	2	
		5-Jun-13	UTDL-WA03	20.0	19.0	65	✓	Sc, Ds	1	
		5-Jun-13	UTDL-WA04	29.8	27.9	250	✓	Sc, Ds	2	
		5-Jun-13	UTDL-WA05	20.6	19.5	55	✓	Sc, Ds	1	
	Whitefish	5-Jun-13	UTDL-WF01	44.5	39.9	1,210		Sc		
		5-Jun-13	UTDL-WF02	46.7	41.6	1,290		Sc		
		5-Jun-13	UTDL-WF03	44.5	39.6	1,060		Sc		
	Yellow Perch	4-Jun-13	UTDL-YP01	5.7	5.5	1.73	✓ Comp1	Sc	1	
		4-Jun-13	UTDL-YP02	6.1	5.8	2.05	✓ Comp1	Sc	2	
		4-Jun-13	UTDL-YP03	5.2	4.9	1.23	✓ Comp1	Sc		
		4-Jun-13	UTDL-YP04	6.0	5.8	2.05	✓ Comp2	Sc		
		4-Jun-13	UTDL-YP05	6.9	6.2	2.56	✓ Comp2	Sc	2	
		4-Jun-13	UTDL-YP06	5.2	4.9	0.79	✓ Comp2	Sc	1	
		4-Jun-13	UTDL-YP07	9.4	9.0	6.81	✓	Sc	2	
		4-Jun-13	UTDL-YP08	8.2	7.8	6.06	✓	Sc	2	
		4-Jun-13	UTDL-YP09	5.0	4.9	1.17	✓ Comp3	Sc	1	
		4-Jun-13	UTDL-YP10	6.2	5.9	2.07	✓ Comp3	Sc	1	
		4-Jun-13	UTDL-YP11	5.3	5.1	1.27	✓ Comp3	Sc		
		4-Jun-13	UTDL-YP12	5.4	5.3	1.23	✓ Comp3	Sc		
		4-Jun-13	UTDL-YP13	6.4	6.1	2.50				
		4-Jun-13	UTDL-YP14	4.9	4.6	1.10				
		4-Jun-13	UTDL-YP15	4.7	4.5	1.10				blackspot
		4-Jun-13	UTDL-YP16	5.8	5.5	2.00				blackspot
		4-Jun-13	UTDL-YP17	5.7	5.4	1.80				blackspot
		4-Jun-13	UTDL-YP18	6.3	5.9	2.20				blackspot
		4-Jun-13	UTDL-YP19	5.5	5.2	1.50				
		4-Jun-13	UTDL-YP20	5.6	5.3	1.60				
		5-Jun-13	UTDL-YP21	14.7	13.9	37.00		Sc, Ds		blackspot

Table F.45: Individual fish data for fish caught in Weeduck Lake, Côté Gold Baseline Study, 2021 and 2013.

Year	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Notes
2013	Northern Pike	5-Jun-13	WeeL-NP01	48.1	45.4	660	✓	Sc, CL	4	blackspot
		5-Jun-13	WeeL-NP02	52.7	49.6	860	✓	Sc, CL	3	blackspot
		5-Jun-13	WeeL-NP03	52.0	49.2	830	✓	Sc, CL	4	blackspot
		5-Jun-13	WeeL-NP04	62.5	58.5	1,240	✓	Sc, CL	6	muscle duplicate WeeL-NP04X
		5-Jun-13	WeeL-NP05	55.5	52.3	950	✓	Sc, CL	5	
		5-Jun-13	WeeL-NP06	61.2	58.0	1,390		Sc		blackspot
	Whitefish	5-Jun-13	WeeL-WF01	42.0	37.5	790		Sc, PF		
		5-Jun-13	WeeL-WF02	44.6	40.2	850		Sc, PF	9	
		5-Jun-13	WeeL-WF03	47.2	42.4	1,100		Sc		
		5-Jun-13	WeeL-WF04	45.4	41.0	1,000		Sc		
		5-Jun-13	WeeL-WF05	27.0	24.0	189		Sc, PF	4	
		5-Jun-13	WeeL-WF06	47.1	41.7	1,090		Sc		
		5-Jun-13	WeeL-WF07	35.0	30.9	405		Sc, PF	3	
		5-Jun-13	WeeL-WF08	44.2	39.7	1,000		Sc, PF		
		5-Jun-13	WeeL-WF09	27.1	24.0	186		Sc, PF		
		5-Jun-13	WeeL-WF10	37.9	33.6	585		Sc, PF		
		5-Jun-13	WeeL-WF11	17.1	15.4	40		Sc, PF	2	
		5-Jun-13	WeeL-WF12	45.6	40.5	1,050		Sc, PF		
		5-Jun-13	WeeL-WF13	39.4	34.8	615		Sc, PF		
		5-Jun-13	WeeL-WF14	46.9	42.1	1,010		Sc, PF		
		5-Jun-13	WeeL-WF15	48.4	43.2	1,260		Sc, PF	15	
		5-Jun-13	WeeL-WF16	46.5	42.0	1,110		Sc		
		5-Jun-13	WeeL-WF17	33.8	30.0	410		Sc, PF		
		5-Jun-13	WeeL-WF18	46.4	41.5	1,180		Sc, PF		
		5-Jun-13	WeeL-WF19	34.1	31.0	390		Sc, PF		
		5-Jun-13	WeeL-WF20	17.0	15.1	42		Sc, PF		
	White Sucker	5-Jun-13	WeeL-WS01	24.5	22.9	168		Sc, PF		
		5-Jun-13	WeeL-WS02	18.6	17.4	75		Sc, PF		
		5-Jun-13	WeeL-WS03	21.1	19.8	126		Sc, PF		
		5-Jun-13	WeeL-WS04	22.0	20.4	114		Sc, PF		
	Yellow Perch	4-Jun-13	WeeL-YP01	5.4	5.0	1.2	✓ Comp1	Sc, Ds	1	
		4-Jun-13	WeeL-YP02	5.3	5.0	1.2	✓ Comp1	Sc	1	
		4-Jun-13	WeeL-YP03	5.8	5.4	1.7	✓ Comp1	Sc		
		4-Jun-13	WeeL-YP04	5.5	5.1	1.1	✓ Comp1	Sc		blackspot
		4-Jun-13	WeeL-YP05	6.8	6.4	2.7	✓ Comp2	Sc	1	
		4-Jun-13	WeeL-YP06	6.0	5.6	1.7	✓ Comp2	Sc		
		5-Jun-13	WeeL-YP07	15.0	14.4	32.5	✓	Sc, Ds		blackspot
		5-Jun-13	WeeL-YP08	10.9	10.3	12.3	✓	Sc, Ds	2	blackspot
		5-Jun-13	WeeL-YP09	6.7	6.3	2.2	✓ Comp3	Sc		
		5-Jun-13	WeeL-YP10	6.5	6.1	2.0	✓ Comp3	Sc	2	
		5-Jun-13	WeeL-YP11	6.3	5.9	2.0	✓ Comp3	Sc		
		5-Jun-13	WeeL-YP12	6.1	5.8	2.2	✓ Comp3	Sc		
		5-Jun-13	WeeL-YP13	7.4	7.0	3.3	✓ Comp4	Sc		blackspot
		5-Jun-13	WeeL-YP14	7.6	7.1	4.0	✓ Comp4	Sc	1	
		5-Jun-13	WeeL-YP15	7.2	6.8	3.3	✓ Comp4	Sc		
		5-Jun-13	WeeL-YP16	6.8	6.3	3.0	✓ Comp4			

Table F.46: Fish tissue data from large- and small-bodied fish surrounding the Côté Gold Baseline, 2012 and 2013.

	Watershed	Mollie River Watershed																			
	Lake	Chester Lake										East Clam Lake				Unnamed Pond				Beaver Pond	
	Species	northern pike					yellow perch					nothern pike	yellow perch	Iowa darter	johnny darter	northern pike				fathead minnow	northern redbelly dace
	Date	7-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13	5-Jul-12	5-Jul-12	7/5/2012	5-Jul-12	11-Jul-13	11-Jul-12	11-Jul-12	11-Jul-12	11-Jul-12	11-Jul-12
	ID	CHEL-NP07	CHEL-NP08	CHEL-NP09	CHEL-NP10	CHEL-NP11	CHEL-YP08	CHEL-YP10	CHEL-YP12	CHEL-YPCOMP1	CHEL-YPCOMP2	CLE-NP-01	CLE-YP-01 - COMPOSITE	CLE-ID-01 COMPOSITE	CLE-JD-01 - COMPOSITE	UP-NP-2	UP-NP-3	UP-NP-4	UP-NP-6	BP-FM-01 - COMPOSITE	BP-NRBD-01 - COMPOSITE
	Sample Type	MT	MT	MT	MT	MT	WhB	WhB	WhB	WhComp	WhComp	MT	WhComp	WhComp	WhComp	MT	MT	MT	MT	WhComp	WhComp
Parameter	Units																				
Moisture	%	81.42	81.83	79.4	80.17	79.07	74.69	77.89	75.41	76.8	77.68	82.33	74.2	68.58	68.39	75.78	75.85	76.46	75.09	73.32	69.66
Mercury	µg/g	20	21	13	11	3.8	0.42	0.45	0.39	0.29	0.43	8.7	0.17	0.21	0.14	3.6	1.9	2.2	2	0.07	0.13
Aluminum	µg/g	1.6	0.8	1	1.6	6	8.6	13	15	13	11	7.4	45	40	100	5	1.9	2.1	1.8	53	36
Antimony	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/g	0.12	0.14	0.06	0.06	0.07	0.04	0.04	0.06	0.06	0.09	0.06	0.15	0.17	0.23	0.11	0.11	0.11	0.14	0.15	0.16
Barium	µg/g	<0.01	<0.01	<0.01	<0.01	<0.01	1.6	2.5	2	3.4	4.6	0.99	3.8	4.4	5.2	0.46	0.08	0.23	0.19	9.1	18
Beryllium	µg/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	0.004	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Boron	µg/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	0.3	0.5
Cadmium	µg/g	0.004	0.004	0.005	0.003	0.003	0.06	0.082	0.1	0.089	0.11	0.006	0.042	0.046	0.07	0.007	<0.002	<0.002	<0.002	0.021	0.032
Chromium	µg/g	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	0.2	0.1	0.2	0.3	0.4	0.7	0.7	0.3	<0.1	<0.1	0.1	0.2	0.4
Cobalt	µg/g	0.023	0.005	0.009	0.007	0.018	0.04	0.038	0.044	0.058	0.053	0.014	0.081	0.079	0.16	0.003	<0.002	<0.002	0.003	0.13	0.16
Copper	µg/g	0.54	0.5	0.69	0.78	0.54	1.7	1.4	1.8	1.9	2	1	3.7	4.2	4.6	1.6	0.89	0.76	2.4	2.7	5.7
Iron	µg/g	<0.5	<0.5	0.9	<0.5	0.6	33	46	55	51	64	18	110	120	270	13	6.7	8.8	7.2	140	200
Lead	µg/g	0.013	0.01	0.01	0.015	0.011	0.099	0.11	0.12	0.065	0.09	0.077	0.21	0.39	0.63	0.07	0.03	0.061	0.021	0.13	0.2
Manganese	µg/g	1.4	0.75	0.39	0.33	1.6	19	18	27	28	40	5	32	19	31	1.9	0.45	1.8	0.57	82	91
Molybdenum	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.08	0.1	0.07	0.06	<0.02	0.07	0.06	0.09	<0.02	<0.02	<0.02	<0.02	0.08	0.16
Nickel	µg/g	0.06	0.02	0.04	0.07	0.06	0.11	0.2	0.14	0.15	0.19	0.1	0.27	0.26	0.37	0.09	0.02	<0.01	0.07	0.13	0.32
Selenium	µg/g	0.95	0.9	0.78	0.98	1.1	2	1.9	2.2	1.2	1.3	0.73	1.2	1.3	1.6	1.2	1	1	1.1	0.71	0.86
Silver	µg/g	<0.002	<0.002	<0.002	0.003	0.003	0.014	0.01	0.013	0.01	0.01	<0.002	0.008	0.005	<0.002	0.002	0.002	0.002	<0.002	0.007	0.035
Strontium	µg/g	0.93	0.37	0.06	0.05	0.74	17	18	20	24	23	5.9	17	28	28	1.1	0.19	0.87	0.29	36	45
Thallium	µg/g	0.02	0.03	0.03	0.03	0.04	0.03	0.02	0.04	0.03	0.02	0.01	0.05	0.04	0.03	0.04	0.04	0.04	0.04	0.03	0.02
Tin	µg/g	0.02	0.01	0.01	0.02	<0.01	0.03	0.06	0.04	0.08	0.14	0.03	0.06	0.04	<0.01	0.18	0.22	0.31	<0.01	<0.01	0.03
Titanium	µg/g	0.39	0.32	0.42	0.34	0.37	0.89	1.1	1.3	0.97	1.2	0.81	3.1	3.1	4.6	0.87	0.61	0.6	0.49	3	3.2
Uranium	µg/g	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	0.004	0.007	0.004	0.018	<0.001	0.002	0.009	0.017	0.005	0.002	<0.001	0.002	0.026	0.011
Vanadium	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.18	0.22	0.3	0.14	0.15	0.03	0.13	0.32	0.36	<0.02	<0.02	<0.02	<0.02	0.12	0.1
Zinc	µg/g	18	20	19	18	18	92	90	100	130	150	28	120	100	120	20	14	15	13	100	290

MT - muscle tissue
WhB - whole body
WhComp - whole body composite

Table F.46: Fish tissue data from large- and small-bodied fish surrounding the Côté Gold Baseline, 2012 and 2013.

	Watershed	Mollie River Watershed																			
	Lake	Clam Lake													Côté Lake						
	Species	northern pike					smallmouth bass		yellow perch	yellow perch					northern pike						
	Date	9-Jun-13	9-Jun-13	9-Jun-13	9-Jun-13	9-Jun-13	7-Jul-12	7-Jul-12	5-Jul-12	8-Jun-13	8-Jun-13	8-Jun-13	8-Jun-13	8-Jun-13	5-Jul-12	6-Jul-12	6-Jul-12	6-Jul-12	7-Jul-12	7-Jul-12	7-Jul-12
	ID	CLAL-NP01	CLAL-NP06	CLAL-NP07	CLAL-NP08	CLAL-NP09	CIL-SMB-17	CIL-SMB-18	CIL-YP-01 - COMPOSITE	CLAL-YPCOMP1	CLAL-YPCOMP2	CLAL-YPCOMP3	CLAL-YPCOMP4	CLAL-YPCOMP5	CL-NP-03	CL-NP-32	CL-NP-33	CL-NP-40	CL-NP-46	CL-NP-50	CL-NP-52
	Sample Type	MT	MT	MT	MT	MT	MT	MT	WhComp	WhComp	WhComp	WhComp	WhComp	WhComp	MT	MT	MT	MT	MT	MT	MT
Parameter	**Units**																				
Moisture	%	78.77	80.08	80.11	78.81	81.06	77.25	74.04	77.6	76.64	76.03	76.12	76.78	76.66	78.76	79.3	81.14	76.26	79.14	79.1	77.34
Mercury	µg/g	3.1	2.7	1.9	4.3	3.2	1.8	1.5	0.12	0.12	0.25	0.2	0.15	0.14	9.7	4.5	0.5	2.1	0.9	2.2	3.5
Aluminum	µg/g	7.3	8.3	5.4	1.4	1.2	2.8	5.3	29	7.5	7.3	6.8	7.7	5.8	36	5.8	19	3.5	8.6	3.2	2.4
Antimony	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/g	0.1	0.1	0.11	0.13	0.16	0.16	0.16	0.19	0.07	0.07	0.06	0.06	0.06	0.16	0.15	0.14	0.12	0.1	0.19	0.13
Barium	µg/g	0.44	0.7	0.45	0.08	<0.01	0.14	0.09	3.3	3.1	4.4	3.8	2.7	3.6	5.8	0.32	0.68	0.21	0.3	0.13	0.42
Beryllium	µg/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Boron	µg/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	µg/g	0.005	0.003	0.005	0.003	0.003	<0.002	<0.002	0.09	0.078	0.075	0.066	0.11	0.082	0.003	<0.002	0.018	0.005	0.003	0.003	0.002
Chromium	µg/g	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	0.3	0.8	0.1	0.1	0.1	<0.1	<0.1	0.5	0.7	1.9	0.2	0.7	0.9	0.3
Cobalt	µg/g	0.019	0.01	0.011	0.007	0.007	0.006	0.006	0.056	0.042	0.038	0.042	0.051	0.041	0.029	0.022	0.037	0.014	0.023	0.017	0.013
Copper	µg/g	0.89	0.59	0.62	0.17	0.17	2.3	0.82	3.4	1.4	1.9	1.4	3	1.5	1.6	1.6	4.8	1.1	1.5	1.2	0.91
Iron	µg/g	14	20	14	5.6	7.6	14	10	83	52	52	48	72	55	51	14	41	11	29	18	9.5
Lead	µg/g	0.029	0.036	0.028	0.007	0.012	0.05	0.019	0.15	0.031	0.043	0.043	0.047	0.03	0.059	0.04	0.12	0.017	0.06	0.046	0.03
Manganese	µg/g	1.6	0.7	0.69	0.42	0.49	0.7	0.49	52	23	18	23	26	24	4.6	4.4	7	1.2	7.7	4.1	2
Molybdenum	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.06	0.08	0.07	0.09	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	µg/g	0.04	0.05	0.08	0.06	0.04	0.08	0.05	0.14	0.17	0.11	0.19	0.1	0.09	0.15	0.08	0.2	0.03	0.09	0.06	0.04
Selenium	µg/g	1.3	0.94	1.2	1.1	1.2	1.6	1.3	1.5	1.3	1.4	1.4	1.8	1.4	0.78	0.96	0.76	0.84	0.68	0.84	1
Silver	µg/g	0.009	0.008	0.007	<0.002	<0.002	<0.002	<0.002	<0.002	0.006	0.006	0.006	0.013	0.004	0.002	<0.002	0.003	<0.002	<0.002	<0.002	<0.002
Strontium	µg/g	0.97	0.14	0.13	0.09	0.08	0.17	0.16	17	17	18	17	20	19	2.1	1.4	1.9	0.54	0.84	1.1	0.73
Thallium	µg/g	0.04	0.03	0.03	0.02	0.03	0.01	0.01	0.03	0.03	0.03	0.04	0.04	0.03	0.03	0.05	0.09	0.05	0.04	0.04	0.06
Tin	µg/g	<0.01	0.02	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.06	0.09	0.27	0.1	0.04	0.06	0.08	0.03	0.02	0.01	0.1	0.05
Titanium	µg/g	0.6	0.83	0.63	0.34	0.34	0.42	0.62	1.9	0.89	0.87	0.82	0.79	0.67	0.95	0.99	1.7	0.81	1.2	0.64	0.61
Uranium	µg/g	<0.001	0.002	<0.001	0.003	<0.001	<0.001	0.002	0.006	0.002	0.002	0.004	0.003	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.09	0.04	0.04	0.04	0.07	0.04	0.06	<0.02	0.05	<0.02	0.03	<0.02	<0.02
Zinc	µg/g	34	18	25	18	16	19	14	120	110	110	92	94	100	21	16	32	17	18	25	18

MT - muscle tissue
WhB - whole body
WhComp - whole body composite

Table F.46: Fish tissue data from large- and small-bodied fish surrounding the Côté Gold Baseline, 2012 and 2013.

	Watershed	Mollie River Watershed																			
	Lake	Weeduck Lake										Upper Three Duck Lake									
	Species	northern pike					yellow perch					walleye					yellow perch				
	Date	5-Jun-13	5-Jun-13	5-Jun-13	5-Jun-13	5-Jun-13	4-Jun-13	4-Jun-13	5-Jun-13	5-Jun-13	5-Jun-13	5-Jun-13	5-Jun-13	5-Jun-13	5-Jun-13	5-Jun-13	4-Jun-13	4-Jun-13	4-Jun-13	4-Jun-13	5-Jun-13
	ID	WEEL-NP01	WEEL-NP02	WEEL-NP03	WEEL-NP04	WEEL-NP05	WEEL-YPCOMP1	WEEL-YPCOMP2	WEEL-YP08	WEEL-YPCOMP3	WEEL-YPCOMP4	UTDL-WA01	UTDL-WA02	UTDL-WA03	UTDL-WA04	UTDL-WA05	UTDL-YPCOMP1	UTDL-YPCOMP2	UTDL-YP07	UTDL-YP08	UTDL-YPCOMP3
	Sample Type	MT	MT	MT	MT	MT	WhComp	WhComp	WhB	WhComp	WhComp	MT	MT	MT	MT	MT	WhComp	WhComp	MT	MT	WhComp
Parameter	**Units**																				
Moisture	%	79.9	80.14	78.89	78.29	78.32	76.17	74.61	75.92	76.64	74.71	81.48	77.62	77.71	80.09	79.71	76.13	77.08	74.15	75.04	76.7
Mercury	µg/g	2.1	2.1	3	4.1	4	0.55	0.24	0.24	0.57	0.29	1.1	1.5	1.3	1	1.2	0.32	0.26	0.3	0.12	0.37
Aluminum	µg/g	4.8	3.1	4.2	8.6	3.5	15	7.4	8.4	4.2	3.2	3.8	5.6	7.1	2.9	7.9	13	32	18	37	12
Antimony	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/g	0.09	0.21	0.07	0.16	0.12	0.14	0.07	0.03	0.09	0.03	0.08	0.08	0.1	0.08	0.1	0.15	0.17	0.09	0.08	0.14
Barium	µg/g	0.5	0.35	0.24	0.25	0.43	12	8.4	5.2	6	4	0.31	0.25	0.55	0.1	0.56	2.6	3.7	2.9	2.5	4.4
Beryllium	µg/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Boron	µg/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.4	<0.2	<0.2	<0.2	<0.2
Cadmium	µg/g	0.004	<0.002	0.004	0.002	0.002	0.072	0.038	0.026	0.045	0.027	<0.002	<0.002	0.004	<0.002	0.003	0.079	0.11	0.12	0.065	0.063
Chromium	µg/g	0.1	0.1	<0.1	<0.1	0.1	0.5	0.2	0.3	0.4	0.3	<0.1	<0.1	<0.1	<0.1	0.2	0.3	0.5	0.3	0.2	0.2
Cobalt	µg/g	0.017	0.013	0.006	0.015	0.012	0.07	0.043	0.039	0.054	0.032	0.012	0.007	0.009	0.006	0.014	0.072	0.074	0.068	0.077	0.07
Copper	µg/g	0.55	1.5	0.61	0.6	1.2	4	2.8	1.5	1.9	1.4	0.65	0.9	0.91	0.51	0.86	1.9	3.4	1.8	2	2
Iron	µg/g	10	20	12	8.7	15	89	60	66	52	38	16	12	20	7	15	64	88	90	90	69
Lead	µg/g	0.015	0.012	<0.002	0.02	0.021	0.14	0.058	0.13	0.027	0.026	0.026	0.024	0.056	0.004	0.068	0.18	0.18	0.2	0.091	0.13
Manganese	µg/g	3.4	1.1	0.87	2.2	3.3	79	92	80	100	46	1.1	1.2	1.4	0.71	2.2	30	34	43	82	37
Molybdenum	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	0.08	0.06	0.07	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.11	0.11	0.11	0.08
Nickel	µg/g	0.15	0.04	0.02	0.04	0.07	0.43	0.3	0.29	0.16	0.18	0.15	0.06	0.12	0.04	0.24	0.34	0.3	0.35	0.15	0.85
Selenium	µg/g	1.7	1.6	1.5	1.3	1.5	1.5	1.5	1.8	1.4	1.2	1.2	1.2	1.1	1.2	0.93	1.2	1.2	2	1.1	1.2
Silver	µg/g	0.004	0.004	<0.002	<0.002	<0.002	0.018	0.021	0.011	0.01	0.013	0.004	<0.002	0.003	<0.002	0.003	0.006	0.013	0.007	0.01	0.01
Strontium	µg/g	0.89	0.17	0.1	0.51	0.79	30	29	25	29	21	0.14	0.14	0.2	0.06	0.47	16	20	27	20	18
Thallium	µg/g	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.04	0.03	0.05	0.05	0.04	0.03	0.04	0.03	0.04	0.03
Tin	µg/g	0.04	0.04	0.02	0.04	0.03	0.91	0.66	0.03	0.06	<0.01	<0.01	<0.01	0.04	<0.01	0.02	0.04	0.02	0.03	0.02	0.03
Titanium	µg/g	0.51	0.44	0.71	0.51	0.49	1.2	0.82	0.87	0.83	0.55	0.7	0.79	0.95	0.67	0.82	1.2	2.8	1.7	1.8	2.4
Uranium	µg/g	<0.001	<0.001	0.012	0.004	<0.001	0.004	0.003	0.002	0.002	0.002	0.001	0.015	0.01	0.006	0.017	0.009	0.007	0.01	0.004	0.006
Vanadium	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.03	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.07	0.11	0.6	0.15	0.07
Zinc	µg/g	21	29	19	22	22	140	100	77	110	79	19	15	18	16	18	96	110	110	90	110

MT - muscle tissue
WhB - whole body
WhComp - whole body composite

Table F.46: Fish tissue data from large- and small-bodied fish surrounding the Côté Gold Baseline, 2012 and 2013.

	Watershed	Mollie River Watershed																			
	Lake	Middle Three Duck Lake										Lower Three Duck Lake									
	Species	walleye					yellow perch					northern pike	walleye				yellow perch				
	Date	6-Jun-13	6-Jun-13	6-Jun-13	6-Jun-13	6-Jun-13	6-Jun-13	6-Jun-13	9-Jun-13	9-Jun-13	9-Jun-13	6-Jun-13	6-Jun-13	6-Jun-13	6-Jun-13	6-Jun-13	5-Jun-13	5-Jun-13	5-Jun-13	6-Jun-13	6-Jun-13
	ID	MTDL-WA01	MTDL-WA02	MTDL-WA03	MTDL-WA05	MTDL-WA07	MTDL-YP02	MTDL-YP04	MTDL-YPCOMP1	MTDL-YPCOMP2	MTDL-YPCOMP3	LTDL-NP05	LTDL-WA01	LTDL-WA02	LTDL-WA03	LTDL-WA04	LTDL-YPCOMP1	LTDL-YPCOMP2	LTDL-YPCOMP3	LTDL-YP09	LTDL-YPCOMP4
	Sample Type	MT	MT	MT	MT	MT	MT	MT	WhComp	WhComp	WhComp	MT	MT	MT	MT	MT	WhComp	WhComp	WhComp	WhB	WhComp
Parameter	Units																				
Moisture	%	80.48	78.07	78.66	81.08	80.44	76.22	75.09	77.58	76.43	76.68	81.5	79.62	77.14	80.66	77.49	77.19	76.62	76.46	75.29	77.32
Mercury	µg/g	2.4	2.2	2.7	2.2	4.1	0.22	0.26	0.44	0.31	0.32	4.8	5.8	2	2.5	0.87	0.19	0.27	0.2	0.32	0.26
Aluminum	µg/g	6.6	2.8	3.3	3.1	3.5	8.3	5.6	9.7	8	8.8	1.8	3.4	1.7	1.9	1.8	16	9.9	12	4.6	6.1
Antimony	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/g	0.14	0.08	0.11	0.1	0.11	0.05	0.03	0.1	0.08	0.07	0.21	0.14	0.07	0.14	0.09	0.1	0.19	0.14	0.06	0.06
Barium	µg/g	0.11	0.16	0.12	0.3	0.12	2.3	2.4	5	3.6	4.7	0.72	0.22	0.08	0.09	0.12	3.6	3.1	3	3.3	3.8
Beryllium	µg/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Boron	µg/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	µg/g	0.003	0.003	0.002	0.005	0.005	0.075	0.076	0.12	0.066	0.079	0.004	0.005	0.002	0.003	0.003	0.071	0.074	0.095	0.074	0.18
Chromium	µg/g	0.2	0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.1	0.2	<0.1	<0.1	0.2	0.2	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1
Cobalt	µg/g	0.008	0.006	0.006	0.018	0.005	0.04	0.045	0.062	0.047	0.048	0.013	0.007	0.006	0.007	0.006	0.051	0.052	0.063	0.046	0.07
Copper	µg/g	1.1	0.64	0.58	0.97	0.76	1.7	1.6	2.2	1.8	1.7	0.57	0.97	0.52	0.56	0.54	1.5	1.9	2.1	1.3	1.6
Iron	µg/g	11	10	6.5	5.8	10	47	59	70	54	70	12	12	5.6	13	8.8	60	56	65	75	50
Lead	µg/g	0.027	0.053	0.043	0.014	0.021	0.068	0.074	0.057	0.035	0.033	0.015	0.032	0.014	0.014	0.013	0.14	0.073	0.054	0.11	0.041
Manganese	µg/g	1	1	1.1	1.3	0.85	32	22	24	20	19	2.8	0.74	0.88	0.81	1.3	47	21	28	49	21
Molybdenum	µg/g	<0.02	<0.02	<0.02	0.03	<0.02	0.09	0.05	0.06	0.06	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.06	0.07	0.06	0.05
Nickel	µg/g	0.21	0.14	0.11	0.05	0.06	0.16	0.13	0.2	0.18	0.18	0.09	0.11	0.09	0.08	0.1	0.19	0.12	0.14	0.16	0.14
Selenium	µg/g	1.4	1.3	1.5	1.2	1.6	2.2	2.1	1.5	1.4	1.3	1.2	1.3	1.1	1.3	1.2	1.1	1.3	1.2	1.7	1.2
Silver	µg/g	<0.002	0.006	0.008	0.015	0.008	0.013	0.005	0.011	0.008	0.006	0.003	0.021	0.005	0.007	0.005	0.008	0.006	0.006	0.007	0.007
Strontium	µg/g	0.08	0.16	0.15	0.15	0.15	20	22	28	25	26	1.2	0.29	0.14	0.45	0.41	23	21	24	24	21
Thallium	µg/g	0.04	0.04	0.03	0.05	0.03	0.03	0.02	0.03	0.03	0.03	0.03	0.04	0.05	0.04	0.04	0.03	0.03	0.04	0.04	0.04
Tin	µg/g	0.01	0.07	0.07	<0.01	0.03	0.13	0.1	0.05	0.03	0.04	0.03	0.03	0.04	0.06	0.03	0.07	0.02	0.02	0.09	0.06
Titanium	µg/g	0.99	0.65	0.97	0.7	0.74	1.1	0.8	1.1	1	1.2	0.52	1.1	0.81	0.9	0.75	1.4	1	1	0.83	0.98
Uranium	µg/g	0.007	0.004	0.004	0.004	0.002	0.009	0.006	0.003	0.002	0.002	0.002	0.002	0.003	0.01	0.002	0.006	0.002	0.007	0.005	0.002
Vanadium	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	0.41	0.06	0.04	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	0.1	0.05	0.07	0.26	0.04
Zinc	µg/g	18	18	21	19	21	93	79	140	100	120	19	15	14	12	17	100	94	110	100	90

MT - muscle tissue
WhB - whole body
WhComp - whole body composite

Table F.46: Fish tissue data from large- and small-bodied fish surrounding the Côté Gold Baseline, 2012 and 2013.

	Watershed	**Mollie River Watershed**																			
	Lake	**Unnamed Lake #3**										**Delaney Lake**									
	Species	northern pike					yellow perch					northern pike					yellow perch				
	Date	8-Jun-13	8-Jun-13	9-Jun-13	9-Jun-13	9-Jun-13	8-Jun-13	8-Jun-13	8-Jun-13	8-Jun-13	8-Jun-13	8-Jun-13	8-Jun-13	8-Jun-13	8-Jun-13	8-Jun-13	8-Jun-13	8-Jun-13	8-Jun-13	8-Jun-13	8-Jun-13
	ID	UNL3-NP01	UNL3-NP02	UNL3-NP06	UNL3-NP07	UNL3-NP08	UNL3-YPCOMP 1	UNL3-YPCOMP 2	UNL3-YPCOMP 3	UNL3-YP10	UNL3-YP11	DELL-NP01	DELL-NP03	DELL-NP04	DELL-NP05	DELL-NP06	DELL-YP03	DELL-YP08	DELL-YP10	DELL-YPCOMP 1	DELL-YPCOMP 2
	Sample Type	MT	MT	MT	MT	MT	WhComp	WhComp	WhComp	WhB	WhB	MT	MT	MT	MT	MT	WhB	WhB	WhB	WhComp	WhComp
Parameter	**Units**																				
Moisture	%	77.09	78.41	79.12	81.5	79.45	76.66	76.63	77.2	76.57	74.82	79.26	79.85	80.46	80.61	79.82	77.39	45.27	77.15	76.41	76.16
Mercury	µg/g	4.6	3	4.7	14	6.5	0.5	0.54	0.28	0.44	0.61	7.4	0.53	1.1	1.9	1.6	0.43	0.27	0.29	0.15	0.15
Aluminum	µg/g	1.4	1.2	5.5	2.7	2.1	12	7.9	30	12	8.4	6.4	4.3	3.3	2.6	5.3	41	5.8	8	24	25
Antimony	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/g	0.11	0.08	0.12	0.13	0.15	0.1	0.11	0.11	0.06	0.06	0.26	0.09	0.09	0.1	0.12	0.08	0.06	0.06	0.12	0.13
Barium	µg/g	<0.01	<0.01	0.2	0.06	0.28	5.2	3.5	3.8	3.2	3.7	0.13	0.18	0.21	<0.01	0.08	2.2	1.4	1.3	3.7	3.1
Beryllium	µg/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Boron	µg/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	µg/g	0.004	0.002	0.004	0.012	0.006	0.15	0.24	0.18	0.093	0.084	0.002	0.004	0.003	0.005	0.003	0.068	0.059	0.046	0.05	0.048
Chromium	µg/g	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.2	0.2	0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.1	0.1	0.1	0.2
Cobalt	µg/g	0.01	0.011	0.012	0.016	0.01	0.062	0.062	0.12	0.051	0.068	0.01	0.012	0.011	0.009	0.007	0.073	0.033	0.035	0.058	0.056
Copper	µg/g	0.28	0.19	0.24	0.22	0.23	1.7	1.6	2.1	1.5	1.2	0.47	0.65	0.74	0.55	0.59	2.4	1	0.95	2	1.8
Iron	µg/g	10	4.7	14	12	16	76	68	90	67	41	8.6	4.2	3.8	5	8.2	91	31	46	81	84
Lead	µg/g	0.007	0.004	0.037	0.014	0.016	0.21	0.16	0.21	0.12	0.11	0.018	0.029	0.023	0.03	0.022	0.26	0.12	0.11	0.2	0.18
Manganese	µg/g	2.1	1.5	1.2	0.64	1.4	21	20	24	19	23	0.94	1.1	1.1	1.1	1.1	31	7.6	9.4	17	15
Molybdenum	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.07	0.08	0.05	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.04	0.06	0.06	0.05
Nickel	µg/g	0.06	0.02	0.1	0.08	0.06	0.25	0.15	0.21	0.17	0.17	0.06	0.06	0.07	0.07	0.24	0.2	0.14	0.13	0.34	0.23
Selenium	µg/g	0.99	0.93	0.96	1.1	1	1.1	1.1	1.2	1.2	1.1	1.3	1.2	1.2	1.3	1.3	1.3	1.8	1.9	1.3	1.3
Silver	µg/g	<0.002	<0.002	0.01	<0.002	<0.002	0.005	0.003	0.008	0.005	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	0.004	0.002	0.003	0.005	0.004
Strontium	µg/g	1.3	0.79	0.65	0.4	0.59	20	19	18	21	22	1.4	0.49	0.69	0.97	0.91	26	16	17	15	13
Thallium	µg/g	0.04	0.05	0.04	0.03	0.04	0.05	0.04	0.04	0.05	0.04	0.03	0.04	0.04	0.03	0.04	0.04	0.03	0.03	0.04	0.04
Tin	µg/g	<0.01	<0.01	0.02	0.02	0.01	0.03	0.03	0.02	0.02	0.01	0.03	0.01	0.01	0.02	0.03	0.01	<0.01	0.01	0.02	0.02
Titanium	µg/g	0.42	0.47	0.73	0.48	0.51	1.2	0.9	5.9	1.4	1.1	0.52	0.74	0.52	0.59	0.58	2.5	0.71	0.92	2	2.2
Uranium	µg/g	<0.001	<0.001	0.005	<0.001	0.006	0.002	0.004	0.007	0.003	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	0.008	0.009	0.009	0.004	0.004
Vanadium	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.07	0.12	0.06	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	0.31	0.51	0.36	0.15	0.14
Zinc	µg/g	17	15	18	19	15	98	85	92	94	85	16	18	21	21	16	66	56	65	100	92

MT - muscle tissue
WhB - whole body
WhComp - whole body composite

Table F.46: Fish tissue data from large- and small-bodied fish surrounding the Côté Gold Baseline, 2012 and 2013.

	Watershed	Neville Lake Watershed																				
	Lake	**Schist Lake**										**Little Clam Lake**							**Bagsverd Lake (South Arm)**			
	Species	walleye					yellow perch					northern pike							northern pike			
	Date	7-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13	6-Jun-13	6-Jun-13	6-Jun-13	6-Jun-13	6-Jun-13	6-Jul-12	6-Jul-12	6-Jul-12	6-Jul-12	6-Jul-12	11-Jul-12	11-Jul-12	12-Jul-12	12-Jul-12	12-Jul-12	12-Jul-12
	ID	SCHL-WA04	SCHL-WA05	SCHL-WA06	SCHL-WA07	SCHL-WA09	SCHL-YP01	SCHL-YPCOMP1	SCHL-YPCOMP2	SCHL-YP07	SCHL-YPCOMP3	LCL-NP-2	LCL-NP-3	LCL-NP-4	LCL-NP-5	LCL-NP-6	LCL-NP-7	LCL-NP-8	BL-NP-20	BL-NP-21	BL-NP-22	BL-NP-23
	Sample Type	MT	MT	MT	MT	MT	WhB	WhComp	WhComp	WhB	WhComp	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT
Parameter	**Units**																					
Moisture	%	76.92	78.87	78.76	77.16	77.59	75.69	75.43	75.58	73.8	76.06	78.59	78.48	77.27	77.71	78.63	76.87	76.75	77.4	79.37	77.3	77.31
Mercury	µg/g	1.9	2.2	8.4	1.1	3.4	0.19	0.33	0.28	0.17	0.32	4.9	4.3	4	2.1	2	1.9	3.8	3	1.4	3.4	1.2
Aluminum	µg/g	1.5	1.1	1.6	2.6	1.1	17	14	18	12	17	2.5	1.5	26	9.6	2	2.8	1.6	3.1	0.8	0.7	1
Antimony	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/g	0.08	0.08	0.17	0.15	0.19	0.15	0.13	0.17	0.12	0.14	0.09	0.13	0.12	0.09	0.07	0.05	0.08	0.17	0.18	0.16	0.14
Barium	µg/g	<0.01	<0.01	<0.01	<0.01	0.28	5	4.5	4.5	5.2	5.5	0.54	0.08	0.34	0.15	0.3	0.38	0.24	0.69	0.23	0.2	0.26
Beryllium	µg/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Boron	µg/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	µg/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.06	0.042	0.057	0.035	0.05	0.006	0.005	0.005	0.015	0.002	0.002	0.003	<0.002	<0.002	<0.002	<0.002
Chromium	µg/g	0.2	<0.1	<0.1	0.1	0.1	0.4	0.3	0.3	0.2	0.2	0.2	<0.1	0.2	1.2	<0.1	<0.1	0.1	1.1	0.8	<0.1	0.2
Cobalt	µg/g	0.003	0.03	0.004	0.006	0.004	0.074	0.046	0.052	0.055	0.068	0.021	0.01	0.016	0.023	0.007	0.007	0.009	0.006	0.007	0.006	0.006
Copper	µg/g	0.46	0.44	0.46	0.74	0.56	4.7	2.8	1.9	2.8	2	0.71	1.1	0.82	0.37	0.96	0.62	1	1.3	0.7	0.63	0.56
Iron	µg/g	5.2	4.9	7.4	1.8	0.9	63	62	72	43	65	11	16	30	22	11	7.8	12	16	7.3	5.4	5.3
Lead	µg/g	0.01	0.006	0.013	0.026	0.01	0.16	0.11	0.12	0.6	0.15	0.054	0.028	0.057	0.045	0.022	0.034	0.033	0.016	0.003	0.005	<0.002
Manganese	µg/g	0.63	1	0.48	1.1	0.48	17	18	26	18	29	2.7	0.74	1.6	1.1	3.3	1.6	2	3.8	2.4	2.2	2
Molybdenum	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.13	0.07	0.07	0.07	0.06	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	µg/g	0.01	0.04	0.02	0.05	0.04	0.16	0.13	0.14	0.14	0.19	0.34	0.04	0.09	0.07	0.03	0.15	<0.01	0.15	0.06	0.13	0.07
Selenium	µg/g	1.4	1.1	1.6	1.6	2	1.5	1.5	1.8	1.5	1.4	1	1	1	0.92	0.96	0.87	0.93	1.6	1.6	1.6	1.6
Silver	µg/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.006	0.004	0.004	0.002	0.006	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Strontium	µg/g	0.12	0.26	0.07	0.7	0.06	27	29	29	38	34	2.7	0.43	0.91	0.64	2.4	0.95	1.4	1.6	1.1	1.2	1.7
Thallium	µg/g	0.04	0.03	0.02	0.04	0.04	0.05	0.03	0.02	0.05	0.02	0.03	0.03	0.03	0.04	0.04	0.03	0.04	0.02	0.03	0.02	0.02
Tin	µg/g	<0.01	<0.01	<0.01	0.02	0.02	0.03	0.03	0.04	0.05	0.02	0.02	0.06	0.05	0.02	0.01	0.02	0.04	0.05	<0.01	<0.01	<0.01
Titanium	µg/g	0.61	0.51	0.58	0.61	0.48	1.1	1.5	1.2	1.1	1.3	0.46	0.35	2.2	0.89	0.52	0.54	0.58	0.36	0.32	0.28	0.36
Uranium	µg/g	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	0.002	<0.001	0.001	<0.001	<0.001	0.005	<0.001	<0.001	<0.001	<0.001	0.022	0.005	0.001	0.003
Vanadium	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.06	0.06	0.04	0.07	<0.02	<0.02	0.05	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Zinc	µg/g	15	18	14	20	19	95	120	120	94	120	24	17	18	18	24	17	20	20	18	17	18

MT - muscle tissue
WhB - whole body
WhComp - whole body composite

Table F.46: Fish tissue data from large- and small-bodied fish surrounding the Côté Gold Baseline, 2012 and 2013.

	Watershed	Neville Lake Watershed																					
	Lake	Bagsverd Lake (South Arm)						Bagsverd Lake (Main Basin)							Unnamed Lake #2								
	Species	walleye					yellow perch	walleye					yellow perch		walleye					yellow perch			
	Date	12-Jul-12	12-Jul-12	12-Jul-12	12-Jul-12	12-Jul-12	12-Jul-12	5-Jun-13	5-Jun-13	5-Jun-13	5-Jun-13	5-Jun-13	5-Jun-13	5-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13
	ID	BL-WA-6	BL-WA-7	BL-WA-8	BL-WA-9	BL-WA-10	BL-YP-1 - COMPOSITE	BAGL-WA01	BAGL-WA02	BAGL-WA03	BAGL-WA04	BAGL-WA05	BAGL-YPCOMP1	BAGL-YPCOMP2	UNL2-WA04	UNL2-WA05	UNL2-WA06	UNL2-WA07	UNL2-WA08	UNL2-YP01	UNL2-YP02	UNL2-YP03	UNL2-YP04
	Sample Type	MT	MT	MT	MT	MT	WhComp	MT	MT	MT	MT	MT	WhComp	WhComp	MT	MT	MT	MT	MT	WhB	WhB	WhB	WhB
Parameter	**Units**																						
Moisture	%	77.72	77.75	77.52	76.82	78.39	74.87	78.87	81.91	80.64	79.8	77.04	77.1	78.1	78.1	77.1	77.89	76.26	76.37	76.34	75.48	76.69	73.92
Mercury	µg/g	1.4	1.4	1.2	1.2	1.3	0.25	1.1	3.3	1.3	1.2	2.4	0.65	0.16	3.5	4.1	5.6	3.5	3.7	0.42	0.35	0.51	0.33
Aluminum	µg/g	1.3	0.7	0.8	1.2	1.2	3.7	4.1	13	6	9.9	6.7	11	15	5.4	2	3.6	0.9	1.8	29	17	36	14
Antimony	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/g	0.11	0.08	0.08	0.11	0.1	0.15	0.12	0.14	0.09	0.07	0.11	0.1	0.14	0.07	0.06	0.2	0.06	0.09	0.06	0.05	0.05	0.04
Barium	µg/g	0.13	0.11	0.27	0.14	0.1	2.2	0.11	<0.01	<0.01	<0.01	<0.01	3	4	0.26	<0.01	<0.01	0.18	<0.01	2.5	1.8	5.3	3.5
Beryllium	µg/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Boron	µg/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	µg/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.022	<0.002	0.002	0.005	0.002	<0.002	0.027	0.069	0.002	0.002	<0.002	0.002	0.002	0.048	0.053	0.077	0.05
Chromium	µg/g	0.1	0.2	0.1	0.5	0.2	0.8	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.1	0.2	0.2
Cobalt	µg/g	0.012	0.004	0.004	0.004	0.004	0.037	0.009	0.015	0.012	0.009	0.007	0.044	0.053	0.009	0.006	0.006	0.009	0.008	0.064	0.059	0.075	0.046
Copper	µg/g	0.81	0.69	1	0.85	0.95	2	1.1	1.1	0.59	0.62	0.9	1.3	1.5	0.25	0.19	0.16	0.54	0.33	0.82	0.88	0.61	0.95
Iron	µg/g	14	5.5	6.6	6	4	36	11	29	10	13	14	58	54	11	5.2	5.6	9.5	6.7	120	58	97	48
Lead	µg/g	0.004	<0.002	<0.002	0.023	0.01	0.076	0.025	0.059	0.028	0.03	0.028	0.15	0.14	0.035	0.027	0.014	0.009	0.046	0.16	0.15	0.3	0.086
Manganese	µg/g	0.57	0.42	0.52	0.64	0.44	11	1.2	1.7	1.5	2.1	1.1	37	140	1	0.68	0.58	0.76	1.2	39	35	86	24
Molybdenum	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.06	0.06	0.08
Nickel	µg/g	0.07	0.02	0.04	0.12	0.02	0.1	0.03	0.12	0.06	0.05	0.02	0.18	0.26	0.06	0.4	0.04	0.07	0.05	0.16	0.1	0.16	0.1
Selenium	µg/g	1.8	1.5	1.5	1.6	1.7	2.2	1.4	1.6	1.6	1.3	1.4	1.5	1.4	1.2	1.2	1.4	1	1.2	1.4	1.4	1.1	1.5
Silver	µg/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.004	<0.002	<0.002	<0.002	0.005	0.007	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	0.003	0.003	0.004
Strontium	µg/g	0.12	0.22	0.19	0.36	0.16	36	0.28	0.16	0.08	1	0.14	24	23	1	0.29	0.1	2.1	2	36	26	50	35
Thallium	µg/g	0.03	0.04	0.04	0.04	0.03	0.02	0.02	0.04	0.02	0.03	0.04	0.03	0.03	0.05	0.05	0.03	0.05	0.05	0.04	0.03	0.05	0.04
Tin	µg/g	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.02	0.01	0.02	<0.01	<0.01	0.02	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.01
Titanium	µg/g	0.44	0.36	0.48	0.44	0.33	0.56	0.71	0.96	0.75	0.69	0.83	1.2	1.3	0.77	0.62	0.52	0.49	0.64	1.9	1.4	2.4	0.95
Uranium	µg/g	0.002	0.009	0.001	0.002	<0.001	0.007	0.001	0.011	0.005	<0.001	<0.001	0.002	0.004	0.001	<0.001	<0.001	<0.001	<0.001	0.014	0.015	0.014	0.02
Vanadium	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	0.03	<0.02	<0.02	<0.02	0.07	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.67	1	0.45	0.53
Zinc	µg/g	17	19	16	17	15	81	18	18	14	17	18	140	110	16	14	12	20	19	78	58	62	80

MT - muscle tissue
WhB - whole body
WhComp - whole body composite

Table F.46: Fish tissue data from large- and small-bodied fish surrounding the Côté Gold Baseline, 2012 and 2013.

	Watershed	Neville Lake Watershed																			
	Lake	Unnamed Lake #1										Neville Lake									
	Species	northern pike			walleye		yellow perch					northern pike		walleye			yellow perch				
	Date	12-Jul-12	12-Jul-12	17-Jul-12	12-Jul-12	13-Jul-12	6-Jun-13	6-Jun-13	6-Jun-13	6-Jun-13	6-Jun-13	6-Jun-13	6-Jun-13	6-Jun-13	6-Jun-13	6-Jun-13	5-Jun-13	5-Jun-13	5-Jun-13	5-Jun-13	5-Jun-13
	ID	UNL-NP-04	UNL-NP-06	UNL-NP-29	UNL-WA-01	UNL-WA-04	UNL1-YP01	UNL1-YP02	UNL1-YP03	UNL1-YP04	UNL1-YPCOMP1	NEVL-NP01	NEVL-NP02	NEVL-WA01	NEVL-WA02	NEVL-WA03	NEVL-YP01	NEVL-YP02	NEVL-YP03	NEVL-YP04	NEVL-YPCOMP1
	Sample Type	MT	MT	MT	MT	MT	WhB	WhB	WhB	WhB	WhComp	MT	MT	MT	MT	MT	WhB	WhB	WhB	WhB	WhComp
Parameter	**Units**																				
Moisture	%	76.14	78.45	80.77	77.49	81.92	75.33	75.5	75.63	74.24	76	84.11	81.34	77.65	79.16	77.99	77.62	75.61	75.84	74.87	75.86
Mercury	µg/g	5.2	9.3	4	8.9	1.2	0.3	0.15	0.09	0.08	0.17	8.9	3.8	3.7	1.2	3.7	0.36	0.29	0.38	0.38	0.31
Aluminum	µg/g	13	4.2	3.6	4.1	10	10	12	23	18	11	2.5	3.1	9.5	1.2	2.6	18	17	9.5	25	14
Antimony	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/g	0.23	0.3	0.2	0.22	0.06	0.06	0.06	0.07	0.08	0.06	0.07	0.13	0.18	0.09	0.1	0.08	0.09	0.05	0.11	0.08
Barium	µg/g	0.22	0.24	0.14	0.08	0.21	3.2	2	2.5	1.9	2.6	<0.01	<0.01	<0.01	<0.01	<0.01	8.1	1.4	2.2	3	1.5
Beryllium	µg/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Boron	µg/g	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	µg/g	0.008	0.006	0.004	0.004	0.002	0.071	0.1	0.11	0.13	0.062	0.004	<0.002	0.003	0.005	<0.002	0.12	0.086	0.076	0.12	0.088
Chromium	µg/g	0.1	0.2	0.2	0.2	0.5	0.1	0.1	0.2	0.2	0.1	0.2	<0.1	0.2	0.1	<0.1	0.2	0.6	0.2	0.4	0.2
Cobalt	µg/g	0.006	0.003	0.002	0.007	0.012	0.069	0.087	0.091	0.15	0.079	0.017	0.014	0.008	0.006	0.008	0.16	0.11	0.073	0.14	0.14
Copper	µg/g	0.75	0.7	0.81	1.1	1.7	1.2	1.6	1.8	1.8	1.4	1.3	0.47	0.76	0.86	0.44	2	1.5	2.8	2.7	2.4
Iron	µg/g	12	12	11	12	15	42	56	73	63	55	16	11	11	9.4	8.4	73	56	48	84	69
Lead	µg/g	0.03	0.045	0.055	0.048	0.043	0.044	0.083	0.089	0.07	0.062	0.018	0.013	0.019	0.01	0.021	0.12	0.077	0.067	0.13	0.12
Manganese	µg/g	1.7	4.1	1.5	0.6	0.83	80	16	17	22	22	2.2	3.2	0.78	1.2	1	53	46	22	35	30
Molybdenum	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.1	0.14	0.11	0.18	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	0.11	0.12	0.11	0.11	0.1
Nickel	µg/g	0.07	0.03	0.02	0.09	0.12	0.12	0.16	0.21	0.23	0.14	0.03	0.04	0.02	<0.01	0.04	0.16	0.16	0.13	0.18	0.19
Selenium	µg/g	1.1	1	1.1	1.3	0.93	1	1.1	1.5	1.2	1.2	1.1	1.1	1.4	2	1.2	1.1	0.96	1.3	1.2	1.2
Silver	µg/g	<0.002	<0.002	0.004	<0.002	<0.002	0.004	0.004	0.006	0.008	0.004	0.003	<0.002	<0.002	<0.002	<0.002	0.006	0.003	0.006	0.008	0.008
Strontium	µg/g	1	2.8	0.91	0.13	0.27	26	34	24	32	35	1.5	2.1	0.49	1	0.08	37	27	46	36	29
Thallium	µg/g	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.06	0.04	0.06	0.04	0.06	0.06	0.1	0.06	0.04	0.05	0.04	0.06	0.05
Tin	µg/g	0.05	0.04	0.33	<0.01	0.05	0.06	0.05	0.02	0.05	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.02	0.02	0.03
Titanium	µg/g	1.6	0.8	1	0.92	1.3	1	1.1	1.6	1.4	1.7	0.4	0.53	0.75	0.6	0.68	1.4	1.6	1.1	1.6	1.2
Uranium	µg/g	<0.001	0.006	<0.001	<0.001	<0.001	0.011	0.006	0.017	0.007	0.009	<0.001	0.005	0.001	<0.001	0.001	0.008	0.007	0.003	0.007	0.007
Vanadium	µg/g	0.08	0.02	<0.02	<0.02	0.02	0.08	0.09	0.44	0.13	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	0.36	0.1	0.06	0.12	0.12
Zinc	µg/g	18	18	18	22	16	70	76	78	76	98	38	20	19	22	16	93	77	87	100	86

MT - muscle tissue
WhB - whole body
WhComp - whole body composite

Table F.46: Fish tissue data from large- and small-bodied fish surrounding the Côté Gold Baseline, 2012 and 2013.

	Watershed	Mettagami River Watershed									
	Lake	Mesomikenda Lake									
	Species	walleye					spottailed shiner				
	Date	8-Jun-13	8-Jun-13	8-Jun-13	8-Jun-13	8-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13	7-Jun-13
	ID	MESL-WA01	MESL-WA02	MESL-WA03	MESL-WA04	MESL-WA05	MESL-SSCOMP1	MESL-SSCOMP2	MESL-SSCOMP3	MESL-SSCOMP4	MESL-SS08
	Sample Type	MT	MT	MT	MT	MT	WhComp	WhComp	WhComp	WhComp	WhB
Parameter	**Units**										
Moisture	%	80.14	76.75	78.12	78.43	75.92	76.85	78.65	78.32	77.56	72.41
Mercury	µg/g	2.8	7.3	7.7	4.2	8.9	0.56	0.48	0.5	0.41	0.37
Aluminum	µg/g	1.5	1.5	1.2	1.8	1.7	20	9.8	10	15	2
Antimony	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/g	0.08	0.14	0.16	0.19	0.14	0.22	0.19	0.21	0.23	0.1
Barium	µg/g	<0.01	<0.01	<0.01	0.22	0.06	5.7	5.5	5.6	6.4	1.5
Beryllium	µg/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Boron	µg/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	µg/g	<0.002	0.003	<0.002	0.002	0.002	0.15	0.098	0.13	0.14	0.063
Chromium	µg/g	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	0.2	0.1	0.3	<0.1
Cobalt	µg/g	0.006	0.004	0.003	0.004	0.01	0.054	0.05	0.045	0.056	0.026
Copper	µg/g	0.55	0.74	0.53	0.42	1	2.6	2.1	2.3	2.8	2.6
Iron	µg/g	7.1	5.9	6	7.6	10	72	53	57	69	24
Lead	µg/g	0.01	0.013	0.006	0.019	0.016	0.12	0.049	0.093	0.093	0.004
Manganese	µg/g	0.44	0.31	0.28	0.32	0.4	13	9.3	11	14	2.7
Molybdenum	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.05	0.05	0.05	0.03
Nickel	µg/g	0.04	0.02	0.03	0.02	0.02	0.29	0.13	0.14	0.19	0.08
Selenium	µg/g	1.1	1.5	1.5	1.3	1.4	1.8	1.4	1.7	1.7	1.8
Silver	µg/g	<0.002	0.002	0.003	0.002	0.002	0.014	0.009	0.009	0.02	0.021
Strontium	µg/g	0.08	0.08	0.07	0.11	0.08	25	24	24	29	12
Thallium	µg/g	0.06	0.06	0.06	0.07	0.07	0.02	0.02	0.02	0.03	0.01
Tin	µg/g	<0.01	0.02	<0.01	<0.01	0.02	0.03	0.01	0.02	0.03	<0.01
Titanium	µg/g	0.54	0.48	0.45	0.45	0.54	1.5	0.9	1.6	1.1	0.64
Uranium	µg/g	0.011	<0.001	<0.001	<0.001	<0.001	0.025	0.01	0.01	0.012	0.001
Vanadium	µg/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.24	0.11	0.12	0.19	<0.02
Zinc	µg/g	19	20	17	25	31	210	180	220	220	190

MT - muscle tissue
WhB - whole body
WhComp - whole body composite

LICENCES TO COLLECT FISH FOR SCIENTIFIC PURPOSES

Ontario — Ministry of Natural Resources / Ministère des Richesses naturelles

Licence to Collect Fish for Scientific Purposes

Permis pour faire la collecte de poissons à des fins scientifiques

Licence No / N° de permis	1068606
Local Reference No / N° de référence local	
Issuer Account No / N° de compte du delivreur de permis	10002246

This licence is issued under Part I of the Fish Licensing Regulation made under the Fish and Wildlife Conservation Act, 1997 to:

Ce permis est délivré en vertu de la Partie I du règlement sur la délivrance de permis de pêche formulé conformément à la Loi sur la protection du poisson et de la faune de 1997 à:

Name of Licencee / **Nom du titulaire du permis**

Last Name / Nom de famille	First Name / Prénom	Middle Name / Second Prénom
Mr. Martens	Kevin	

Name of Business/Organization/Affiliation (if applicable) / Nom de l'entreprise/de l'organisme/de l'affiliation (le cas échéant)

Minnow Environmental Inc.

Mailing address of Licencee / ***Adresse postale du titulaire du permis***

Street Name & No /PO Box/RR#/Gen. Del / N° rue/C.P /R R /poste restante

2 Lamb St.

City/Town/Municipality / Ville/village/municipalité	Province/State Province/État	Postal Code/Zip Code Code Postal/Zip
Georgetown	ON	L7G 3M9

to collect the species, size and quantites of fish from the waters as set out below.
Pour faire la collecte des espèces suivantes (stade et nombre indiqués ci-dessous):

Species Espèces	Eggs Oeuf X	Juvenile Fretin X	Adults Adulte X	Numbers Nombre	Name of Waterbody Nom de l'étendue d'eau
All species	X	X	X		Cote, Clam and Bagsverd Lakes
All species	X	X	X		Mollie River 3 Ducks Lake and Chester Lakes
All species	X	X	X		Unnamed lakes 1 and 2 between Bagsverd and Neville Lake
All species	X	X	X		Unnamed lake

Yes/Oui ☐ Additional species/Waterbody list attached / Liste d'espèces/d'étendue d'eau additionnelles ci-jointe

Purpose of collection / ***But de la collecte***: To determine fisheries communities and aid and mine development site

Licence Dates / ***Dates du permis***	Effective Date / Date d'entrée en vigueur (YYYY-MM-DD)	Expiry Date / Date d'expiration (YYYY-MM-DD)
	2012-07-01	2012-09-30

Licence conditions This licence is subject to the conditions contained in Schedule A if included. / Ce permis doit respecter les conditions de l'annexe A si celle-ci est jointe.

Conditions du permis Yes/Oui ☒ No/Non ☐ Schedule A included. / Annexe A ci-jointe

Issued by (please print) / Délivré par (veuillez écrire en caractères d'imprimerie)	Signature of issuer / Signature du délivreur	Date of Issue/Date de délivrance (YYYY-MM-DD)
Kyle Aird	[signature]	2012-06-06

Signature of Licencee / Signature du titulaire du permis	Date (YYYY-MM-DD)
[signature]	2012-06-06

Licence to Collect Fish for Scientific Purposes
Permis pour faire la collecte de poissons à des fins scientifiques
Schedule A - Licence Conditions
Annexe A - Conditions du permis

Licence No.
No de permis 1068606

This licence is subject to the conditions listed below.

1. This Licence is valid only for the persons, species, numbers, areas and calendar year indicated. A written report covering the operation of the preceding year must be submitted to the licence issuer within 30 days of the termination date, but in no case later than January 31 next following the year of issue. The report shall contain a statement outlining the objectives of the operations, the methods used, the number and species of fish caught and their fate as well as a map indicating where the collections took place. An analysis is not required. The submission of a satisfactory report is a prerequisite to any subsequent renewals.
2. Before carrying out any operation under the licence in any area the licenced person shall inform the Area Supervisor or Lake Manager of his or her intentions at least a week before commencing work and include information as to the type of operation, location, duration, and the name or names of personnel involved.
3. A copy of the original licence must be carried by the licenced person when working at the designated sites. An assistant of the licenced person who is carrying out activities under this licence during the absence of the licenced person shall carry a copy of the licence on his or her person.
4. All collection gear shall be clearly marked with the licenced person's and the organization's name.
5. This licence is not valid in Provincial Parks, park reserves, or National Parks without the written permission from the authorized person in charge of the area concerned.
6. Capture gear shall be inspected regularly and live holding traps must be inspected at least once daily.
7. This licence does not allow access to any property without permission of the landowner.

Report of all species caught by location must be given to the local MNR office within 3 months of completing the survey.

Added conditions

All dead fish are to be buried on shore away from human habitation and work location.

Within 30 days of the expiration of the permit, a report Is to be submitted to MNR Timmins District with the minimum information required being species caught, by location, number and effort used.

Ce permis doit se conformer aux conditions ci-dessous.

1. Ce permis n'est valide que pour les personnes, espèces, nombres, zones et année civile indiqués. Un rapport écrit portant sur les activités de l'année précédente doit être soumis au délivreur du permis dans les 30 jours suivant la date d'expiration et jamais plus tard que le 31 janvier qui suit la date de délivrance. Le rapport devra comprendre une déclaration décrivant les objectifs des activités, les méthodes utilisées, le nombre et les espèces de poissons capturés et leur destination finale ainsi qu'une carte montrant l'emplacement des collectes. Une analyse n'est pas requise. La présentation d'un rapport satisfaisant est une condition préalable pour obtenir un renouvellement de permis.
2. Avant de réaliser toute activité visée par le permis dans toute zone, le titulaire du permis doit aviser le superviseur de la zone ou le gestionnaire du lac de ses intentions au moins une semaine avant de commencer ses activités et il doit fournir des renseignements sur le type d'activité, l'emplacement, la durée et le nom de toutes les personnes impliquées.
3. Le titulaire du permis doit avoir en sa possession un exemplaire du permis original lorsqu'il travaille dans les endroits désignés. Si un adjoint du titulaire du permis réalise des activités visées par le permis en l'absence du titulaire du permis, il devra avoir un exemplaire du permis en sa possession.
4. Tout le matériel de collecte doit indiquer bien clairement le nom du titulaire du permis et de son organisme.
5. Ce permis n'est pas valide dans les parcs provinciaux, les réserves de parcs et les parcs nationaux sans la permission écrite de la personne autorisée qui est responsable de la zone en question.
6. Tout le matériel de collecte doit être inspecté régulièrement
et les viviers doivent être inspectés au moins une fois par jour.
7. Ce permis ne permet pas au titulaire d'avoir accès à une propriété privée sans la permission du propriétaire foncier.

Signature of Licencee / Signature du titulaire du permis | **Date**

June 11/12

Ontario | Ministry of Natural Resources | Ministère des Richesses naturelles

Licence to Collect Fish for Scientific Purposes

Permis pour faire la collecte de poissons à des fins scientifiques

Licence No. / Nº de permis	1073685
Local Reference No. / Nº de référence local	
Issuer Account No. / Nº de compte du delivreur de permis.	10002246

This licence is issued under Part I of the Fish Licensing Regulation made under the Fish and Wildlife Conservation Act, 1997 to:

Ce permis est délivré en vertu de la Partie I du règlement sur la délivrance de permis de pêche formulé conformément à la Loi sur la protection du poisson et de la faune de 1997 à:

Name of Licencee / **Nom du titulaire du permis**

Last Name / Nom de famille	First Name / Prénom	Middle Name / Second Prénom
Ms. Connors	Kim	Barbara

Name of Business/Organization/Affiliation (if applicable) / Nom de l'entreprise/de l'organisme/de l'affiliation (le cas échéant)

Minnow Environmental Inc.

Mailing address of Licencee / ***Adresse postale du titulaire du permis***

Street Name & No./PO Box/RR#/Gen. Del./ Nº rue/C.P./R.R./poste restante

2 Lamb St.

City/Town/Municipality / Ville/village/municipalité	Province/State Province/État	Postal Code/Zip Code Code Postal/Zip
Georgetown	ON	L7G 3M9

to collect the species, size and quantites of fish from the waters as set out below.
Pour faire la collecte des espèces suivantes (stade et nombre indiqués ci-dessous):

Species Espèces	Eggs Oeuf X	Juvenile Fretin X	Adults Adulte X	Numbers Nombre	Name of Waterbody Nom de l'étendue d'eau
Northern Pike and Walley			X	45	
Based on whats available		X		120	

Yes/Oui ☒ Additional species/Waterbody list attached / Liste d'espèces/d'étendue d'eau additionnelles ci-jointe

Purpose of collection / ***But de la collecte***: Environmental Assessment for IAMGOLD Corporation

Licence Dates / ***Dates du permis***

Effective Date / Date d'entrée en vigueur (YYYY-MM-DD)	Expiry Date / Date d'expiration (YYYY-MM-DD)
2013-05-15	2013-06-30

Licence conditions This licence is subject to the conditions contained in Schedule A if included. / Ce permis doit respecter les conditions de l'annexe A si celle-ci est jointe.

Conditions du permis Yes/Oui ☒ No/Non ☐ Schedule A included. / Annexe A ci-jointe

Issued by (please print) Délivré par (veuillez écrire en caractères d'imprimerie)	Signature of issuer / Signature du délivreur	Date of Issue/Date de délivrance (YYYY-MM-DD)
Glen McFarlane	Gl McFarlane	2013-05-01

Signature of Licencee / Signature du titulaire du permis	Date (YYYY-MM-DD)
Kim Connors	2013-05-01

Personal information contained on this form is collected under the authority of the Fish and Wildlife Conservation Act, 1997 and will be used for the purpose of licencing, identification, enforcement, resource management and customer service surveys. Please direct further inquiries to the District Manager of the MNR issuing district.

Les renseignements personnels dans ce formulaire sont recueillis conformément à la Loi sur la protection du poisson de la faune, 1997 , et ils seront utilisés aux fins de délivrance de permis, d'identification, d'application des règlements, de gestion des ressources et de sondage sur les services a la clientèle. Veuillez communiquer avec le chef du district du MRN qui délivré le permis si vous avez des questions.

Licence to Collect Fish for Scientific Purposes
Permis pour faire la collecte de poissons à des fins scientifiques
Schedule A - Licence Conditions
Annexe A - Conditions du permis

Licence No. 1073685
No de permis ______________

This licence is subject to the conditions listed below.

1. This Licence is valid only for the persons, species, numbers, areas and calendar year indicated. A written report covering the operation of the preceding year must be submitted to the licence issuer within 30 days of the termination date, but in no case later than January 31 next following the year of issue. The report shall contain a statement outlining the objectives of the operations, the methods used, the number and species of fish caught and their fate as well as a map indicating where the collections took place. An analysis is not required. The submission of a satisfactory report is a prerequisite to any subsequent renewals.
2. Before carrying out any operation under the licence in any area the licenced person shall inform the Area Supervisor or Lake Manager of his or her intentions at least a week before commencing work and include information as to the type of operation, location, duration, and the name or names of personnel involved.
3. A copy of the original licence must be carried by the licenced person when working at the designated sites. An assistant of the licenced person who is carrying out activities under this licence during the absence of the licenced person shall carry a copy of the licence on his or her person.
4. All collection gear shall be clearly marked with the licenced person's and the organization's name.
5. This licence is not valid in Provincial Parks, park reserves, or National Parks without the written permission from the authorized person in charge of the area concerned.
6. Capture gear shall be inspected regularly and live holding traps must be inspected at least once daily.
7. This licence does not allow access to any property without permission of the landowner.

Report of all species caught by location must be given to the local MNR office within 3 months of completing the survey.

Added conditions

All dead fish are to be buried on shore away from human habitation and work location.

Within 30 days of the expiration of the permit, a report is to be submitted to MNR Timmins District with the minimum information required being species caught, by location, number and effort used.

Ce permis doit se conformer aux conditions ci-dessous.

1. Ce permis n'est valide que pour les personnes, espèces, nombres, zones et année civile indiqués. Un rapport écrit portant sur les activités de l'année précédente doit être soumis au délivreur du permis dans les 30 jours suivant la date d'expiration et jamais plus tard que le 31 janvier qui suit la date de délivrance. Le rapport devra comprendre une déclaration décrivant les objectifs des activités, les méthodes utilisées, le nombre et les espèces de poissons capturés et leur destination finale ainsi qu'une carte montrant l'emplacement des collectes. Une analyse n'est pas requise. La présentation d'un rapport satisfaisant est une condition préalable pour obtenir un renouvellement de permis.
2. Avant de réaliser toute activité visée par le permis dans toute zone, le titulaire du permis doit aviser le superviseur de la zone ou le gestionnaire du lac de ses intentions au moins une semaine avant de commencer ses activités et il doit fournir des renseignements sur le type d'activité, l'emplacement, la durée et le nom de toutes les personnes impliquées.
3. Le titulaire du permis doit avoir en sa possession un exemplaire du permis original lorsqu'il travaille dans les endroits désignés. Si un adjoint du titulaire du permis réalise des activités visées par le permis en l'absence du titulaire du permis, il devra avoir un exemplaire du permis en sa possession.
4. Tout le matériel de collecte doit indiquer bien clairement le nom du titulaire du permis et de son organisme.
5. Ce permis n'est pas valide dans les parcs provinciaux, les réserves de parcs et les parcs nationaux sans la permission écrite de la personne autorisée qui est responsable de la zone en question.
6. Tout le matériel de collecte doit être inspecté régulièrement
et les viviers doivent être inspectés au moins une fois par jour.
7. Ce permis ne permet pas au titulaire d'avoir accès à une propriété privée sans la permission du propriétaire foncier.

Signature of Licencee / Signature du titulaire du permis

Date

May 13/2013

License to Collect Fish for Scientific Purposes

MINNOW INVIRONMENTAL INC.
License No. 1073685

Additional species/Waterbody

Table 1: Locations for Fish Habitat, Community and Tissue Analysis as well as the number of fish sample to be obtained at each location.

Location	# of large-bodies samples	# of small bodied samples
Unnamed lake #2	5	5
Chester Lake	5	5
Upper 3 Duck Lake	5	5
Middle 3 Duck Lake	5	5
Lower 3 Duck Lake	5	5
Mesomikenda Lake	5	5
Neville Lake	5	5
Clam Lake	5	5
Bagsverd Lake	-	5
Weeduck Lake	5	5
Unnamed lake #1	1	5
Little Clam Lake	-	5

Ontario | Ministry of Natural Resources | Ministère des Richesses naturelles

Licence to Collect Fish for Scientific Purposes

Permis pour faire la collecte de poissons à des fins scientifiques

Licence No. / N° de permis	1073757
Local Reference No. / N° de référence local	
Issuer Account No. / N° de compte du delivreur de permis.	10002246

This licence is issued under Part I of the Fish Licensing Regulation made under the Fish and Wildlife Conservation Act, 1997 to:

Ce permis est délivré en vertu de la Partie I du règlement sur la délivrance de permis de pêche formulé conformément à la Loi sur la protection du poisson et de la faune de 1997 à:

Name of Licencee / **Nom du titulaire du permis**

Last Name / Nom de famille	First Name / Prénom	Middle Name / Second Prénom
Ms. Connors	Kim	Barbara

Name of Business/Organization/Affiliation (if applicable) / Nom de l'entreprise/de l'organisme/de l'affiliation (le cas échéant)

Minnow Environmental Inc.

Mailing address of Licencee / ***Adresse postale du titulaire du permis***

Street Name & No./PO Box/RR#/Gen. Del / N° rue/C.P./R.R./poste restante

2 Lamb Street.

City/Town/Municipality / Ville/village/municipalité	Province/State Province/État	Postal Code/Zip Code Code Postal/Zip
Georgetown	ON	L7G 3M9

to collect the species, size and quantites of fish from the waters as set out below.
Pour faire la collecte des espèces suivantes (stade et nombre indiqués ci-dessous):

Species Espèces	Eggs Oeuf X	Juvenile Fretin X	Adults Adulte X	Numbers Nombre	Name of Waterbody Nom de l'étendue d'eau
Northern Pike and Walley			X	45	Schist and Moore Lakes
Small Bodies			X	120	Schist and Moore Lakes
Large Bodies			X	1	Schist and Moore Lakes

Yes/Oui ☐ Additional species/Waterbody list attached / Liste d'espèces/d'étendue d'eau additionnelles ci-jointe

Purpose of collection / ***But de la collecte***: Environmental Assessment for IAMGOLD Corporation

Licence Dates / ***Dates du permis***

Effective Date / Date d'entrée en vigueur (YYYY-MM-DD)	Expiry Date / Date d'expiration (YYYY-MM-DD)
2013-05-15	2013-06-30

Licence conditions This licence is subject to the conditions contained in Schedule A if included. / Ce permis doit respecter les conditions de l'annexe A si celle-ci est jointe.

Conditions du permis Yes/Oui ☒ No/Non ☐ Schedule A included. / Annexe A ci-jointe

Issued by (please print) / Délivré par (veuillez écrire en caractères d'imprimerie)	Signature of Issuer / Signature du délivreur	Date of Issue/Date de délivrance (YYYY-MM-DD)
Glen McFarlane	Glen McFarlane	2013-05-07

Signature of Licencee / Signature du titulaire du permis	Date (YYYY-MM-DD)
Kim Connors	2013-05-07

Licence to Collect Fish for Scientific Purposes
Permis pour faire la collecte de poissons à des fins scientifiques
Schedule A - Licence Conditions
Annexe A - Conditions du permis

Licence No.
No de permis 1073757

This licence is subject to the conditions listed below.

1. This Licence is valid only for the persons, species, numbers, areas and calendar year indicated. A written report covering the operation of the preceding year must be submitted to the licence issuer within 30 days of the termination date, but in no case later than January 31 next following the year of issue. The report shall contain a statement outlining the objectives of the operations, the methods used, the number and species of fish caught and their fate as well as a map indicating where the collections took place. An analysis is not required. The submission of a satisfactory report is a prerequisite to any subsequent renewals.
2. Before carrying out any operation under the licence in any area the licenced person shall inform the Area Supervisor or Lake Manager of his or her intentions at least a week before commencing work and include information as to the type of operation, location, duration, and the name or names of personnel involved.
3. A copy of the original licence must be carried by the licenced person when working at the designated sites. An assistant of the licenced person who is carrying out activities under this licence during the absence of the licenced person shall carry a copy of the licence on his or her person.
4. All collection gear shall be clearly marked with the licenced person's and the organization's name.
5. This licence is not valid in Provincial Parks, park reserves, or National Parks without the written permission from the authorized person in charge of the area concerned.
6. Capture gear shall be inspected regularly and live holding traps must be inspected at least once daily.
7. This licence does not allow access to any property without permission of the landowner.

Report of all species caught by location must be given to the local MNR office within 3 months of completing the survey.

Added conditions

All dead fish are to be buried on shore away from human habitation and work location.

Within 30 days of the expiration of the permit, a report is to be submitted to MNR Timmins District with the minimum information required being species caught, by location, number and effort used.

Gear to be used: Seine nets, experimental gill nets (1" to 5")

Assistants: Cynthia Russel, Kevin Martens, Tyrell Worrall and Katharina Batchelar.

This license refers to license # 1073685 issued on May 1, 2013.

Ce permis doit se conformer aux conditions ci-dessous.

1. Ce permis n'est valide que pour les personnes, espèces, nombres, zones et année civile indiqués. Un rapport écrit portant sur les activités de l'année précédente doit être soumis au délivreur du permis dans les 30 jours suivant la date d'expiration et jamais plus tard que le 31 janvier qui suit la date de délivrance. Le rapport devra comprendre une déclaration décrivant les objectifs des activités, les méthodes utilisées, le nombre et les espèces de poissons capturés et leur destination finale ainsi qu'une carte montrant l'emplacement des collectes. Une analyse n'est pas requise. La présentation d'un rapport satisfaisant est une condition préalable pour obtenir un renouvellement de permis.
2. Avant de réaliser toute activité visée par le permis dans toute zone, le titulaire du permis doit aviser le superviseur de la zone ou le gestionnaire du lac de ses intentions au moins une semaine avant de commencer ses activités et il doit fournir des renseignements sur le type d'activité, l'emplacement, la durée et le nom de toutes les personnes impliquées.
3. Le titulaire du permis doit avoir en sa possession un exemplaire du permis original lorsqu'il travaille dans les endroits désignés. Si un adjoint du titulaire du permis réalise des activités visées par le permis en l'absence du titulaire du permis, il devra avoir un exemplaire du permis en sa possession.
4. Tout le matériel de collecte doit indiquer bien clairement le nom du titulaire du permis et de son organisme.
5. Ce permis n'est pas valide dans les parcs provinciaux, les réserves de parcs et les parcs nationaux sans la permission écrite de la personne autorisée qui est responsable de la zone en question.
6. Tout le matériel de collecte doit être inspecté régulièrement et les viviers doivent être inspectés au moins une fois par jour.
7. Ce permis ne permet pas au titulaire d'avoir accès à une propriété privée sans la permission du propriétaire foncier.

Signature of Licencee / Signature du titulaire du permis [signature]

Date May 13/2013

Ontario | Ministry of Natural Resources | Ministère des Richesses naturelles

Licence to Collect Fish for Scientific Purposes

Permis pour faire la collecte de poissons à des fins scientifiques

Licence No. / Nº de permis	1073957
Local Reference No. / Nº de référence local	
Issuer Account No. / Nº de compte du delivreur de permis.	10002246

This licence is issued under Part I of the Fish Licensing Regulation made under the Fish and Wildlife Conservation Act, 1997 to:

Ce permis est délivré en vertu de la Partie I du règlement sur la délivrance de permis de pêche formulé conformément à la Loi sur la protection du poisson et de la faune de 1997 à:

Name of Licencee / Nom du titulaire du permis

Last Name / Nom de famille	First Name / Prénom	Middle Name / Second Prénom
Ms. Connors	Kim	Barbara

Name of Business/Organization/Affiliation (if applicable) / Nom de l'entreprise/de l'organisme/de l'affiliation (le cas échéant)

Minnow Environmental Inc.

Mailing address of Licencee / *Adresse postale du titulaire du permis*

Street Name & No./PO Box/RR#/Gen. Del./ Nº rue/C P./R.R./poste restante

2 Lamb Street.

City/Town/Municipality / Ville/village/municipalité	Province/State Province/État	Postal Code/Zip Code Code Postal/Zip
Georgetown	ON	L7G 3M9

to collect the species, size and quantites of fish from the waters as set out below.
Pour faire la collecte des espèces suivantes (stade et nombre indiqués ci-dessous):

Species Espèces	Eggs Oeuf X	Juvenile Fretin X	Adults Adulte X	Numbers Nombre	Name of Waterbody Nom de l'étendue d'eau
Northern Pike and Walleye			X	45	
Small Bodies			X	120	
Large Bodies			X	1	

Yes/Oui ☒ Additional species/Waterbody list attached / Liste d'espèces/d'étendue d'eau additionnelles ci-jointe

Purpose of collection / *But de la collecte*: Environmental Assessment for IAMGOLD Corporation.

Licence Dates / *Dates du permis*

Effective Date / Date d'entrée en vigueur (YYYY-MM-DD)	Expiry Date / Date d'expiration (YYYY-MM-DD)
2013-06-01	2013-07-15

Licence conditions This licence is subject to the conditions contained in Schedule A if included. / Ce permis doit respecter les conditions de l'annexe A si celle-ci est jointe.

Conditions du permis Yes/Oui ☒ No/Non ☐ Schedule A included. / Annexe A ci-jointe

Issued by (please print) / Délivré par (veuillez écrire en caractères d'imprimerie): Glen McFarlane

Signature of Issuer / Signature du délivreur: Glen McFarlane

Date of Issue/Date de délivrance (YYYY-MM-DD): 2013-05-24

Signature of Licencee / Signature du titulaire du permis: Kim Connors

Date (YYYY-MM-DD): 2013-05-24

Personal information contained on this form is collected under the authority of the Fish and Wildlife Conservation Act, 1997 and will be used for the purpose of licencing, identification, enforcement, resource management and customer service surveys. Please direct further inquiries to the District Manager of the MNR issuing district.

Les renseignements personnels dans ce formulaire sont recueillis conformément à la Loi sur la protection du poisson de la faune, 1997 , et ils seront utilisés aux fins de délivrance de permis, d'identification, d'application des règlements, de gestion des ressources et de sondage sur les services a la clientèle. Veuillez communiquer avec le chef du district du MRN qui délivré le permis si vous avez des questions.

Licence to Collect Fish for Scientific Purposes
Permis pour faire la collecte de poissons à des fins scientifiques
Schedule A - Licence Conditions
Annexe A - Conditions du permis

Licence No.
No de permis 1073957

This licence is subject to the conditions listed below.

1. This Licence is valid only for the persons, species, numbers, areas and calendar year indicated. A written report covering the operation of the preceding year must be submitted to the licence issuer within 30 days of the termination date, but in no case later than January 31 next following the year of issue. The report shall contain a statement outlining the objectives of the operations, the methods used, the number and species of fish caught and their fate as well as a map indicating where the collections took place. An analysis is not required. The submission of a satisfactory report is a prerequisite to any subsequent renewals.
2. Before carrying out any operation under the licence in any area the licenced person shall inform the Area Supervisor or Lake Manager of his or her intentions at least a week before commencing work and include information as to the type of operation, location, duration, and the name or names of personnel involved.
3. A copy of the original licence must be carried by the licenced person when working at the designated sites. An assistant of the licenced person who is carrying out activities under this licence during the absence of the licenced person shall carry a copy of the licence on his or her person.
4. All collection gear shall be clearly marked with the licenced person's and the organization's name.
5. This licence is not valid in Provincial Parks, park reserves, or National Parks without the written permission from the authorized person in charge of the area concerned.
6. Capture gear shall be inspected regularly and live holding traps must be inspected at least once daily.
7. This licence does not allow access to any property without permission of the landowner.

Report of all species caught by location must be given to the local MNR office within 3 months of completing the survey.

Added conditions

All dead fish are to be buried on shore away from human habitation and work location.

Within 30 days of the expiration of the permit, a report is to be submitted to MNR Timmins District with the minimum information required being species caught, by location, number and effort used.

Gear to be used: Seine nets, experimental gill nets (1" to 5")

Assistants: Cynthia Russel, Kevin Martens, Tyrell Worrall and Katharina Batchelar.

This license refers to license # 1073957 issued on May 24, 2013.

Ce permis doit se conformer aux conditions ci-dessous.

1. Ce permis n'est valide que pour les personnes, espèces, nombres, zones et année civile indiqués. Un rapport écrit portant sur les activités de l'année précédente doit être soumis au délivreur du permis dans les 30 jours suivant la date d'expiration et jamais plus tard que le 31 janvier qui suit la date de délivrance. Le rapport devra comprendre une déclaration décrivant les objectifs des activités, les méthodes utilisées, le nombre et les espèces de poissons capturés et leur destination finale ainsi qu'une carte montrant l'emplacement des collectes. Une analyse n'est pas requise. La présentation d'un rapport satisfaisant est une condition préalable pour obtenir un renouvellement de permis.
2. Avant de réaliser toute activité visée par le permis dans toute zone, le titulaire du permis doit aviser le superviseur de la zone ou le gestionnaire du lac de ses intentions au moins une semaine avant de commencer ses activités et il doit fournir des renseignements sur le type d'activité, l'emplacement, la durée et le nom de toutes les personnes impliquées.
3. Le titulaire du permis doit avoir en sa possession un exemplaire du permis original lorsqu'il travaille dans les endroits désignés. Si un adjoint du titulaire du permis réalise des activités visées par le permis en l'absence du titulaire du permis, il devra avoir un exemplaire du permis en sa possession.
4. Tout le matériel de collecte doit indiquer bien clairement le nom du titulaire du permis et de son organisme.
5. Ce permis n'est pas valide dans les parcs provinciaux, les réserves de parcs et les parcs nationaux sans la permission écrite de la personne autorisée qui est responsable de la zone en question.
6. Tout le matériel de collecte doit être inspecté régulièrement
et les viviers doivent être inspectés au moins une fois par jour.
7. Ce permis ne permet pas au titulaire d'avoir accès à une propriété privée sans la permission du propriétaire foncier.

Signature of Licencee / Signature du titulaire du permis

Ken Connors

Date

May 31/2013

License to Collect Fish for Scientific Purposes
#1073957

Minnow Environmental Inc.
2 Lamb St.
Georgetown, ON
L7G 3M9

Species/Waterbody

Species	**Number**	**Name of Waterbody**
Northern Pike and Walleye	45 Adult	Schist, Moore Neville, Delaney and Unnamed Lake # 3
Small Bodies	120 Adults	Schist, Moore Neville, Delaney and Unnamed Lake # 3
Large Bodies	1	Schist, Moore Neville, Delaney and Unnamed Lake # 3

Table 1: Locations for Fish Habitat, Community and Tissue Analysis as well as the number of fish sample to be obtained at each location.

May 24, 2013

Ontario

Ministry of Natural Resources

Ministère des Richesses naturelles

Licence to Collect Fish for Scientific Purposes

Permis pour faire la collecte de poissons à des fins scientifiques

Licence No. / Nº de permis	1075293
Local Reference No. / Nº de référence local	
Issuer Account No. / Nº de compte du delivreur de permis.	10002246

This licence is issued under Part I of the Fish Licensing Regulation made under the Fish and Wildlife Conservation Act, 1997 to:

Ce permis est délivré en vertu de la Partie I du règlement sur la délivrance de permis de pêche formulé conformément à la Loi sur la protection du poisson et de la faune de 1997 à:

Name of Licencee / **Nom du titulaire du permis**

Last Name / Nom de famille	First Name / Prénom	Middle Name / Second Prénom
Ms. Connors	Kim	Barbara

Name of Business/Organization/Affiliation (if applicable) / Nom de l'entreprise/de l'organisme/de l'affiliation (le cas échéant)

Minnow Environmental Inc.

Mailing address of Licencee / ***Adresse postale du titulaire du permis***

Street Name & No./PO Box/RR#/Gen. Del./ Nº rue/C.P./R.R./poste restante

2 Lamb Street

City/Town/Municipality / Ville/village/municipalité	Province/State Province/État	Postal Code/Zip Code Code Postal/Zip
Georgetown	ON	L7G3M9

to collect the species, size and quantites of fish from the waters as set out below.
Pour faire la collecte des espèces suivantes (stade et nombre indiqués ci-dessous):

Species Espèces	Eggs Oeuf X	Juvenile Fretin X	Adults Adulte X	Numbers Nombre	Name of Waterbody Nom de l'étendue d'eau
All	X	X	X		Clam Creek
All	X	X	X		inlet to Bagsverd
All	X	X	X		Clam Creek

Yes/Oui ☐ Additional species/Waterbody list attached / Liste d'espèces/d'étendue d'eau additionnelles ci-jointe

Purpose of collection / ***But de la collecte***: Environmental Assessment for IAMGOLD Corporation.

Licence Dates / ***Dates du permis***

Effective Date / Date d'entrée en vigueur (YYYY-MM-DD)	Expiry Date / Date d'expiration (YYYY-MM-DD)
2013-09-11	2013-09-25

Licence conditions This licence is subject to the conditions contained in Schedule A if included. / Ce permis doit respecter les conditions de l'annexe A si celle-ci est jointe.

Conditions du permis Yes/Oui ☒ No/Non ☐ Schedule A included. / Annexe A ci-jointe

Issued by (please print) Délivré par (veuillez écrire en caractères d'imprimerie)	Signature of Issuer / Signature du délivreur	Date of Issue/Date de délivrance (YYYY-MM-DD)
Glen McFarlane	Glen McFarlane	2013-09-09

Signature of Licencee / Signature du titulaire du permis	Date (YYYY-MM-DD)
Kim Connors	2013-09-09

Licence to Collect Fish for Scientific Purposes
Permis pour faire la collecte de poissons à des fins scientifiques
Schedule A - Licence Conditions
Annexe A - Conditions du permis

Licence No. 1075293
No de permis

This licence is subject to the conditions listed below.

1. This Licence is valid only for the persons, species, numbers, areas and calendar year indicated. A written report covering the operation of the preceding year must be submitted to the licence issuer within 30 days of the termination date, but in no case later than January 31 next following the year of issue. The report shall contain a statement outlining the objectives of the operations, the methods used, the number and species of fish caught and their fate as well as a map indicating where the collections took place. An analysis is not required. The submission of a satisfactory report is a prerequisite to any subsequent renewals.
2. Before carrying out any operation under the licence in any area the licenced person shall inform the Area Supervisor or Lake Manager of his or her intentions at least a week before commencing work and include information as to the type of operation, location, duration, and the name or names of personnel involved.
3. A copy of the original licence must be carried by the licenced person when working at the designated sites. An assistant of the licenced person who is carrying out activities under this licence during the absence of the licenced person shall carry a copy of the licence on his or her person.
4. All collection gear shall be clearly marked with the licenced person's and the organization's name.
5. This licence is not valid in Provincial Parks, park reserves, or National Parks without the written permission from the authorized person in charge of the area concerned.
6. Capture gear shall be inspected regularly and live holding traps must be inspected at least once daily.
7. This licence does not allow access to any property without permission of the landowner.

Report of all species caught by location must be given to the local MNR office within 3 months of completing the survey.

Added conditions

All dead fish are to be buried on shore away from human habitation and work location.

Within 30 days of the expiration of the permit, a report is to be submitted to MNR Timmins District with the minimum information required being species caught, by location, number and effort used.

Gear to be used: Electrofisher, backpack, siene and minnow traps.

Assistants: Tyrell Worral, Jess Tester and Cynthia Russel.

This license refers to license # 1075293 issued on Septemebre 11, 2013.

Ce permis doit se conformer aux conditions ci-dessous.

1. Ce permis n'est valide que pour les personnes, espèces, nombres, zones et année civile indiqués. Un rapport écrit portant sur les activités de l'année précédente doit être soumis au délivreur du permis dans les 30 jours suivant la date d'expiration et jamais plus tard que le 31 janvier qui suit la date de délivrance. Le rapport devra comprendre une déclaration décrivant les objectifs des activités, les méthodes utilisées, le nombre et les espèces de poissons capturés et leur destination finale ainsi qu'une carte montrant l'emplacement des collectes. Une analyse n'est pas requise. La présentation d'un rapport satisfaisant est une condition préalable pour obtenir un renouvellement de permis.
2. Avant de réaliser toute activité visée par le permis dans toute zone, le titulaire du permis doit aviser le superviseur de la zone ou le gestionnaire du lac de ses intentions au moins une semaine avant de commencer ses activités et il doit fournir des renseignements sur le type d'activité, l'emplacement, la durée et le nom de toutes les personnes impliquées.
3. Le titulaire du permis doit avoir en sa possession un exemplaire du permis original lorsqu'il travaille dans les endroits désignés. Si un adjoint du titulaire du permis réalise des activités visées par le permis en l'absence du titulaire du permis, il devra avoir un exemplaire du permis en sa possession.
4. Tout le matériel de collecte doit indiquer bien clairement le nom du titulaire du permis et de son organisme.
5. Ce permis n'est pas valide dans les parcs provinciaux, les réserves de parcs et les parcs nationaux sans la permission écrite de la personne autorisée qui est responsable de la zone en question.
6. Tout le matériel de collecte doit être inspecté régulièrement
et les viviers doivent être inspectés au moins une fois par jour.
7. Ce permis ne permet pas au titulaire d'avoir accès à une propriété privée sans la permission du propriétaire foncier.

Signature of Licencee / Signature du titulaire du permis

[signature]

Date

Sept 9, 2013

FISH LAB DATA

SRC Group # 2013-5422

Jun 27, 2013

SRC ANALYTICAL

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

Minnow Environmental Inc.
2 Lamb Street
Georgetown, ON   L7G 3M9
Attn: Kim Connors

Date Samples Received: Jun-06-2013   Client P.O.: 2496

This is a final report.

Organics results have been authorized by Pat Moser, Supervisor

ICP results have been authorized by Keith Gipman, Supervisor

Inorganics and Radiochemistry results have been authorized by Jeff Zimmer, Supervisor

SLOWPOKE-2 results have been authorized by Dave Chorney

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as

    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

SRC ANALYTICAL

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

Minnow Environmental Inc.
2 Lamb Street
Georgetown, ON L7G 3M9
Attn: Kim Connors

Date Samples Received: Jun-06-2013

Client P.O.: 2496

16147 **07/12/2012 BAGSVERD LAKE - SOUTH ARM: BL-NP-20 *FISH FLESH***
16148 **07/12/2012 BAGSVERD LAKE - SOUTH ARM: BL-NP-21 *FISH FLESH***
16149 **07/12/2012 BAGSVERD LAKE - SOUTH ARM: BL-NP-22 *FISH FLESH***

Analyte	Units	16147	16148	16149
Inorganic Chemistry				
Mercury	ug/g	3.0	1.4	3.4
Moisture	%	77.40	79.37	77.30
ICP				
Aluminum	ug/g	3.1	0.8	0.7
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.17	0.18	0.16
Barium	ug/g	0.69	0.23	0.20
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	<0.002	<0.002	<0.002
Chromium	ug/g	1.1	0.8	<0.1
Cobalt	ug/g	0.006	0.007	0.006
Copper	ug/g	1.3	0.70	0.63
Iron	ug/g	16	7.3	5.4
Lead	ug/g	0.016	0.003	0.005
Manganese	ug/g	3.8	2.4	2.2
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.15	0.06	0.13
Selenium	ug/g	1.6	1.6	1.6
Silver	ug/g	<0.002	<0.002	<0.002
Strontium	ug/g	1.6	1.1	1.2
Thallium	ug/g	0.02	0.03	0.02
Tin	ug/g	0.05	<0.01	<0.01

SRC ANALYTICAL

Jun 27, 2013

Minnow Environmental Inc.

16147 **07/12/2012 BAGSVERD LAKE - SOUTH ARM: BL-NP-20 *FISH FLESH***
16148 **07/12/2012 BAGSVERD LAKE - SOUTH ARM: BL-NP-21 *FISH FLESH***
16149 **07/12/2012 BAGSVERD LAKE - SOUTH ARM: BL-NP-22 *FISH FLESH***

Analyte	Units	16147	16148	16149
ICP				
Titanium	ug/g	0.36	0.32	0.28
Uranium	ug/g	0.022	0.005	0.001
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	20	18	17

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Results are reported on a freeze dried basis.

SRC ANALYTICAL

Jun 27, 2013

Minnow Environmental Inc.

16150 **07/12/2012 BAGSVERD LAKE - SOUTH ARM: BL-NP-23 *FISH FLESH***
16151 **07/12/2012 BAGSVERD LAKE - SOUTH ARM: BL-WA-6 *FISH FLESH***
16152 **07/12/2012 BAGSVERD LAKE - SOUTH ARM: BL-WA-7 *FISH FLESH***

Analyte	Units	16150	16151	16152
Inorganic Chemistry				
Mercury	ug/g	1.2	1.4	1.4
Moisture	%	77.31	77.72	77.75
ICP				
Aluminum	ug/g	1.0	1.3	0.7
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.14	0.11	0.08
Barium	ug/g	0.26	0.13	0.11
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	<0.002	<0.002	<0.002
Chromium	ug/g	0.2	0.1	0.2
Cobalt	ug/g	0.006	0.012	0.004
Copper	ug/g	0.56	0.81	0.69
Iron	ug/g	5.3	14	5.5
Lead	ug/g	<0.002	0.004	<0.002
Manganese	ug/g	2.0	0.57	0.42
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.07	0.07	0.02
Selenium	ug/g	1.6	1.8	1.5
Silver	ug/g	<0.002	<0.002	<0.002
Strontium	ug/g	1.7	0.12	0.22
Thallium	ug/g	0.02	0.03	0.04
Tin	ug/g	<0.01	<0.01	<0.01
Titanium	ug/g	0.36	0.44	0.36
Uranium	ug/g	0.003	0.002	0.009
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	18	17	19

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Results are reported on a freeze dried basis.

SRC ANALYTICAL

Minnow Environmental Inc.

16153 **07/12/2012 BAGSVERD LAKE - SOUTH ARM: BL-WA-8 *FISH FLESH***
16154 **07/12/2012 BAGSVERD LAKE - SOUTH ARM: BL-WA-9 *FISH FLESH***
16155 **07/12/2012 BAGSVERD LAKE - SOUTH ARM: BL-WA-10 *FISH FLESH***

Analyte	Units	16153	16154	16155
Inorganic Chemistry				
Mercury	ug/g	1.2	1.2	1.3
Moisture	%	77.52	76.82	78.39
ICP				
Aluminum	ug/g	0.8	1.2	1.2
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.08	0.11	0.10
Barium	ug/g	0.27	0.14	0.10
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	<0.002	<0.002	<0.002
Chromium	ug/g	0.1	0.5	0.2
Cobalt	ug/g	0.004	0.004	0.004
Copper	ug/g	1.0	0.85	0.95
Iron	ug/g	6.6	6.0	4.0
Lead	ug/g	<0.002	0.023	0.010
Manganese	ug/g	0.52	0.64	0.44
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.04	0.12	0.02
Selenium	ug/g	1.5	1.6	1.7
Silver	ug/g	<0.002	<0.002	<0.002
Strontium	ug/g	0.19	0.36	0.16
Thallium	ug/g	0.04	0.04	0.03
Tin	ug/g	<0.01	0.01	<0.01
Titanium	ug/g	0.48	0.44	0.33
Uranium	ug/g	0.001	0.002	<0.001
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	16	17	15

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Minnow Environmental Inc.

16156 07/12/2012 BAGSVERD LAKE - SOUTH ARM: BL-YP-1 - COMPOSITE *FISH*
16157 07/11/2012 BEAVER POND: BP-FM-01 - COMPOSITE *FISH*
16158 07/11/2012 BEAVER POND: BP-NRBD-01 - COMPOSITE *FISH*

Analyte	Units	16156	16157	16158
Inorganic Chemistry				
Mercury	ug/g	0.25	0.07	0.13
Moisture	%	74.87	73.32	69.66
ICP				
Aluminum	ug/g	3.7	53	36
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.15	0.15	0.16
Barium	ug/g	2.2	9.1	18
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	0.3	0.5
Cadmium	ug/g	0.022	0.021	0.032
Chromium	ug/g	0.8	0.2	0.4
Cobalt	ug/g	0.037	0.13	0.16
Copper	ug/g	2.0	2.7	5.7
Iron	ug/g	36	140	200
Lead	ug/g	0.076	0.13	0.20
Manganese	ug/g	11	82	91
Molybdenum	ug/g	0.07	0.08	0.16
Nickel	ug/g	0.10	0.13	0.32
Selenium	ug/g	2.2	0.71	0.86
Silver	ug/g	<0.002	0.007	0.035
Strontium	ug/g	36	36	45
Thallium	ug/g	0.02	0.03	0.02
Tin	ug/g	<0.01	<0.01	0.03
Titanium	ug/g	0.56	3.0	3.2
Uranium	ug/g	0.007	0.026	0.011
Vanadium	ug/g	0.05	0.12	0.10
Zinc	ug/g	81	100	290

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Minnow Environmental Inc.

16159 **07/07/2012 CLAM LAKE: CIL-SMB-17 *FISH FLESH***
16160 **07/07/2012 CLAM LAKE: CIL-SMB-18 *FISH FLESH***
16161 **07/05/2012 CLAM LAKE: CIL-YP-01 - COMPOSITE *FISH***

Analyte	Units	16159	16160	16161
Inorganic Chemistry				
Mercury	ug/g	1.8	1.5	0.12
Moisture	%	77.25	74.04	77.60
ICP				
Aluminum	ug/g	2.8	5.3	29
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.16	0.16	0.19
Barium	ug/g	0.14	0.09	3.3
Beryllium	ug/g	<0.002	<0.002	0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	<0.002	<0.002	0.090
Chromium	ug/g	0.4	0.3	0.8
Cobalt	ug/g	0.006	0.006	0.056
Copper	ug/g	2.3	0.82	3.4
Iron	ug/g	14	10	83
Lead	ug/g	0.050	0.019	0.15
Manganese	ug/g	0.70	0.49	52
Molybdenum	ug/g	<0.02	<0.02	0.06
Nickel	ug/g	0.08	0.05	0.14
Selenium	ug/g	1.6	1.3	1.5
Silver	ug/g	<0.002	<0.002	<0.002
Strontium	ug/g	0.17	0.16	17
Thallium	ug/g	0.01	0.01	0.03
Tin	ug/g	<0.01	<0.01	<0.01
Titanium	ug/g	0.42	0.62	1.9
Uranium	ug/g	<0.001	0.002	0.006
Vanadium	ug/g	<0.02	<0.02	0.09
Zinc	ug/g	19	14	120

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Jun 27, 2013

Minnow Environmental Inc.

16162	**07/05/2012 CLAM LAKE EAST: CLE-JD-01 - COMPOSITE *FISH***
16163	**07/05/2012 CLAM LAKE EAST: CLE-NP-01 *FISH FLESH***
16164	**07/05/2012 CLAM LAKE EAST: CLE-YP-01 - COMPOSITE *FISH***

Analyte	Units	16162	16163	16164
Inorganic Chemistry				
Mercury	ug/g	0.14	8.7	0.17
Moisture	%	68.39	82.33	74.20
ICP				
Aluminum	ug/g	100	7.4	45
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.23	0.06	0.15
Barium	ug/g	5.2	0.99	3.8
Beryllium	ug/g	0.004	<0.002	<0.002
Boron	ug/g	0.3	<0.2	<0.2
Cadmium	ug/g	0.070	0.006	0.042
Chromium	ug/g	0.7	0.3	0.4
Cobalt	ug/g	0.16	0.014	0.081
Copper	ug/g	4.6	1.0	3.7
Iron	ug/g	270	18	110
Lead	ug/g	0.63	0.077	0.21
Manganese	ug/g	31	5.0	32
Molybdenum	ug/g	0.09	<0.02	0.07
Nickel	ug/g	0.37	0.10	0.27
Selenium	ug/g	1.6	0.73	1.2
Silver	ug/g	<0.002	<0.002	0.008
Strontium	ug/g	28	5.9	17
Thallium	ug/g	0.03	0.01	0.05
Tin	ug/g	<0.01	0.03	0.06
Titanium	ug/g	4.6	0.81	3.1
Uranium	ug/g	0.017	<0.001	0.002
Vanadium	ug/g	0.36	0.03	0.13
Zinc	ug/g	120	28	120

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Minnow Environmental Inc.

16165 **07/05/2012 COTE LAKE: CL-NP-03 *FISH FLESH***
16166 **07/06/2012 COTE LAKE: CL-NP-32 *FISH FLESH***
16167 **07/06/2012 COTE LAKE: CL-NP-33 *FISH FLESH***

Analyte	Units	16165	16166	16167
Inorganic Chemistry				
Mercury	ug/g	9.7	4.5	0.50
Moisture	%	78.76	79.30	81.14
ICP				
Aluminum	ug/g	36	5.8	19
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.16	0.15	0.14
Barium	ug/g	5.8	0.32	0.68
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.003	<0.002	0.018
Chromium	ug/g	0.5	0.7	1.9
Cobalt	ug/g	0.029	0.022	0.037
Copper	ug/g	1.6	1.6	4.8
Iron	ug/g	51	14	41
Lead	ug/g	0.059	0.040	0.12
Manganese	ug/g	4.6	4.4	7.0
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.15	0.08	0.20
Selenium	ug/g	0.78	0.96	0.76
Silver	ug/g	0.002	<0.002	0.003
Strontium	ug/g	2.1	1.4	1.9
Thallium	ug/g	0.03	0.05	0.09
Tin	ug/g	0.06	0.08	0.03
Titanium	ug/g	0.95	0.99	1.7
Uranium	ug/g	<0.001	<0.001	<0.001
Vanadium	ug/g	0.06	<0.02	0.05
Zinc	ug/g	21	16	32

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SRC ANALYTICAL

Minnow Environmental Inc.

16168 **07/06/2012 COTE LAKE: CL-NP-40 *FISH FLESH***
16169 **07/07/2012 COTE LAKE: CL-NP-46 *FISH FLESH***
16170 **07/07/2012 COTE LAKE: CL-NP-50 *FISH FLESH***

Analyte	Units	16168	16169	16170
Inorganic Chemistry				
Mercury	ug/g	2.1	0.90	2.2
Moisture	%	76.26	79.14	79.10
ICP				
Aluminum	ug/g	3.5	8.6	3.2
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.12	0.10	0.19
Barium	ug/g	0.21	0.30	0.13
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.005	0.003	0.003
Chromium	ug/g	0.2	0.7	0.9
Cobalt	ug/g	0.014	0.023	0.017
Copper	ug/g	1.1	1.5	1.2
Iron	ug/g	11	29	18
Lead	ug/g	0.017	0.060	0.046
Manganese	ug/g	1.2	7.7	4.1
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.03	0.09	0.06
Selenium	ug/g	0.84	0.68	0.84
Silver	ug/g	<0.002	<0.002	<0.002
Strontium	ug/g	0.54	0.84	1.1
Thallium	ug/g	0.05	0.04	0.04
Tin	ug/g	0.02	0.01	0.10
Titanium	ug/g	0.81	1.2	0.64
Uranium	ug/g	<0.001	<0.001	<0.001
Vanadium	ug/g	<0.02	0.03	<0.02
Zinc	ug/g	17	18	25

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SRC ANALYTICAL

Jun 27, 2013

Minnow Environmental Inc.

16171 **07/07/2012 COTE LAKE: CL-NP-52 *FISH FLESH***
16172 **07/06/2012 LITTLE CLAM LAKE: LCL-NP-2 *FISH FLESH***
16173 **07/06/2012 LITTLE CLAM LAKE: LCL-NP-3 *FISH FLESH***

Analyte	Units	16171	16172	16173
Inorganic Chemistry				
Mercury	ug/g	3.5	4.9	4.3
Moisture	%	77.34	78.59	78.48
ICP				
Aluminum	ug/g	2.4	2.5	1.5
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.13	0.09	0.13
Barium	ug/g	0.42	0.54	0.08
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.002	0.006	0.005
Chromium	ug/g	0.3	0.2	<0.1
Cobalt	ug/g	0.013	0.021	0.010
Copper	ug/g	0.91	0.71	1.1
Iron	ug/g	9.5	11	16
Lead	ug/g	0.030	0.054	0.028
Manganese	ug/g	2.0	2.7	0.74
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.04	0.34	0.04
Selenium	ug/g	1.0	1.0	1.0
Silver	ug/g	<0.002	<0.002	<0.002
Strontium	ug/g	0.73	2.7	0.43
Thallium	ug/g	0.06	0.03	0.03
Tin	ug/g	0.05	0.02	0.06
Titanium	ug/g	0.61	0.46	0.35
Uranium	ug/g	<0.001	<0.001	<0.001
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	18	24	17

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SRC ANALYTICAL

Minnow Environmental Inc.

16174 **07/06/2012 LITTLE CLAM LAKE: LCL-NP-4 *FISH FLESH***
16175 **07/06/2012 LITTLE CLAM LAKE: LCL-NP-5 *FISH FLESH***
16176 **07/06/2012 LITTLE CLAM LAKE: LCL-NP-6 *FISH FLESH***

Analyte	Units	16174	16175	16176
Inorganic Chemistry				
Mercury	ug/g	4.0	2.1	2.0
Moisture	%	77.27	77.71	78.63
ICP				
Aluminum	ug/g	26	9.6	2.0
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.12	0.09	0.07
Barium	ug/g	0.34	0.15	0.30
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.005	0.015	0.002
Chromium	ug/g	0.2	1.2	<0.1
Cobalt	ug/g	0.016	0.023	0.007
Copper	ug/g	0.82	0.37	0.96
Iron	ug/g	30	22	11
Lead	ug/g	0.057	0.045	0.022
Manganese	ug/g	1.6	1.1	3.3
Molybdenum	ug/g	<0.02	0.02	<0.02
Nickel	ug/g	0.09	0.07	0.03
Selenium	ug/g	1.0	0.92	0.96
Silver	ug/g	<0.002	<0.002	<0.002
Strontium	ug/g	0.91	0.64	2.4
Thallium	ug/g	0.03	0.04	0.04
Tin	ug/g	0.05	0.02	0.01
Titanium	ug/g	2.2	0.89	0.52
Uranium	ug/g	0.005	<0.001	<0.001
Vanadium	ug/g	0.05	0.04	<0.02
Zinc	ug/g	18	18	24

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SRC ANALYTICAL

Jun 27, 2013

Minnow Environmental Inc.

16177 **07/11/2012 LITTLE CLAM LAKE: LCL-NP-7 *FISH FLESH***
16178 **07/11/2012 LITTLE CLAM LAKE: LCL-NP-8 *FISH FLESH***
16179 **07/12/2012 UNNAMED LAKE #1: UNL-WA-01 *FISH FLESH***

Analyte	Units	16177	16178	16179
Inorganic Chemistry				
Mercury	ug/g	1.9	3.8	8.9
Moisture	%	76.87	76.75	77.49
ICP				
Aluminum	ug/g	2.8	1.6	4.1
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.05	0.08	0.22
Barium	ug/g	0.38	0.24	0.08
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.002	0.003	0.004
Chromium	ug/g	<0.1	0.1	0.2
Cobalt	ug/g	0.007	0.009	0.007
Copper	ug/g	0.62	1.0	1.1
Iron	ug/g	7.8	12	12
Lead	ug/g	0.034	0.033	0.048
Manganese	ug/g	1.6	2.0	0.60
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.15	<0.01	0.09
Selenium	ug/g	0.87	0.93	1.3
Silver	ug/g	<0.002	<0.002	<0.002
Strontium	ug/g	0.95	1.4	0.13
Thallium	ug/g	0.03	0.04	0.05
Tin	ug/g	0.02	0.04	<0.01
Titanium	ug/g	0.54	0.58	0.92
Uranium	ug/g	<0.001	<0.001	<0.001
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	17	20	22

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SRC ANALYTICAL

Jun 27, 2013

Minnow Environmental Inc.

16180 **07/13/2012 UNNAMED LAKE #1: UNL-WA-04 *FISH FLESH***
16181 **07/12/2012 UNNAMED LAKE #1: UNL-NP-04 *FISH FLESH***
16182 **07/12/2012 UNNAMED LAKE #1: UNL-NP-06 *FISH FLESH***

Analyte	Units	16180	16181	16182
Inorganic Chemistry				
Mercury	ug/g	1.2	5.2	9.3
Moisture	%	81.92	76.14	78.45
ICP				
Aluminum	ug/g	10	13	4.2
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.06	0.23	0.30
Barium	ug/g	0.21	0.22	0.24
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	0.2	<0.2
Cadmium	ug/g	0.002	0.008	0.006
Chromium	ug/g	0.5	0.1	0.2
Cobalt	ug/g	0.012	0.006	0.003
Copper	ug/g	1.7	0.75	0.70
Iron	ug/g	15	12	12
Lead	ug/g	0.043	0.030	0.045
Manganese	ug/g	0.83	1.7	4.1
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.12	0.07	0.03
Selenium	ug/g	0.93	1.1	1.0
Silver	ug/g	<0.002	<0.002	<0.002
Strontium	ug/g	0.27	1.0	2.8
Thallium	ug/g	0.06	0.03	0.03
Tin	ug/g	0.05	0.05	0.04
Titanium	ug/g	1.3	1.6	0.80
Uranium	ug/g	<0.001	<0.001	0.006
Vanadium	ug/g	0.02	0.08	0.02
Zinc	ug/g	16	18	18

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SRC ANALYTICAL

Jun 27, 2013

Minnow Environmental Inc.

16183 **07/17/2012 UNNAMED LAKE #1: UNL-NP-29 *FISH FLESH***
16184 **07/11/2013 UNNAMED POND: UP-NP-2 *FISH FLESH***
16185 **07/11/2012 UNNAMED POND: UP-NP-3 *FISH FLESH***

Analyte	Units	16183	16184	16185
Inorganic Chemistry				
Mercury	ug/g	4.0	3.6	1.9
Moisture	%	80.77	75.78	75.85
ICP				
Aluminum	ug/g	3.6	5.0	1.9
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.20	0.11	0.11
Barium	ug/g	0.14	0.46	0.08
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.004	0.007	<0.002
Chromium	ug/g	0.2	0.3	<0.1
Cobalt	ug/g	0.002	0.003	<0.002
Copper	ug/g	0.81	1.6	0.89
Iron	ug/g	11	13	6.7
Lead	ug/g	0.055	0.070	0.030
Manganese	ug/g	1.5	1.9	0.45
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.02	0.09	0.02
Selenium	ug/g	1.1	1.2	1.0
Silver	ug/g	0.004	0.002	0.002
Strontium	ug/g	0.91	1.1	0.19
Thallium	ug/g	0.04	0.04	0.04
Tin	ug/g	0.33	0.18	0.22
Titanium	ug/g	1.0	0.87	0.61
Uranium	ug/g	<0.001	0.005	0.002
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	18	20	14

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Minnow Environmental Inc.

16186 **07/11/2012 UNNAMED POND: UP-NP-4 *FISH FLESH***
16187 **07/11/2012 UNNAMED POND: UP-NP-6 *FISH FLESH***
16188 **07/05/2012 CLAM LAKE EAST: CLE-ID-01 COMPOSITE *FISH***

Analyte	Units	16186	16187	16188
Inorganic Chemistry				
Mercury	ug/g	2.2	2.0	0.21
Moisture	%	76.46	75.09	68.58
ICP				
Aluminum	ug/g	2.1	1.8	40
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.11	0.14	0.17
Barium	ug/g	0.23	0.19	4.4
Beryllium	ug/g	<0.002	<0.002	0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	<0.002	<0.002	0.046
Chromium	ug/g	<0.1	0.1	0.7
Cobalt	ug/g	<0.002	0.003	0.079
Copper	ug/g	0.76	2.4	4.2
Iron	ug/g	8.8	7.2	120
Lead	ug/g	0.061	0.021	0.39
Manganese	ug/g	1.8	0.57	19
Molybdenum	ug/g	<0.02	<0.02	0.06
Nickel	ug/g	<0.01	0.07	0.26
Selenium	ug/g	1.0	1.1	1.3
Silver	ug/g	0.002	<0.002	0.005
Strontium	ug/g	0.87	0.29	28
Thallium	ug/g	0.04	0.04	0.04
Tin	ug/g	0.31	<0.01	0.04
Titanium	ug/g	0.60	0.49	3.1
Uranium	ug/g	<0.001	0.002	0.009
Vanadium	ug/g	<0.02	<0.02	0.32
Zinc	ug/g	15	13	100

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Results are reported on a freeze dried basis.

SRC Group # 2013-5888

Aug 02, 2013

SRC ANALYTICAL

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

Minnow Environmental Inc.
2 Lamb Street
Georgetown, ON L7G 3M9
Attn: Kim Connors

Date Samples Received: Jun-19-2013 Client P.O.: 2496

This is a final report.

Organics results have been authorized by Pat Moser, Supervisor

ICP results have been authorized by Keith Gipman, Supervisor

Inorganics and Radiochemistry results have been authorized by Jeff Zimmer, Supervisor

SLOWPOKE-2 results have been authorized by Dave Chorney

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as

    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

SRC ANALYTICAL

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2 Lamb Street
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Attn: Kim Connors

Date Samples Received: Jun-19-2013

Client P.O.: 2496

18039 **06/05/2013 WEEL-NP01 *FISH FLESH***
18040 **06/05/2013 WEEL-NP02 *FISH FLESH***
18041 **06/05/2013 WEEL-NP03 *FISH FLESH***

Analyte	Units	18039	18040	18041
Inorganic Chemistry				
Mercury	ug/g	2.1	2.1	3.0
Moisture	%	79.90	80.14	78.89
ICP				
Aluminum	ug/g	4.8	3.1	4.2
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.09	0.21	0.07
Barium	ug/g	0.50	0.35	0.24
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.004	<0.002	0.004
Chromium	ug/g	0.1	0.1	<0.1
Cobalt	ug/g	0.017	0.013	0.006
Copper	ug/g	0.55	1.5	0.61
Iron	ug/g	10	20	12
Lead	ug/g	0.015	0.012	<0.002
Manganese	ug/g	3.4	1.1	0.87
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.15	0.04	0.02
Selenium	ug/g	1.7	1.6	1.5
Silver	ug/g	0.004	0.004	<0.002
Strontium	ug/g	0.89	0.17	0.10
Thallium	ug/g	0.02	0.02	0.03
Tin	ug/g	0.04	0.04	0.02

SRC ANALYTICAL

Minnow Environmental Inc.

18039 06/05/2013 WEEL-NP01 *FISH FLESH*
18040 06/05/2013 WEEL-NP02 *FISH FLESH*
18041 06/05/2013 WEEL-NP03 *FISH FLESH*

Analyte	Units	18039	18040	18041
ICP				
Titanium	ug/g	0.51	0.44	0.71
Uranium	ug/g	<0.001	<0.001	0.012
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	21	29	19

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SRC ANALYTICAL

Minnow Environmental Inc.

18042 **06/05/2013 WEEL-NP04 *FISH FLESH***
18043 **06/05/2013 WEEL-NP04X *FISH FLESH***
18044 **06/05/2013 WEEL-NP05 *FISH FLESH***

Analyte	Units	18042	18043	18044
Inorganic Chemistry				
Mercury	ug/g	4.1	4.7	4.0
Moisture	%	78.29	78.57	78.32
ICP				
Aluminum	ug/g	8.6	6.3	3.5
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.16	0.17	0.12
Barium	ug/g	0.25	0.25	0.43
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.002	0.003	0.002
Chromium	ug/g	<0.1	0.1	0.1
Cobalt	ug/g	0.015	0.010	0.012
Copper	ug/g	0.60	0.64	1.2
Iron	ug/g	8.7	11	15
Lead	ug/g	0.020	0.020	0.021
Manganese	ug/g	2.2	1.0	3.3
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.04	0.05	0.07
Selenium	ug/g	1.3	1.3	1.5
Silver	ug/g	<0.002	<0.002	<0.002
Strontium	ug/g	0.51	0.19	0.79
Thallium	ug/g	0.02	0.02	0.02
Tin	ug/g	0.04	0.06	0.03
Titanium	ug/g	0.51	0.58	0.49
Uranium	ug/g	0.004	<0.001	<0.001
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	22	18	22

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SRC ANALYTICAL

Minnow Environmental Inc.

18045 **06/04/2013 WEEL-YPCOMP1 *FISH***
18046 **06/04/2013 WEEL-YPCOMP2 *FISH***
18047 **06/05/2013 WEEL-YP08 *FISH***

Analyte	Units	18045	18046	18047
Inorganic Chemistry				
Mercury	ug/g	0.55	0.24	0.24
Moisture	%	76.17	74.61	75.92
ICP				
Aluminum	ug/g	15	7.4	8.4
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.14	0.07	0.03
Barium	ug/g	12	8.4	5.2
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.072	0.038	0.026
Chromium	ug/g	0.5	0.2	0.3
Cobalt	ug/g	0.070	0.043	0.039
Copper	ug/g	4.0	2.8	1.5
Iron	ug/g	89	60	66
Lead	ug/g	0.14	0.058	0.13
Manganese	ug/g	79	92	80
Molybdenum	ug/g	0.08	0.08	0.06
Nickel	ug/g	0.43	0.30	0.29
Selenium	ug/g	1.5	1.5	1.8
Silver	ug/g	0.018	0.021	0.011
Strontium	ug/g	30	29	25
Thallium	ug/g	0.02	0.02	0.01
Tin	ug/g	0.91	0.66	0.03
Titanium	ug/g	1.2	0.82	0.87
Uranium	ug/g	0.004	0.003	0.002
Vanadium	ug/g	0.06	0.03	0.04
Zinc	ug/g	140	100	77

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SRC ANALYTICAL

Minnow Environmental Inc.

18048 **06/05/2013 WEEL-YPCOMP3 *FISH***
18049 **06/05/2013 WEEL-YPCOMP4 *FISH***
18050 **06/05/2013 UTDL-WA01 *FISH FLESH***

Analyte	Units	18048	18049	18050
Inorganic Chemistry				
Mercury	ug/g	0.57	0.29	1.1
Moisture	%	76.64	74.71	81.48
ICP				
Aluminum	ug/g	4.2	3.2	3.8
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.09	0.03	0.08
Barium	ug/g	6.0	4.0	0.31
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.045	0.027	<0.002
Chromium	ug/g	0.4	0.3	<0.1
Cobalt	ug/g	0.054	0.032	0.012
Copper	ug/g	1.9	1.4	0.65
Iron	ug/g	52	38	16
Lead	ug/g	0.027	0.026	0.026
Manganese	ug/g	100	46	1.1
Molybdenum	ug/g	0.07	0.06	<0.02
Nickel	ug/g	0.16	0.18	0.15
Selenium	ug/g	1.4	1.2	1.2
Silver	ug/g	0.010	0.013	0.004
Strontium	ug/g	29	21	0.14
Thallium	ug/g	0.02	0.02	0.04
Tin	ug/g	0.06	<0.01	<0.01
Titanium	ug/g	0.83	0.55	0.70
Uranium	ug/g	0.002	0.002	0.001
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	110	79	19

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SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18051 **06/05/2013 UTDL-WA02 *FISH FLESH***
18052 **06/05/2013 UTDL-WA03 *FISH FLESH***
18053 **06/05/2013 UTDL-WA04 *FISH FLESH***

Analyte	Units	18051	18052	18053
Inorganic Chemistry				
Mercury	ug/g	1.5	1.3	1.0
Moisture	%	77.62	77.71	80.09
ICP				
Aluminum	ug/g	5.6	7.1	2.9
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.08	0.10	0.08
Barium	ug/g	0.25	0.55	0.10
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	<0.002	0.004	<0.002
Chromium	ug/g	<0.1	<0.1	<0.1
Cobalt	ug/g	0.007	0.009	0.006
Copper	ug/g	0.90	0.91	0.51
Iron	ug/g	12	20	7.0
Lead	ug/g	0.024	0.056	0.004
Manganese	ug/g	1.2	1.4	0.71
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.06	0.12	0.04
Selenium	ug/g	1.2	1.1	1.2
Silver	ug/g	<0.002	0.003	<0.002
Strontium	ug/g	0.14	0.20	0.06
Thallium	ug/g	0.03	0.05	0.05
Tin	ug/g	<0.01	0.04	<0.01
Titanium	ug/g	0.79	0.95	0.67
Uranium	ug/g	0.015	0.010	0.006
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	15	18	16

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SRC ANALYTICAL

Minnow Environmental Inc.

18054 **06/05/2013 UTDL-WA05 *FISH FLESH***
18055 **06/04/2013 UTDL-YPCOMP1 *FISH***
18056 **06/04/2013 UTDL-YPCOMP2 *FISH***

Analyte	Units	18054	18055	18056
Inorganic Chemistry				
Mercury	ug/g	1.2	0.32	0.26
Moisture	%	79.71	76.13	77.08
ICP				
Aluminum	ug/g	7.9	13	32
Antimony	ug/g	0.02	<0.02	<0.02
Arsenic	ug/g	0.10	0.15	0.17
Barium	ug/g	0.56	2.6	3.7
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	0.4	<0.2
Cadmium	ug/g	0.003	0.079	0.11
Chromium	ug/g	0.2	0.3	0.5
Cobalt	ug/g	0.014	0.072	0.074
Copper	ug/g	0.86	1.9	3.4
Iron	ug/g	15	64	88
Lead	ug/g	0.068	0.18	0.18
Manganese	ug/g	2.2	30	34
Molybdenum	ug/g	<0.02	0.06	0.11
Nickel	ug/g	0.24	0.34	0.30
Selenium	ug/g	0.93	1.2	1.2
Silver	ug/g	0.003	0.006	0.013
Strontium	ug/g	0.47	16	20
Thallium	ug/g	0.04	0.03	0.04
Tin	ug/g	0.02	0.04	0.02
Titanium	ug/g	0.82	1.2	2.8
Uranium	ug/g	0.017	0.009	0.007
Vanadium	ug/g	0.04	0.07	0.11
Zinc	ug/g	18	96	110

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SRC ANALYTICAL

Minnow Environmental Inc.

18057 **06/04/2013 UTDL-YP07 *FISH***
18058 **06/04/2013 UTDL-YP08 *FISH***
18059 **06/05/2013 UTDL-YPCOMP3 *FISH***

Analyte	Units	18057	18058	18059
Inorganic Chemistry				
Mercury	ug/g	0.30	0.12	0.37
Moisture	%	74.15	75.04	76.70
ICP				
Aluminum	ug/g	18	37	12
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.09	0.08	0.14
Barium	ug/g	2.9	2.5	4.4
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.12	0.065	0.063
Chromium	ug/g	0.3	0.2	0.2
Cobalt	ug/g	0.068	0.077	0.070
Copper	ug/g	1.8	2.0	2.0
Iron	ug/g	90	90	69
Lead	ug/g	0.20	0.091	0.13
Manganese	ug/g	43	82	37
Molybdenum	ug/g	0.11	0.11	0.08
Nickel	ug/g	0.35	0.15	0.85
Selenium	ug/g	2.0	1.1	1.2
Silver	ug/g	0.007	0.010	0.010
Strontium	ug/g	27	20	18
Thallium	ug/g	0.03	0.04	0.03
Tin	ug/g	0.03	0.02	0.03
Titanium	ug/g	1.7	1.8	2.4
Uranium	ug/g	0.010	0.004	0.006
Vanadium	ug/g	0.60	0.15	0.07
Zinc	ug/g	110	90	110

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SRC ANALYTICAL

Minnow Environmental Inc.

18060 **06/06/2013 MTDL-WA01 *FISH FLESH***
18061 **06/06/2013 MTDL-WA02 *FISH FLESH***
18062 **06/06/2013 MTDL-WA03 *FISH FLESH***

Analyte	Units	18060	18061	18062
Inorganic Chemistry				
Mercury	ug/g	2.4	2.2	2.7
Moisture	%	80.48	78.07	78.66
ICP				
Aluminum	ug/g	6.6	2.8	3.3
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.14	0.08	0.11
Barium	ug/g	0.11	0.16	0.12
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.003	0.003	0.002
Chromium	ug/g	0.2	0.1	<0.1
Cobalt	ug/g	0.008	0.006	0.006
Copper	ug/g	1.1	0.64	0.58
Iron	ug/g	11	10	6.5
Lead	ug/g	0.027	0.053	0.043
Manganese	ug/g	1.0	1.0	1.1
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.21	0.14	0.11
Selenium	ug/g	1.4	1.3	1.5
Silver	ug/g	<0.002	0.006	0.008
Strontium	ug/g	0.08	0.16	0.15
Thallium	ug/g	0.04	0.04	0.03
Tin	ug/g	0.01	0.07	0.07
Titanium	ug/g	0.99	0.65	0.97
Uranium	ug/g	0.007	0.004	0.004
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	18	18	21

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SRC ANALYTICAL

Minnow Environmental Inc.

18063 06/06/2013 MTDL-WA05 *FISH FLESH*
18064 06/06/2013 MTDL-WA07 *FISH FLESH*
18065 06/06/2013 MTDL-YP02 *FISH*

Analyte	Units	18063	18064	18065
Inorganic Chemistry				
Mercury	ug/g	2.2	4.1	0.22
Moisture	%	81.08	80.44	76.22
ICP				
Aluminum	ug/g	3.1	3.5	8.3
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.10	0.11	0.05
Barium	ug/g	0.30	0.12	2.3
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.005	0.005	0.075
Chromium	ug/g	0.1	<0.1	<0.1
Cobalt	ug/g	0.018	0.005	0.040
Copper	ug/g	0.97	0.76	1.7
Iron	ug/g	5.8	10	47
Lead	ug/g	0.014	0.021	0.068
Manganese	ug/g	1.3	0.85	32
Molybdenum	ug/g	0.03	<0.02	0.09
Nickel	ug/g	0.05	0.06	0.16
Selenium	ug/g	1.2	1.6	2.2
Silver	ug/g	0.015	0.008	0.013
Strontium	ug/g	0.15	0.15	20
Thallium	ug/g	0.05	0.03	0.03
Tin	ug/g	<0.01	0.03	0.13
Titanium	ug/g	0.70	0.74	1.1
Uranium	ug/g	0.004	0.002	0.009
Vanadium	ug/g	<0.02	<0.02	0.40
Zinc	ug/g	19	21	93

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SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18066 **06/06/2013 MTDL-YP04 *FISH***
18067 **06/09/2013 MTDL-YPCOMP1 *FISH***
18068 **06/09/2013 MTDL-YPCOMP2 *FISH***

Analyte	Units	18066	18067	18068
Inorganic Chemistry				
Mercury	ug/g	0.26	0.44	0.31
Moisture	%	75.09	77.58	76.43
ICP				
Aluminum	ug/g	5.6	9.7	8.0
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.03	0.10	0.08
Barium	ug/g	2.4	5.0	3.6
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.076	0.12	0.066
Chromium	ug/g	<0.1	0.1	0.2
Cobalt	ug/g	0.045	0.062	0.047
Copper	ug/g	1.6	2.2	1.8
Iron	ug/g	59	70	54
Lead	ug/g	0.074	0.057	0.035
Manganese	ug/g	22	24	20
Molybdenum	ug/g	0.05	0.06	0.06
Nickel	ug/g	0.13	0.20	0.18
Selenium	ug/g	2.1	1.5	1.4
Silver	ug/g	0.005	0.011	0.008
Strontium	ug/g	22	28	25
Thallium	ug/g	0.02	0.03	0.03
Tin	ug/g	0.10	0.05	0.03
Titanium	ug/g	0.80	1.1	1.0
Uranium	ug/g	0.006	0.003	0.002
Vanadium	ug/g	0.41	0.06	0.04
Zinc	ug/g	79	140	100

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Minnow Environmental Inc.

18069 **06/09/2013 MTDL-YPCOMP3 *FISH***
18070 **06/06/2013 LTDL-WA01 *FISH FLESH***
18071 **06/06/2013 LTDL-WA02 *FISH FLESH***

Analyte	Units	18069	18070	18071
Inorganic Chemistry				
Mercury	ug/g	0.32	5.8	2.0
Moisture	%	76.68	79.62	77.14
ICP				
Aluminum	ug/g	8.8	3.4	1.7
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.07	0.14	0.07
Barium	ug/g	4.7	0.22	0.08
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.079	0.005	0.002
Chromium	ug/g	<0.1	0.2	0.2
Cobalt	ug/g	0.048	0.007	0.006
Copper	ug/g	1.7	0.97	0.52
Iron	ug/g	70	12	5.6
Lead	ug/g	0.033	0.032	0.014
Manganese	ug/g	19	0.74	0.88
Molybdenum	ug/g	0.06	<0.02	<0.02
Nickel	ug/g	0.18	0.11	0.09
Selenium	ug/g	1.3	1.3	1.1
Silver	ug/g	0.006	0.021	0.005
Strontium	ug/g	26	0.29	0.14
Thallium	ug/g	0.03	0.04	0.05
Tin	ug/g	0.04	0.03	0.04
Titanium	ug/g	1.2	1.1	0.81
Uranium	ug/g	0.002	0.002	0.003
Vanadium	ug/g	0.05	<0.02	<0.02
Zinc	ug/g	120	15	14

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18072 06/06/2013 LTDL-WA03 *FISH FLESH*
18073 06/06/2013 LTDL-WA04 *FISH FLESH*
18074 06/06/2013 LTDL-NP05 *FISH FLESH*

Analyte	Units	18072	18073	18074
Inorganic Chemistry				
Mercury	ug/g	2.5	0.87	4.8
Moisture	%	80.66	77.49	81.50
ICP				
Aluminum	ug/g	1.9	1.8	1.8
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.14	0.09	0.21
Barium	ug/g	0.09	0.12	0.72
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.003	0.003	0.004
Chromium	ug/g	<0.1	<0.1	<0.1
Cobalt	ug/g	0.007	0.006	0.013
Copper	ug/g	0.56	0.54	0.57
Iron	ug/g	13	8.8	12
Lead	ug/g	0.014	0.013	0.015
Manganese	ug/g	0.81	1.3	2.8
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.08	0.10	0.09
Selenium	ug/g	1.3	1.2	1.2
Silver	ug/g	0.007	0.005	0.003
Strontium	ug/g	0.45	0.41	1.2
Thallium	ug/g	0.04	0.04	0.03
Tin	ug/g	0.06	0.03	0.03
Titanium	ug/g	0.90	0.75	0.52
Uranium	ug/g	0.010	0.002	0.002
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	12	17	19

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Results are reported on a freeze dried basis.

SRC ANALYTICAL

Minnow Environmental Inc.

18075 **06/05/2013 LTDL-YPCOMP1 *FISH***
18076 **06/05/2013 LTDL-YPCOMP2 *FISH***
18077 **06/05/2013 LTDL-YPCOMP3 *FISH***

Analyte	Units	18075	18076	18077
Inorganic Chemistry				
Mercury	ug/g	0.19	0.27	0.20
Moisture	%	77.19	76.62	76.46
ICP				
Aluminum	ug/g	16	9.9	12
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.10	0.19	0.14
Barium	ug/g	3.6	3.1	3.0
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.071	0.074	0.095
Chromium	ug/g	0.2	<0.1	<0.1
Cobalt	ug/g	0.051	0.052	0.063
Copper	ug/g	1.5	1.9	2.1
Iron	ug/g	60	56	65
Lead	ug/g	0.14	0.073	0.054
Manganese	ug/g	47	21	28
Molybdenum	ug/g	0.06	0.06	0.07
Nickel	ug/g	0.19	0.12	0.14
Selenium	ug/g	1.1	1.3	1.2
Silver	ug/g	0.008	0.006	0.006
Strontium	ug/g	23	21	24
Thallium	ug/g	0.03	0.03	0.04
Tin	ug/g	0.07	0.02	0.02
Titanium	ug/g	1.4	1.0	1.0
Uranium	ug/g	0.006	0.002	0.007
Vanadium	ug/g	0.10	0.05	0.07
Zinc	ug/g	100	94	110

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18078 06/06/2013 LTDL-YP09 *FISH*
18079 06/06/2013 LTDL-YPCOMP4 *FISH*
18080 06/05/2013 BAGL-WA01 *FISH FLESH*

Analyte	Units	18078	18079	18080
Inorganic Chemistry				
Mercury	ug/g	0.32	0.26	1.1
Moisture	%	75.29	77.32	78.87
ICP				
Aluminum	ug/g	4.6	6.1	4.1
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.06	0.06	0.12
Barium	ug/g	3.3	3.8	0.11
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.074	0.18	<0.002
Chromium	ug/g	<0.1	<0.1	<0.1
Cobalt	ug/g	0.046	0.070	0.009
Copper	ug/g	1.3	1.6	1.1
Iron	ug/g	75	50	11
Lead	ug/g	0.11	0.041	0.025
Manganese	ug/g	49	21	1.2
Molybdenum	ug/g	0.06	0.05	<0.02
Nickel	ug/g	0.16	0.14	0.03
Selenium	ug/g	1.7	1.2	1.4
Silver	ug/g	0.007	0.007	<0.002
Strontium	ug/g	24	21	0.28
Thallium	ug/g	0.04	0.04	0.02
Tin	ug/g	0.09	0.06	0.02
Titanium	ug/g	0.83	0.98	0.71
Uranium	ug/g	0.005	0.002	0.001
Vanadium	ug/g	0.26	0.04	<0.02
Zinc	ug/g	100	90	18

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Minnow Environmental Inc.

18081 **06/05/2013 BAGL-WA02 *FISH FLESH***
18082 **06/05/2013 BAGL-WA03 *FISH FLESH***
18083 **06/05/2013 BAGL-WA04 *FISH FLESH***

Analyte	Units	18081	18082	18083
Inorganic Chemistry				
Mercury	ug/g	3.3	1.3	1.2
Moisture	%	81.91	80.64	79.80
ICP				
Aluminum	ug/g	13	6.0	9.9
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.14	0.09	0.07
Barium	ug/g	<0.01	<0.01	<0.01
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	0.3	<0.2	<0.2
Cadmium	ug/g	0.002	0.005	0.002
Chromium	ug/g	<0.1	<0.1	<0.1
Cobalt	ug/g	0.015	0.012	0.009
Copper	ug/g	1.1	0.59	0.62
Iron	ug/g	29	10	13
Lead	ug/g	0.059	0.028	0.030
Manganese	ug/g	1.7	1.5	2.1
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.12	0.06	0.05
Selenium	ug/g	1.6	1.6	1.3
Silver	ug/g	0.004	<0.002	<0.002
Strontium	ug/g	0.16	0.08	1.0
Thallium	ug/g	0.04	0.02	0.03
Tin	ug/g	0.01	0.02	<0.01
Titanium	ug/g	0.96	0.75	0.69
Uranium	ug/g	0.011	0.005	<0.001
Vanadium	ug/g	0.03	<0.02	<0.02
Zinc	ug/g	18	14	17

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18084 **06/05/2013 BAGL-WA05 *FISH FLESH***
18085 **06/05/2013 BAGL-YPCOMP1 *FISH***
18086 **06/05/2013 BAGL-YPCOMP2 *FISH***

Analyte	Units	18084	18085	18086
Inorganic Chemistry				
Mercury	ug/g	2.4	0.65	0.16
Moisture	%	77.04	77.10	78.10
ICP				
Aluminum	ug/g	6.7	11	15
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.11	0.10	0.14
Barium	ug/g	<0.01	3.0	4.0
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	<0.002	0.027	0.069
Chromium	ug/g	<0.1	0.1	0.1
Cobalt	ug/g	0.007	0.044	0.053
Copper	ug/g	0.90	1.3	1.5
Iron	ug/g	14	58	54
Lead	ug/g	0.028	0.15	0.14
Manganese	ug/g	1.1	37	140
Molybdenum	ug/g	<0.02	0.05	0.06
Nickel	ug/g	0.02	0.18	0.26
Selenium	ug/g	1.4	1.5	1.4
Silver	ug/g	<0.002	0.005	0.007
Strontium	ug/g	0.14	24	23
Thallium	ug/g	0.04	0.03	0.03
Tin	ug/g	<0.01	0.02	<0.01
Titanium	ug/g	0.83	1.2	1.3
Uranium	ug/g	<0.001	0.002	0.004
Vanadium	ug/g	<0.02	0.07	0.10
Zinc	ug/g	18	140	110

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18087 **06/06/2013 NEVL-WA01 *FISH FLESH***
18088 **06/06/2013 NEVL-WA01X *FISH FLESH***
18089 **06/06/2013 NEVL-WA02 *FISH FLESH***

Analyte	Units	18087	18088	18089
Inorganic Chemistry				
Mercury	ug/g	3.7	3.6	1.2
Moisture	%	77.65	77.90	79.16
ICP				
Aluminum	ug/g	9.5	7.8	1.2
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.18	0.19	0.09
Barium	ug/g	<0.01	<0.01	<0.01
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.003	0.003	0.005
Chromium	ug/g	0.2	<0.1	0.1
Cobalt	ug/g	0.008	0.012	0.006
Copper	ug/g	0.76	0.72	0.86
Iron	ug/g	11	11	9.4
Lead	ug/g	0.019	0.020	0.010
Manganese	ug/g	0.78	0.95	1.2
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.02	0.04	<0.01
Selenium	ug/g	1.4	1.5	2.0
Silver	ug/g	<0.002	<0.002	<0.002
Strontium	ug/g	0.49	0.33	1.0
Thallium	ug/g	0.06	0.06	0.10
Tin	ug/g	<0.01	<0.01	<0.01
Titanium	ug/g	0.75	0.73	0.60
Uranium	ug/g	0.001	0.002	<0.001
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	19	19	22

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Minnow Environmental Inc.

18090 06/06/2013 NEVL-WA03 *FISH FLESH*
18091 06/06/2013 NEVL-NP01 *FISH FLESH*
18092 06/06/2013 NEVL-NP02 *FISH FLESH*

Analyte	Units	18090	18091	18092
Inorganic Chemistry				
Mercury	ug/g	3.7	8.9	3.8
Moisture	%	77.99	84.11	81.34
ICP				
Aluminum	ug/g	2.6	2.5	3.1
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.10	0.07	0.13
Barium	ug/g	<0.01	<0.01	<0.01
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	<0.002	0.004	<0.002
Chromium	ug/g	<0.1	0.2	<0.1
Cobalt	ug/g	0.008	0.017	0.014
Copper	ug/g	0.44	1.3	0.47
Iron	ug/g	8.4	16	11
Lead	ug/g	0.021	0.018	0.013
Manganese	ug/g	1.0	2.2	3.2
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.04	0.03	0.04
Selenium	ug/g	1.2	1.1	1.1
Silver	ug/g	<0.002	0.003	<0.002
Strontium	ug/g	0.08	1.5	2.1
Thallium	ug/g	0.06	0.04	0.06
Tin	ug/g	<0.01	<0.01	<0.01
Titanium	ug/g	0.68	0.40	0.53
Uranium	ug/g	0.001	<0.001	0.005
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	16	38	20

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Minnow Environmental Inc.

18093 **06/05/2013 NEVL-YP01 *FISH***
18094 **06/05/2013 NEVL-YP02 *FISH***
18095 **06/05/2013 NEVL-YP03 *FISH***

Analyte	Units	18093	18094	18095
Inorganic Chemistry				
Mercury	ug/g	0.36	0.29	0.38
Moisture	%	77.62	75.61	75.84
ICP				
Aluminum	ug/g	18	17	9.5
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.08	0.09	0.05
Barium	ug/g	8.1	1.4	2.2
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.12	0.086	0.076
Chromium	ug/g	0.2	0.6	0.2
Cobalt	ug/g	0.16	0.11	0.073
Copper	ug/g	2.0	1.5	2.8
Iron	ug/g	73	56	48
Lead	ug/g	0.12	0.077	0.067
Manganese	ug/g	53	46	22
Molybdenum	ug/g	0.11	0.12	0.11
Nickel	ug/g	0.16	0.16	0.13
Selenium	ug/g	1.1	0.96	1.3
Silver	ug/g	0.006	0.003	0.006
Strontium	ug/g	37	27	46
Thallium	ug/g	0.04	0.05	0.04
Tin	ug/g	0.01	0.01	0.02
Titanium	ug/g	1.4	1.6	1.1
Uranium	ug/g	0.008	0.007	0.003
Vanadium	ug/g	0.36	0.10	0.06
Zinc	ug/g	93	77	87

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Minnow Environmental Inc.

18096 **06/05/2013 NEVL-YP04 *FISH***
18097 **06/05/2013 NEVL-YPCOMP1 *FISH***
18098 **06/07/2013 SCHL-WA04 *FISH FLESH***

Analyte	Units	18096	18097	18098
Inorganic Chemistry				
Mercury	ug/g	0.38	0.31	1.9
Moisture	%	74.87	75.86	76.92
ICP				
Aluminum	ug/g	25	14	1.5
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.11	0.08	0.08
Barium	ug/g	3.0	1.5	<0.01
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.12	0.088	<0.002
Chromium	ug/g	0.4	0.2	0.2
Cobalt	ug/g	0.14	0.14	0.003
Copper	ug/g	2.7	2.4	0.46
Iron	ug/g	84	69	5.2
Lead	ug/g	0.13	0.12	0.010
Manganese	ug/g	35	30	0.63
Molybdenum	ug/g	0.11	0.10	<0.02
Nickel	ug/g	0.18	0.19	0.01
Selenium	ug/g	1.2	1.2	1.4
Silver	ug/g	0.008	0.008	<0.002
Strontium	ug/g	36	29	0.12
Thallium	ug/g	0.06	0.05	0.04
Tin	ug/g	0.02	0.03	<0.01
Titanium	ug/g	1.6	1.2	0.61
Uranium	ug/g	0.007	0.007	<0.001
Vanadium	ug/g	0.12	0.12	<0.02
Zinc	ug/g	100	86	15

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18099 06/07/2013 SCHL-WA05 *FISH FLESH*
18100 06/07/2013 SCHL-WA06 *FISH FLESH*
18101 06/07/2013 SCHL-WA07 *FISH FLESH*

Analyte	Units	18099	18100	18101
Inorganic Chemistry				
Mercury	ug/g	2.2	8.4	1.1
Moisture	%	78.87	78.76	77.16
ICP				
Aluminum	ug/g	1.1	1.6	2.6
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.08	0.17	0.15
Barium	ug/g	<0.01	<0.01	<0.01
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	<0.002	<0.002	<0.002
Chromium	ug/g	<0.1	<0.1	0.1
Cobalt	ug/g	0.030	0.004	0.006
Copper	ug/g	0.44	0.46	0.74
Iron	ug/g	4.9	7.4	1.8
Lead	ug/g	0.006	0.013	0.026
Manganese	ug/g	1.0	0.48	1.1
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.04	0.02	0.05
Selenium	ug/g	1.1	1.6	1.6
Silver	ug/g	<0.002	<0.002	<0.002
Strontium	ug/g	0.26	0.07	0.70
Thallium	ug/g	0.03	0.02	0.04
Tin	ug/g	<0.01	<0.01	0.02
Titanium	ug/g	0.51	0.58	0.61
Uranium	ug/g	<0.001	<0.001	<0.001
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	18	14	20

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18102 **06/07/2013 SCHL-WA09 *FISH FLESH***
18103 **06/06/2013 SCHL-YP01 *FISH***
18104 **06/06/2013 SCHL-YPCOMP1 *FISH***

Analyte	Units	18102	18103	18104
Inorganic Chemistry				
Mercury	ug/g	3.4	0.19	0.33
Moisture	%	77.59	75.69	75.43
ICP				
Aluminum	ug/g	1.1	17	14
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.19	0.15	0.13
Barium	ug/g	0.28	5.0	4.5
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	<0.002	0.060	0.042
Chromium	ug/g	0.1	0.4	0.3
Cobalt	ug/g	0.004	0.074	0.046
Copper	ug/g	0.56	4.7	2.8
Iron	ug/g	0.9	63	62
Lead	ug/g	0.010	0.16	0.11
Manganese	ug/g	0.48	17	18
Molybdenum	ug/g	<0.02	0.13	0.07
Nickel	ug/g	0.04	0.16	0.13
Selenium	ug/g	2.0	1.5	1.5
Silver	ug/g	<0.002	0.006	0.004
Strontium	ug/g	0.06	27	29
Thallium	ug/g	0.04	0.05	0.03
Tin	ug/g	0.02	0.03	0.03
Titanium	ug/g	0.48	1.1	1.5
Uranium	ug/g	<0.001	0.002	<0.001
Vanadium	ug/g	<0.02	0.06	0.06
Zinc	ug/g	19	95	120

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18105 **06/06/2013 SCHL-YPCOMP2 *FISH***
18106 **06/06/2013 SCHL-YP07 *FISH***
18107 **06/06/2013 SCHL-YPCOMP3 *FISH***

Analyte	Units	18105	18106	18107
Inorganic Chemistry				
Mercury	ug/g	0.28	0.17	0.32
Moisture	%	75.58	73.80	76.06
ICP				
Aluminum	ug/g	18	12	17
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.17	0.12	0.14
Barium	ug/g	4.5	5.2	5.5
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	0.2	<0.2	<0.2
Cadmium	ug/g	0.057	0.035	0.050
Chromium	ug/g	0.3	0.2	0.2
Cobalt	ug/g	0.052	0.055	0.068
Copper	ug/g	1.9	2.8	2.0
Iron	ug/g	72	43	65
Lead	ug/g	0.12	0.60	0.15
Manganese	ug/g	26	18	29
Molybdenum	ug/g	0.07	0.07	0.06
Nickel	ug/g	0.14	0.14	0.19
Selenium	ug/g	1.8	1.5	1.4
Silver	ug/g	0.004	0.002	0.006
Strontium	ug/g	29	38	34
Thallium	ug/g	0.02	0.05	0.02
Tin	ug/g	0.04	0.05	0.02
Titanium	ug/g	1.2	1.1	1.3
Uranium	ug/g	0.002	<0.001	0.001
Vanadium	ug/g	0.06	0.04	0.07
Zinc	ug/g	120	94	120

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Results are reported on a freeze dried basis.

SRC ANALYTICAL

Minnow Environmental Inc.

18108 **06/07/2013 CHEL-NP07 *FISH FLESH***
18109 **06/07/2013 CHEL-NP08 *FISH FLESH***
18110 **06/07/2013 CHEL-NP08X *FISH FLESH***

Analyte	Units	18108	18109	18110
Inorganic Chemistry				
Mercury	ug/g	20	21	23
Moisture	%	81.42	81.83	81.54
ICP				
Aluminum	ug/g	1.6	0.8	1.1
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.12	0.14	0.12
Barium	ug/g	<0.01	<0.01	0.05
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.004	0.004	0.004
Chromium	ug/g	<0.1	<0.1	<0.1
Cobalt	ug/g	0.023	0.005	0.005
Copper	ug/g	0.54	0.50	0.59
Iron	ug/g	<0.5	<0.5	<0.5
Lead	ug/g	0.013	0.010	0.009
Manganese	ug/g	1.4	0.75	1.0
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.06	0.02	0.04
Selenium	ug/g	0.95	0.90	0.93
Silver	ug/g	<0.002	<0.002	<0.002
Strontium	ug/g	0.93	0.37	0.48
Thallium	ug/g	0.02	0.03	0.03
Tin	ug/g	0.02	0.01	<0.01
Titanium	ug/g	0.39	0.32	0.34
Uranium	ug/g	<0.001	<0.001	<0.001
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	18	20	20

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Results are reported on a freeze dried basis.

SRC ANALYTICAL

Minnow Environmental Inc.

18111 **06/07/2013 CHEL-NP09 *FISH FLESH***
18112 **06/07/2013 CHEL-NP10 *FISH FLESH***
18113 **06/07/2013 CHEL-NP11 *FISH FLESH***

Analyte	Units	18111	18112	18113
Inorganic Chemistry				
Mercury	ug/g	13	11	3.8
Moisture	%	79.40	80.17	79.07
ICP				
Aluminum	ug/g	1.0	1.6	6.0
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.06	0.06	0.07
Barium	ug/g	<0.01	<0.01	<0.01
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.005	0.003	0.003
Chromium	ug/g	<0.1	<0.1	<0.1
Cobalt	ug/g	0.009	0.007	0.018
Copper	ug/g	0.69	0.78	0.54
Iron	ug/g	0.9	<0.5	0.6
Lead	ug/g	0.010	0.015	0.011
Manganese	ug/g	0.39	0.33	1.6
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.04	0.07	0.06
Selenium	ug/g	0.78	0.98	1.1
Silver	ug/g	<0.002	0.003	0.003
Strontium	ug/g	0.06	0.05	0.74
Thallium	ug/g	0.03	0.03	0.04
Tin	ug/g	0.01	0.02	<0.01
Titanium	ug/g	0.42	0.34	0.37
Uranium	ug/g	<0.001	<0.001	<0.001
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	19	18	18

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Minnow Environmental Inc.

18114 **06/07/2013 CHEL-YP08 *FISH***
18115 **06/07/2013 CHEL-YP10 *FISH***
18116 **06/07/2013 CHEL-YP12 *FISH***

Analyte	Units	18114	18115	18116
Inorganic Chemistry				
Mercury	ug/g	0.42	0.45	0.39
Moisture	%	74.69	77.89	75.41
ICP				
Aluminum	ug/g	8.6	13	15
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.04	0.04	0.06
Barium	ug/g	1.6	2.5	2.0
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.060	0.082	0.10
Chromium	ug/g	0.2	0.2	0.2
Cobalt	ug/g	0.040	0.038	0.044
Copper	ug/g	1.7	1.4	1.8
Iron	ug/g	33	46	55
Lead	ug/g	0.099	0.11	0.12
Manganese	ug/g	19	18	27
Molybdenum	ug/g	0.08	0.08	0.10
Nickel	ug/g	0.11	0.20	0.14
Selenium	ug/g	2.0	1.9	2.2
Silver	ug/g	0.014	0.010	0.013
Strontium	ug/g	17	18	20
Thallium	ug/g	0.03	0.02	0.04
Tin	ug/g	0.03	0.06	0.04
Titanium	ug/g	0.89	1.1	1.3
Uranium	ug/g	0.003	0.004	0.007
Vanadium	ug/g	0.18	0.22	0.30
Zinc	ug/g	92	90	100

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18117	06/07/2013 CHEL-YPCOMP1	*FISH*
18118	06/07/2013 CHEL-YPCOMP2	*FISH*
18119	06/08/2013 DELL-NP01	*FISH FLESH*

Analyte	Units	18117	18118	18119
Inorganic Chemistry				
Mercury	ug/g	0.29	0.43	7.4
Moisture	%	76.80	77.68	79.26
ICP				
Aluminum	ug/g	13	11	6.4
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.06	0.09	0.26
Barium	ug/g	3.4	4.6	0.13
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.089	0.11	0.002
Chromium	ug/g	0.1	0.2	0.1
Cobalt	ug/g	0.058	0.053	0.010
Copper	ug/g	1.9	2.0	0.47
Iron	ug/g	51	64	8.6
Lead	ug/g	0.065	0.090	0.018
Manganese	ug/g	28	40	0.94
Molybdenum	ug/g	0.07	0.06	<0.02
Nickel	ug/g	0.15	0.19	0.06
Selenium	ug/g	1.2	1.3	1.3
Silver	ug/g	0.010	0.010	<0.002
Strontium	ug/g	24	23	1.4
Thallium	ug/g	0.03	0.02	0.03
Tin	ug/g	0.08	0.14	0.03
Titanium	ug/g	0.97	1.2	0.52
Uranium	ug/g	0.004	0.018	<0.001
Vanadium	ug/g	0.14	0.15	<0.02
Zinc	ug/g	130	150	16

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18120 **06/08/2013 DELL-NP03 *FISH FLESH***
18121 **06/08/2013 DELL-NP04 *FISH FLESH***
18122 **06/08/2013 DELL-NP05 *FISH FLESH***

Analyte	Units	18120	18121	18122
Inorganic Chemistry				
Mercury	ug/g	0.53	1.1	1.9
Moisture	%	79.85	80.46	80.61
ICP				
Aluminum	ug/g	4.3	3.3	2.6
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.09	0.09	0.10
Barium	ug/g	0.18	0.21	<0.01
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.004	0.003	0.005
Chromium	ug/g	<0.1	<0.1	<0.1
Cobalt	ug/g	0.012	0.011	0.009
Copper	ug/g	0.65	0.74	0.55
Iron	ug/g	4.2	3.8	5.0
Lead	ug/g	0.029	0.023	0.030
Manganese	ug/g	1.1	1.1	1.1
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.06	0.07	0.07
Selenium	ug/g	1.2	1.2	1.3
Silver	ug/g	<0.002	<0.002	<0.002
Strontium	ug/g	0.49	0.69	0.97
Thallium	ug/g	0.04	0.04	0.03
Tin	ug/g	0.01	0.01	0.02
Titanium	ug/g	0.74	0.52	0.59
Uranium	ug/g	<0.001	<0.001	<0.001
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	18	21	21

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SRC ANALYTICAL

Minnow Environmental Inc.

18123 **06/08/2013 DELL-NP06 *FISH FLESH***
18124 **06/08/2013 DELL-YP03 *FISH***
18125 **06/08/2013 DELL-YP08 *FISH***

Analyte	Units	18123	18124	18125
Inorganic Chemistry				
Mercury	ug/g	1.6	0.43	0.27
Moisture	%	79.82	77.39	45.27
ICP				
Aluminum	ug/g	5.3	41	5.8
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.12	0.08	0.06
Barium	ug/g	0.08	2.2	1.4
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.003	0.068	0.059
Chromium	ug/g	<0.1	0.2	0.1
Cobalt	ug/g	0.007	0.073	0.033
Copper	ug/g	0.59	2.4	1.0
Iron	ug/g	8.2	91	31
Lead	ug/g	0.022	0.26	0.12
Manganese	ug/g	1.1	31	7.6
Molybdenum	ug/g	<0.02	0.05	0.04
Nickel	ug/g	0.24	0.20	0.14
Selenium	ug/g	1.3	1.3	1.8
Silver	ug/g	<0.002	0.004	0.002
Strontium	ug/g	0.91	26	16
Thallium	ug/g	0.04	0.04	0.03
Tin	ug/g	0.03	0.01	<0.01
Titanium	ug/g	0.58	2.5	0.71
Uranium	ug/g	<0.001	0.008	0.009
Vanadium	ug/g	<0.02	0.31	0.51
Zinc	ug/g	16	66	56

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SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18126 06/08/2013 DELL-YP10 *FISH*
18127 06/08/2013 DELL-YPCOMP1 *FISH*
18128 06/08/2013 DELL-YPCOMP2 *FISH*

Analyte	Units	18126	18127	18128
Inorganic Chemistry				
Mercury	ug/g	0.29	0.15	0.15
Moisture	%	77.15	76.41	76.16
ICP				
Aluminum	ug/g	8.0	24	25
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.06	0.12	0.13
Barium	ug/g	1.3	3.7	3.1
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.046	0.050	0.048
Chromium	ug/g	0.1	0.1	0.2
Cobalt	ug/g	0.035	0.058	0.056
Copper	ug/g	0.95	2.0	1.8
Iron	ug/g	46	81	84
Lead	ug/g	0.11	0.20	0.18
Manganese	ug/g	9.4	17	15
Molybdenum	ug/g	0.06	0.06	0.05
Nickel	ug/g	0.13	0.34	0.23
Selenium	ug/g	1.9	1.3	1.3
Silver	ug/g	0.003	0.005	0.004
Strontium	ug/g	17	15	13
Thallium	ug/g	0.03	0.04	0.04
Tin	ug/g	0.01	0.02	0.02
Titanium	ug/g	0.92	2.0	2.2
Uranium	ug/g	0.009	0.004	0.004
Vanadium	ug/g	0.36	0.15	0.14
Zinc	ug/g	65	100	92

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SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18129 06/08/2013 MESL-WA01 *FISH FLESH*
18130 06/08/2013 MESL-WA02 *FISH FLESH*
18131 06/08/2013 MESL-WA03 *FISH FLESH*

Analyte	Units	18129	18130	18131
Inorganic Chemistry				
Mercury	ug/g	2.8	7.3	7.7
Moisture	%	80.14	76.75	78.12
ICP				
Aluminum	ug/g	1.5	1.5	1.2
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.08	0.14	0.16
Barium	ug/g	<0.01	<0.01	<0.01
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	<0.002	0.003	<0.002
Chromium	ug/g	<0.1	<0.1	<0.1
Cobalt	ug/g	0.006	0.004	0.003
Copper	ug/g	0.55	0.74	0.53
Iron	ug/g	7.1	5.9	6.0
Lead	ug/g	0.010	0.013	0.006
Manganese	ug/g	0.44	0.31	0.28
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.04	0.02	0.03
Selenium	ug/g	1.1	1.5	1.5
Silver	ug/g	<0.002	0.002	0.003
Strontium	ug/g	0.08	0.08	0.07
Thallium	ug/g	0.06	0.06	0.06
Tin	ug/g	<0.01	0.02	<0.01
Titanium	ug/g	0.54	0.48	0.45
Uranium	ug/g	0.011	<0.001	<0.001
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	19	20	17

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SRC ANALYTICAL

Minnow Environmental Inc.

18132 06/08/2013 MESL-WA04 *FISH FLESH*
18133 06/08/2013 MESL-WA05 *FISH FLESH*
18134 06/07/2013 MESL-SSCOMP1 *FISH*

Analyte	Units	18132	18133	18134
Inorganic Chemistry				
Mercury	ug/g	4.2	8.9	0.56
Moisture	%	78.43	75.92	76.85
ICP				
Aluminum	ug/g	1.8	1.7	20
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.19	0.14	0.22
Barium	ug/g	0.22	0.06	5.7
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.002	0.002	0.15
Chromium	ug/g	<0.1	<0.1	0.4
Cobalt	ug/g	0.004	0.010	0.054
Copper	ug/g	0.42	1.0	2.6
Iron	ug/g	7.6	10	72
Lead	ug/g	0.019	0.016	0.12
Manganese	ug/g	0.32	0.40	13
Molybdenum	ug/g	<0.02	<0.02	0.06
Nickel	ug/g	0.02	0.02	0.29
Selenium	ug/g	1.3	1.4	1.8
Silver	ug/g	0.002	0.002	0.014
Strontium	ug/g	0.11	0.08	25
Thallium	ug/g	0.07	0.07	0.02
Tin	ug/g	<0.01	0.02	0.03
Titanium	ug/g	0.45	0.54	1.5
Uranium	ug/g	<0.001	<0.001	0.025
Vanadium	ug/g	<0.02	<0.02	0.24
Zinc	ug/g	25	31	210

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SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18135	**06/07/2013 MESL-SSCOMP2**	***FISH***
18136	**06/07/2013 MESL-SSCOMP3**	***FISH***
18137	**06/07/2013 MESL-SSCOMP4**	***FISH***

Analyte	Units	18135	18136	18137
Inorganic Chemistry				
Mercury	ug/g	0.48	0.50	0.41
Moisture	%	78.65	78.32	77.56
ICP				
Aluminum	ug/g	9.8	10	15
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.19	0.21	0.23
Barium	ug/g	5.5	5.6	6.4
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.098	0.13	0.14
Chromium	ug/g	0.2	0.1	0.3
Cobalt	ug/g	0.050	0.045	0.056
Copper	ug/g	2.1	2.3	2.8
Iron	ug/g	53	57	69
Lead	ug/g	0.049	0.093	0.093
Manganese	ug/g	9.3	11	14
Molybdenum	ug/g	0.05	0.05	0.05
Nickel	ug/g	0.13	0.14	0.19
Selenium	ug/g	1.4	1.7	1.7
Silver	ug/g	0.009	0.009	0.020
Strontium	ug/g	24	24	29
Thallium	ug/g	0.02	0.02	0.03
Tin	ug/g	0.01	0.02	0.03
Titanium	ug/g	0.90	1.6	1.1
Uranium	ug/g	0.010	0.010	0.012
Vanadium	ug/g	0.11	0.12	0.19
Zinc	ug/g	180	220	220

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18138 **06/09/2013 CLAL-NP01X *FISH FLESH***
18139 **06/09/2013 CLAL-NP01 *FISH FLESH***
18140 **06/09/2013 CLAL-NP06 *FISH FLESH***

Analyte	Units	18138	18139	18140
Inorganic Chemistry				
Mercury	ug/g	3.4	3.1	2.7
Moisture	%	78.28	78.77	80.08
ICP				
Aluminum	ug/g	8.5	7.3	8.3
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.11	0.10	0.10
Barium	ug/g	0.39	0.44	0.70
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.007	0.005	0.003
Chromium	ug/g	<0.1	<0.1	<0.1
Cobalt	ug/g	0.038	0.019	0.010
Copper	ug/g	0.61	0.89	0.59
Iron	ug/g	17	14	20
Lead	ug/g	0.040	0.029	0.036
Manganese	ug/g	2.4	1.6	0.70
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.09	0.04	0.05
Selenium	ug/g	1.2	1.3	0.94
Silver	ug/g	0.017	0.009	0.008
Strontium	ug/g	0.80	0.97	0.14
Thallium	ug/g	0.04	0.04	0.03
Tin	ug/g	0.01	<0.01	0.02
Titanium	ug/g	0.84	0.60	0.83
Uranium	ug/g	0.001	<0.001	0.002
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	32	34	18

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18141 **06/09/2013 CLAL-NP07 *FISH FLESH***
18142 **06/09/2013 CLAL-NP08 *FISH FLESH***
18143 **06/09/2013 CLAL-NP09 *FISH FLESH***

Analyte	Units	18141	18142	18143
Inorganic Chemistry				
Mercury	ug/g	1.9	4.3	3.2
Moisture	%	80.11	78.81	81.06
ICP				
Aluminum	ug/g	5.4	1.4	1.2
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.11	0.13	0.16
Barium	ug/g	0.45	0.08	<0.01
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.005	0.003	0.003
Chromium	ug/g	<0.1	<0.1	<0.1
Cobalt	ug/g	0.011	0.007	0.007
Copper	ug/g	0.62	0.17	0.17
Iron	ug/g	14	5.6	7.6
Lead	ug/g	0.028	0.007	0.012
Manganese	ug/g	0.69	0.42	0.49
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.08	0.06	0.04
Selenium	ug/g	1.2	1.1	1.2
Silver	ug/g	0.007	<0.002	<0.002
Strontium	ug/g	0.13	0.09	0.08
Thallium	ug/g	0.03	0.02	0.03
Tin	ug/g	0.01	<0.01	<0.01
Titanium	ug/g	0.63	0.34	0.34
Uranium	ug/g	<0.001	0.003	<0.001
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	25	18	16

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Minnow Environmental Inc.

18144 06/08/2013 CLAL-YPCOMP1 *FISH*
18145 06/08/2013 CLAL-YPCOMP2 *FISH*
18146 06/08/2013 CLAL-YPCOMP3 *FISH*

Analyte	Units	18144	18145	18146
Inorganic Chemistry				
Mercury	ug/g	0.12	0.25	0.20
Moisture	%	76.64	76.03	76.12
ICP				
Aluminum	ug/g	7.5	7.3	6.8
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.07	0.07	0.06
Barium	ug/g	3.1	4.4	3.8
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.078	0.075	0.066
Chromium	ug/g	0.1	0.1	0.1
Cobalt	ug/g	0.042	0.038	0.042
Copper	ug/g	1.4	1.9	1.4
Iron	ug/g	52	52	48
Lead	ug/g	0.031	0.043	0.043
Manganese	ug/g	23	18	23
Molybdenum	ug/g	0.06	0.08	0.07
Nickel	ug/g	0.17	0.11	0.19
Selenium	ug/g	1.3	1.4	1.4
Silver	ug/g	0.006	0.006	0.006
Strontium	ug/g	17	18	17
Thallium	ug/g	0.03	0.03	0.04
Tin	ug/g	0.06	0.09	0.27
Titanium	ug/g	0.89	0.87	0.82
Uranium	ug/g	0.002	0.002	0.004
Vanadium	ug/g	0.04	0.04	0.04
Zinc	ug/g	110	110	92

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18147 **06/08/2013 CLAL-YPCOMP4 *FISH***
18148 **06/08/2013 CLAL-YPCOMP5 *FISH***
18149 **06/07/2013 UNL2-WA04 *FISH FLESH***

Analyte	Units	18147	18148	18149
Inorganic Chemistry				
Mercury	ug/g	0.15	0.14	3.5
Moisture	%	76.78	76.66	78.10
ICP				
Aluminum	ug/g	7.7	5.8	5.4
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.06	0.06	0.07
Barium	ug/g	2.7	3.6	0.26
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.11	0.082	0.002
Chromium	ug/g	<0.1	<0.1	<0.1
Cobalt	ug/g	0.051	0.041	0.009
Copper	ug/g	3.0	1.5	0.25
Iron	ug/g	72	55	11
Lead	ug/g	0.047	0.030	0.035
Manganese	ug/g	26	24	1.0
Molybdenum	ug/g	0.09	0.07	<0.02
Nickel	ug/g	0.10	0.09	0.06
Selenium	ug/g	1.8	1.4	1.2
Silver	ug/g	0.013	0.004	<0.002
Strontium	ug/g	20	19	1.0
Thallium	ug/g	0.04	0.03	0.05
Tin	ug/g	0.10	0.04	0.02
Titanium	ug/g	0.79	0.67	0.77
Uranium	ug/g	0.003	0.002	0.001
Vanadium	ug/g	0.07	0.04	<0.02
Zinc	ug/g	94	100	16

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SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18150 **06/07/2013 UNL2-WA05 *FISH FLESH***
18151 **06/07/2013 UNL2-WA06 *FISH FLESH***
18152 **06/07/2013 UNL2-WA07 *FISH FLESH***

Analyte	Units	18150	18151	18152
Inorganic Chemistry				
Mercury	ug/g	4.1	5.6	3.5
Moisture	%	77.10	77.89	76.26
ICP				
Aluminum	ug/g	2.0	3.6	0.9
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.06	0.20	0.06
Barium	ug/g	<0.01	<0.01	0.18
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.002	<0.002	0.002
Chromium	ug/g	<0.1	<0.1	<0.1
Cobalt	ug/g	0.006	0.006	0.009
Copper	ug/g	0.19	0.16	0.54
Iron	ug/g	5.2	5.6	9.5
Lead	ug/g	0.027	0.014	0.009
Manganese	ug/g	0.68	0.58	0.76
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.40	0.04	0.07
Selenium	ug/g	1.2	1.4	1.0
Silver	ug/g	<0.002	<0.002	<0.002
Strontium	ug/g	0.29	0.10	2.1
Thallium	ug/g	0.05	0.03	0.05
Tin	ug/g	<0.01	<0.01	<0.01
Titanium	ug/g	0.62	0.52	0.49
Uranium	ug/g	<0.001	<0.001	<0.001
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	14	12	20

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SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18153 **06/07/2013 UNL2-WA08 *FISH FLESH***
18154 **06/07/2013 UNL2-YP01 *FISH***
18155 **06/07/2013 UNL2-YP02 *FISH***

Analyte	Units	18153	18154	18155
Inorganic Chemistry				
Mercury	ug/g	3.7	0.42	0.35
Moisture	%	76.37	76.34	75.48
ICP				
Aluminum	ug/g	1.8	29	17
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.09	0.06	0.05
Barium	ug/g	<0.01	2.5	1.8
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.002	0.048	0.053
Chromium	ug/g	<0.1	0.2	0.1
Cobalt	ug/g	0.008	0.064	0.059
Copper	ug/g	0.33	0.82	0.88
Iron	ug/g	6.7	120	58
Lead	ug/g	0.046	0.16	0.15
Manganese	ug/g	1.2	39	35
Molybdenum	ug/g	<0.02	0.06	0.06
Nickel	ug/g	0.05	0.16	0.10
Selenium	ug/g	1.2	1.4	1.4
Silver	ug/g	<0.002	0.003	0.003
Strontium	ug/g	2.0	36	26
Thallium	ug/g	0.05	0.04	0.03
Tin	ug/g	<0.01	0.01	<0.01
Titanium	ug/g	0.64	1.9	1.4
Uranium	ug/g	<0.001	0.014	0.015
Vanadium	ug/g	<0.02	0.67	1.0
Zinc	ug/g	19	78	58

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SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18156 **06/07/2013 UNL2-YP03 *FISH***
18157 **06/07/2013 UNL2-YP04 *FISH***
18158 **06/08/2013 UNL3-NP01 *FISH FLESH***

Analyte	Units	18156	18157	18158
Inorganic Chemistry				
Mercury	ug/g	0.51	0.33	4.6
Moisture	%	76.69	73.92	77.09
ICP				
Aluminum	ug/g	36	14	1.4
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.05	0.04	0.11
Barium	ug/g	5.3	3.5	<0.01
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.077	0.050	0.004
Chromium	ug/g	0.2	0.2	<0.1
Cobalt	ug/g	0.075	0.046	0.010
Copper	ug/g	0.61	0.95	0.28
Iron	ug/g	97	48	10
Lead	ug/g	0.30	0.086	0.007
Manganese	ug/g	86	24	2.1
Molybdenum	ug/g	0.06	0.08	<0.02
Nickel	ug/g	0.16	0.10	0.06
Selenium	ug/g	1.1	1.5	0.99
Silver	ug/g	0.003	0.004	<0.002
Strontium	ug/g	50	35	1.3
Thallium	ug/g	0.05	0.04	0.04
Tin	ug/g	<0.01	0.01	<0.01
Titanium	ug/g	2.4	0.95	0.42
Uranium	ug/g	0.014	0.020	<0.001
Vanadium	ug/g	0.45	0.53	<0.02
Zinc	ug/g	62	80	17

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SRC ANALYTICAL

Minnow Environmental Inc.

18159 06/08/2013 UNL3-NP02 *FISH FLESH*
18160 06/09/2013 UNL3-NP06 *FISH FLESH*
18161 06/09/2013 UNL3-NP07 *FISH FLESH*

Analyte	Units	18159	18160	18161
Inorganic Chemistry				
Mercury	ug/g	3.0	4.7	14
Moisture	%	78.41	79.12	81.50
ICP				
Aluminum	ug/g	1.2	5.5	2.7
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.08	0.12	0.13
Barium	ug/g	<0.01	0.20	0.06
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.002	0.004	0.012
Chromium	ug/g	<0.1	<0.1	<0.1
Cobalt	ug/g	0.011	0.012	0.016
Copper	ug/g	0.19	0.24	0.22
Iron	ug/g	4.7	14	12
Lead	ug/g	0.004	0.037	0.014
Manganese	ug/g	1.5	1.2	0.64
Molybdenum	ug/g	<0.02	<0.02	<0.02
Nickel	ug/g	0.02	0.10	0.08
Selenium	ug/g	0.93	0.96	1.1
Silver	ug/g	<0.002	0.010	<0.002
Strontium	ug/g	0.79	0.65	0.40
Thallium	ug/g	0.05	0.04	0.03
Tin	ug/g	<0.01	0.02	0.02
Titanium	ug/g	0.47	0.73	0.48
Uranium	ug/g	<0.001	0.005	<0.001
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	15	18	19

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SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18162 **06/09/2013 UNL3-NP08 *FISH FLESH***
18163 **06/08/2013 UNL3-YPCOMP1 *FISH***
18164 **06/08/2013 UNL3-YPCOMP2 *FISH***

Analyte	Units	18162	18163	18164
Inorganic Chemistry				
Mercury	ug/g	6.5	0.50	0.54
Moisture	%	79.45	76.66	76.63
ICP				
Aluminum	ug/g	2.1	12	7.9
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.15	0.10	0.11
Barium	ug/g	0.28	5.2	3.5
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.006	0.15	0.24
Chromium	ug/g	<0.1	0.1	0.1
Cobalt	ug/g	0.010	0.062	0.062
Copper	ug/g	0.23	1.7	1.6
Iron	ug/g	16	76	68
Lead	ug/g	0.016	0.21	0.16
Manganese	ug/g	1.4	21	20
Molybdenum	ug/g	<0.02	0.06	0.07
Nickel	ug/g	0.06	0.25	0.15
Selenium	ug/g	1.0	1.1	1.1
Silver	ug/g	<0.002	0.005	0.003
Strontium	ug/g	0.59	20	19
Thallium	ug/g	0.04	0.05	0.04
Tin	ug/g	0.01	0.03	0.03
Titanium	ug/g	0.51	1.2	0.90
Uranium	ug/g	0.006	0.002	0.004
Vanadium	ug/g	<0.02	0.07	0.07
Zinc	ug/g	15	98	85

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Results are reported on a freeze dried basis.

SRC ANALYTICAL

Minnow Environmental Inc.

18165 **06/08/2013 UNL3-YPCOMP3 *FISH***
18166 **06/08/2013 UNL3-YP10 *FISH***
18167 **06/08/2013 UNL3-YP11 *FISH***

Analyte	Units	18165	18166	18167
Inorganic Chemistry				
Mercury	ug/g	0.28	0.44	0.61
Moisture	%	77.20	76.57	74.82
ICP				
Aluminum	ug/g	30	12	8.4
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.11	0.06	0.06
Barium	ug/g	3.8	3.2	3.7
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.18	0.093	0.084
Chromium	ug/g	0.2	0.2	0.1
Cobalt	ug/g	0.12	0.051	0.068
Copper	ug/g	2.1	1.5	1.2
Iron	ug/g	90	67	41
Lead	ug/g	0.21	0.12	0.11
Manganese	ug/g	24	19	23
Molybdenum	ug/g	0.08	0.05	0.06
Nickel	ug/g	0.21	0.17	0.17
Selenium	ug/g	1.2	1.2	1.1
Silver	ug/g	0.008	0.005	0.003
Strontium	ug/g	18	21	22
Thallium	ug/g	0.04	0.05	0.04
Tin	ug/g	0.02	0.02	0.01
Titanium	ug/g	5.9	1.4	1.1
Uranium	ug/g	0.007	0.003	0.004
Vanadium	ug/g	0.12	0.06	0.14
Zinc	ug/g	92	94	85

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SRC ANALYTICAL

Minnow Environmental Inc.

18168 **06/06/2013 MTDL-WA01X *FISH FLESH***
18169 **06/08/2013 MESL-WA02X *FISH FLESH***
18170 **06/07/2013 MESL-SS08 *FISH***

Analyte	Units	18168	18169	18170
Inorganic Chemistry				
Mercury	ug/g	2.2	7.3	0.37
Moisture	%	80.82	79.59	72.41
ICP				
Aluminum	ug/g	7.0	1.3	2.0
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.14	0.12	0.10
Barium	ug/g	0.27	<0.01	1.5
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.003	0.004	0.063
Chromium	ug/g	<0.1	<0.1	<0.1
Cobalt	ug/g	0.011	0.007	0.026
Copper	ug/g	0.63	0.63	2.6
Iron	ug/g	13	5.0	24
Lead	ug/g	0.038	0.008	0.004
Manganese	ug/g	0.90	0.38	2.7
Molybdenum	ug/g	<0.02	<0.02	0.03
Nickel	ug/g	0.10	0.06	0.08
Selenium	ug/g	1.4	1.5	1.8
Silver	ug/g	0.011	<0.002	0.021
Strontium	ug/g	0.18	0.08	12
Thallium	ug/g	0.04	0.06	0.01
Tin	ug/g	0.02	<0.01	<0.01
Titanium	ug/g	0.71	0.57	0.64
Uranium	ug/g	<0.001	<0.001	0.001
Vanadium	ug/g	<0.02	<0.02	<0.02
Zinc	ug/g	22	20	190

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SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18171 **06/06/2013 UNL1-YP01 *FISH***
18172 **06/06/2013 UNL1-YP02 *FISH***
18173 **06/06/2013 UNL1-YP03 *FISH***

Analyte	Units	18171	18172	18173
Inorganic Chemistry				
Mercury	ug/g	0.30	0.15	0.09
Moisture	%	75.33	75.50	75.63
ICP				
Aluminum	ug/g	10	12	23
Antimony	ug/g	<0.02	<0.02	<0.02
Arsenic	ug/g	0.06	0.06	0.07
Barium	ug/g	3.2	2.0	2.5
Beryllium	ug/g	<0.002	<0.002	<0.002
Boron	ug/g	<0.2	<0.2	<0.2
Cadmium	ug/g	0.071	0.10	0.11
Chromium	ug/g	0.1	0.1	0.2
Cobalt	ug/g	0.069	0.087	0.091
Copper	ug/g	1.2	1.6	1.8
Iron	ug/g	42	56	73
Lead	ug/g	0.044	0.083	0.089
Manganese	ug/g	80	16	17
Molybdenum	ug/g	0.10	0.14	0.11
Nickel	ug/g	0.12	0.16	0.21
Selenium	ug/g	1.0	1.1	1.5
Silver	ug/g	0.004	0.004	0.006
Strontium	ug/g	26	34	24
Thallium	ug/g	0.06	0.07	0.06
Tin	ug/g	0.06	0.05	0.02
Titanium	ug/g	1.0	1.1	1.6
Uranium	ug/g	0.011	0.006	0.017
Vanadium	ug/g	0.08	0.09	0.44
Zinc	ug/g	70	76	78

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SRC ANALYTICAL

Aug 02, 2013

Minnow Environmental Inc.

18174 06/06/2013 UNL1-YP04 *FISH*
18175 06/06/2013 UNL1-YPCOMP1 *FISH*

Analyte	Units	18174	18175
Inorganic Chemistry			
Mercury	ug/g	0.08	0.17
Moisture	%	74.24	76.00
ICP			
Aluminum	ug/g	18	11
Antimony	ug/g	<0.02	<0.02
Arsenic	ug/g	0.08	0.06
Barium	ug/g	1.9	2.6
Beryllium	ug/g	<0.002	<0.002
Boron	ug/g	<0.2	<0.2
Cadmium	ug/g	0.13	0.062
Chromium	ug/g	0.2	0.1
Cobalt	ug/g	0.15	0.079
Copper	ug/g	1.8	1.4
Iron	ug/g	63	55
Lead	ug/g	0.070	0.062
Manganese	ug/g	22	22
Molybdenum	ug/g	0.18	0.08
Nickel	ug/g	0.23	0.14
Selenium	ug/g	1.2	1.2
Silver	ug/g	0.008	0.004
Strontium	ug/g	32	35
Thallium	ug/g	0.04	0.06
Tin	ug/g	0.05	0.06
Titanium	ug/g	1.4	1.7
Uranium	ug/g	0.007	0.009
Vanadium	ug/g	0.13	0.14
Zinc	ug/g	76	98

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Results are reported on a freeze dried basis.

October 18-2(

NORTH SHORE
ENVIRONMENTAL SERVICES

Minnow Enviromental Inc.
#2 Lamb Street.
Georgetown, ON
L7G 3M9.

Attn: Kim Connors

Re: Fish Aging Tissues - Project 2496.

Dear Kim,

Please find attached the age data summary sheets for the above project.

The aging went O.K. but was very slow and we needed to prep a number of backup tissues.

As we discussed, the wrong bone was collected by N. Pike and although that tissue did show some zonation, scales appeared to be more reliable.

For Lake white fish and the percids often only the small lead rays or spines were collected. These lead rays etc are not good for aging. We need the 1st 2 to 4 large rays and/or spines. Scales were pretty good backups when we needed them. The majority of

P.O. Box 10129
Thunder Bay, Ontario
P7B 6T6

Tel. (807) 345-9929

CONT'D

walleye were fairly straight forward even though only 1 spine was available.

The yellow perch were very tricky on both spines and scales especially on the young fish, that made up the bulk of the collections.

The edge condition was a tough call on many of these fish as a number of tissues appear to show some marginal plus growth outside the last visible annulus in early June. Usually, this edge growth would be considered last years but in 2013 that is a tough call.

Our apologies on the delays but it has been a crazy fall.

Should you have any questions, please give us a call.

As a note, we have identified a number of samples as possible QAQC candidates. On both sets of data sheets they are identified by an * or x next to the sample. We are not sure on the numbers for the various species but hope there are enough to cover off the QAQC requirements.

Best Regards

NSES #661

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9
ph: 905-873-3371
fax: 905-873-6370

CHAIN OF CUSTODY RECORD

Laboratory: North Shore Environmental Services
#204-780 Gordon Street
Thunder Bay, Ontario P7E 6S1
Contact: Jon Tost
Phone: 807-345-9929
Fax: 807-345-9929

Page 1 of 8
Minnow Contact: Kim Connors
Minnow Project #: 2496
Date Results Required By: 15-Sep-13

* Potential QAQC samples

Bag (1)

Sample Number	Minnow Sample ID	Matrix	Total Length (mm)	Body Weight (g)	Number of Containers	Age	Comments
1	BagL-NP04	Sc *	63.60	1700	1	5+ 6° (7)	
2	BagL-NP05	Sc *	54.00	865	1	2++ 3° (7)	
3	BagL-NP06	Sc	54.50	1010	1	2++ 3° (7)	
4	BagL-NP07	Sc *	65.30	1680	1	6++ 7° (7)	
5	BagL-NP08	Sc	43.00	440	1	2* 2* (7)	
6	BagL-WA01	Sc, Ds	29.00	215	1	1++ 2° (7)	
7	BagL-WA02	Sc, Ds *	37.80	460	1	3* 3* (7)	
8	BagL-WA03	Sc, Ds	38.10	530	1	3* 3* (6-7)	
9	BagL-WA04	Sc, Ds	27.60	170	1	2* 2* "	
10	BagL-WA05	Sc, Ds	34.70	330	1	3* 3* (7)	
11	BagL-YP03	Sc, Ds	7.80	4.3	1	1++ 2° (6)	
12	BagL-YP04	Sc, Ds	5.25	1.2	1	0++ 1° (6-7)	
13	BagL-YP05	Sc, Ds	6.87	2.4	1	0++ 1° (7)	
14	BagL-YP06	Sc, Ds	6.58	2.4	1	0++ 1° (6-7)	
15	BagL-YP07	Sc, Ds	5.48	1.2	1	0++ 1° (7)	
(2) 16	CheL-NP07	Sc, CL	61.20	1240	1	6+ 7° (6-7)	QA/QC required on 10% of samples
17	CheL-NP08	Sc, CL	66.10	1380	1	7+ 8° "	
18	CheL-NP09	Sc, CL	56.20	920	1	6++ 7° "	
19	CheL-NP10	Sc, CL	51.80	680	1	5++ 6° (7)	
20	CheL-NP11	Sc, CL	43.40	465	1	4* 4* (6-7)	
21	CheL-WF01	Sc, PF	48.00	1440	1	15++ 16° (6-7)	
22	CheL-WF02	Sc, PF	47.10	1280	1	14++ 15° (6	
23	CheL-WF05	Sc, PF	45.00	1060	1	11+ 12° (5-6)	
24	CheL-WF06	Sc, PF	46.50	1280	1	15++ 16° (5-6)	
25	CheL-WF07	Sc, PF *	43.50	960	1	7++ 8° (6)	
26	CheL-YP01	Sc, Ds	25.50	210	1	5+ 6° (6-7)	
27	CheL-YP02	Sc, Ds	27.70	260	1	6++ 7° "	
28	CheL-YP04	Sc, Ds	19.00	84	1	4++ 5° (7)	
29	CheL-YP08	Sc, Ds	9.10	8.50	1	2+ 3° (6-7)	
30	CheL-YP10	Sc, Ds	9.90	9.75	1	1++ 2° (7)	

Samples Relinquished to Lab By: (Minnow Employee Signature) Jessica Tester
Date: 12-Aug-13
Time: 12:40 pm
Shipment Method: Purolator
Samples Received In Lab By: (Lab Employee Signature)
Date:
Time:
Sample Condition upon Receipt:

SUBMIT ORIGINAL TO LAB WITH SAMPLES AND RETAIN TWO PHOTOCOPIES AT MINNOW

Note: CheL. - N.P. - bones collected are not cleithra. (No Scales)

MINNOW ENVIRONMENTAL INCORPORATED
2 Lamb Street
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ph: 905-873-3371
fax: 905-873-6370

CHAIN OF CUSTODY RECORD

Laboratory: North Shore Environmental Services
#204-780 Gordon Street
Thunder Bay, Ontario P7E 6S1
Contact: Jon Tost
Phone: 807-345-9929 Fax: 807-345-9929

Page 2 of 8
Minnow Contact: Kim Connors
Minnow Project #: 2496
Date Results Required By: 15-Sep-13

	Sample Number	Minnow Sample ID	Matrix	Total Length (mm)	Body Weight (g)	Number of Containers	Age	Comments
	31	CheL-YP12	Sc, Ds	10	10	1	2+ 3°	(6) (Poss 2+)
	32	CheL-YP21	Sc, Ds	7	3.1	1	1* 1*	(6·7)
	33	CheL-YP22	Sc, Ds	6.8	2	1	0++ 1°	"
	34	CheL-YP25	Sc, Ds	4.8	0.6	1	0++ 1°	"
	35	CheL-YP26	Sc, Ds	4.9	0.7	1	0++ 1°	(6-7)
3	36	DelL-NP01	Sc, CL	72.1	2400	1	7+ 8°	(6)
	37	DelL-NP03	Sc, CL	27.7	105	1	1+ 2°	(6·7) - Poss 1+
	38	DelL-NP04	Sc, CL	34.1	208	1	2+ 3°	(7) - Poss 2+
	39	DelL-NP05	Sc, CL	45.7	510	1	4++ 5°	(7)
	40	DelL-NP06	Sc, CL	46	395	1	5++ 6°	(6·7)
	41	DelL-YP02	Sc, Ds	22.3	127	1	6* 6*	(7)
	42	DelL-YP03	Sc, Ds	14.5	36	1	2++ 3°	(7)
	43	DelL-YP04	Sc, Ds	22.8	143	1	7++ 8°	(7)
	44	DelL-YP08	Sc, Ds	11.5	16	1	3* 3*	(7)
	45	DelL-YP10	Sc, Ds	10.8	13	1	2* 2*	(7)
	46	DelL-YP16	Sc, Ds	5.7	1.4	1	1+ 1+	QA/QC required on 10% of samples (6·7)
	47	DelL-YP21	Sc, Ds	5.3	1	1	1+ 1+	(6·7)
4	48	MesL-NP02	Sc, CL	60.3	1320	1	4++ 5°	(6-7)
	49	MesL-NP04	Sc, CL	71.2	1920	1	5++ 6°	"
	50	MesL-WA01	Sc, Ds	29	225	1	2* 2*	(7)
	51	MesL-WA02	Sc, Ds	54.1	1200	1	6++ 7°	(7)
	52	MesL-WA03	Sc, Ds	52	1320	1	6++ 7°	(7)
	53	MesL-WA04	Sc, Ds	37.8	530	1	2++ 3°	(7)
	54	MesL-WA05	Sc, Ds	53.2	1500	1	7++ 8°	(7)
	55	MesL-WF01	Sc, PF	47.8	1160	1	10++ 11°	(6·7)
	56	MesL-WF02	Sc, PF	47.5	1200	1	13+ 14°	(6)
	57	MesL-WF03	Sc, PF	47.5	1180	1	15++ 16°	(6·7)
	58	MesL-WF04	Sc, PF	41	680	1	17+ 18°	(5)
	59	MesL-WF05	Sc, PF	39.5	590	1	6+ 7°	(6·7)
	60	MesL-SS01	Sc	48.82	0.73	1	0++ 1°	(6)

Samples Relinquished to Lab By: (Minnow Employee Signature)
Date:
Time:
Shipment Method: Purolator

Samples Received in Lab By: (Lab Employee Signature)
Date:
Time:
Sample Condition upon Receipt:

SUBMIT ORIGINAL TO LAB WITH SAMPLES AND RETAIN TWO PHOTOCOPIES AT MINNOW

Note 8 SS. = species ?? Scales probably useless.
Lengths ???
8 Del. L. - N. Pike bones collected are not
cleithra. (Do scales.)
Mes. L " " " " "

MINNOW ENVIRONMENTAL INCORPORATED

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CHAIN OF CUSTODY RECORD

Laboratory: North Shore Environmental Services
#204-780 Gordon Street
Thunder Bay, Ontario P7E 6S1
Contact: Jon Tost
Phone: 807-345-9929 Fax: 807-345-9929

Minnow Contact: Kim Connors
Minnow Project #: 2496
Date Results Required By: 15-Sep-13

	Sample Number	Minnow Sample ID	Matrix	Total Length (mm)	Body Weight (g)	Number of Containers	Age	Comments
	61	MesL-SS08	Sc	82.04	4.655	1	1++ 2°	(6)
	62	MesL-SS10	Sc	54.56	1.001	1	0++ 1°	(6-7)
	63	MesL-SS12	Sc	45.14	0.574	1	0++ 1°	(6)
	64	MesL-SS16	Sc	49.98	0.921	1	0++ 1°	(6-7)
5	65	NevL-NP01	Sc, CL ✓	47.3	440	1	4+ 5°	(6-7) - Nev.L. Cleithra were collected. ✓
	66	NevL-NP02	Sc, CL ✓	44.2	410	1	5* 5*	"
	67	NevL-NP03	Sc, CL ✓	35.1	232	1	2+ 2+	(6-7)
	68	NevL-NP04	Sc, CL ✓	34.3	190	1	2+ 3	(6)
	69	NevL-NP06	Sc, CL ✓	29.2	145	1	1+ 1+	(6-7)
	70	NevL-WA01	Sc, Ds *	43.1	850	1	5* 5*	(7)
	71	NevL-WA02	Sc, Ds *	42.1	620	1	6* 6*	(7)
	72	NevL-WA03	Sc, Ds	34	340	1	3* 3*	(7)
	73	NevL-YP01	Sc, Ds *	11.174	15	1	2* 2*	(6-7)
	74	NevL-YP02	Sc, Ds	7.875	4.6	1	1* 1*	(6)
	75	NevL-YP03	Sc, Ds	8.21	5.5	1	1* 1*	(6-7)
	76	NevL-YP04	Sc, Ds	7.682	4.5	1	1* 1*	QA/QC required on 10% of samples
	77	NevL-YP05	Sc, Ds	7.14	3.9	1	1* 1*	(6)
	78	NevL-YP06	Sc, Ds	7.212	4.7	1	1* 1*	(6)
6	79	SchL-NP01	Sc, CL	67.8	1540	1	7+ 8°	(6)
	80	SchL-NP03	Sc, CL	45.8	563	1	2+ 3°	(7) Poss 2+.
	81	SchL-NP05	Sc, CL	43.8	515	1	2+ 3°	(7) " " .
	82	SchL-NP06	Sc, CL *	60	1021	1	4++ 5°	(7)
	83	SchL-NP07	Sc, CL	57.6	1017	1	4+ 5°	(6-7)
	84	SchL-WA04	Sc, Ds *	39	551	1	3* 3*	(7)
	85	SchL-WA05	Sc, Ds	28.7	200	1	2* 2*	(7)
	86	SchL-WA06	Sc, Ds *	63.8	2360	1	10++ 11°	(7)
	87	SchL-WA07	Sc, Ds *	17.9	52	1	1* 1*	(7)
	88	SchL-WA09	Sc, Ds	45	805	1	4+ 5°	(6-7)
	89	SchL-YP01	Sc *	9.9	9.86	1	1++ 2°	(7)
	90	SchL-YP03	Sc	6.2	2.43	1	1* 1*	(7)

Samples Relinquished to Lab By: (Minnow Employee Signature) Date: Time: Shipment Method: Purolator
Samples Received in Lab By: (Lab Employee Signature) Date: Time: Sample Condition upon Receipt:

SUBMIT ORIGINAL TO LAB WITH SAMPLES AND RETAIN TWO PHOTOCOPIES AT MINNOW

Note: Nev.L. - N Pike - cleithra collected. ✓✓
- Y.P. - only 1 spine. Need 3-4. Very tough aging from 1 of these fish.
SchL - N-Pike - bones taken are not cleithra.

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CHAIN OF CUSTODY RECORD

Laboratory: North Shore Environmental Services
#204-780 Gordon Street
Thunder Bay, Ontario P7E 6S1
Contact: Jon Tost
Phone: 807-345-9929 Fax: 807-345-9929

Page 4 of 8
Minnow Contact: Kim Connors
Minnow Project #: 2496
Date Results Required By: 15-Sep-13

	Sample Number	Minnow Sample ID	Matrix	Total Length (mm)	Body Weight (g)	Number of Containers	Age	Comments
	91	SchL-YP04	Sc	6.4	2.47	1	1* 1*	(6-7)
	92	SchL-YP07	Sc	10.7	11.94	1	2* 2*	(7)
	93	SchL-YP09	Sc	5.4	1.64	1	1+ 1+	(6)
7	94	UTDL-NP01	Sc, CL	79.8	3200	2	7++ 8°	(6)
	95	UTDL-NP03	Sc, CL	45.2	500	1	4++ 5°	(6-7)
	96	UTDL-NP05	Sc, CL	37	270	1	2+ 3°	" (Poss. 2+)
	97	UTDL-NP09	Sc, CL X	36.6	255	1	2+ 3°	(7) (" ")
	98	UTDL-NP10	Sc, CL	49.6	630	1	4++ 5°	(7)
	99	UTDL-WA01	Sc, Ds	28.9	230	1	3* 3*	(6-7)
	100	UTDL-WA02	Sc, Ds	31	280	1	2* 2*	"
	101	UTDL-WA03	Sc, Ds	20	65	1	1* 1*	(7)
	102	UTDL-WA04	Sc, Ds	29.8	250	1	2* 2*	(6-7)
	103	UTDL-WA05	Sc, Ds	20.6	55	1	1* 1*	"
	104	UTDL-YP01	Sc	5.7	1.729	1	1* 1*	"
	105	UTDL-YP02	Sc	6.1	2.05	1	1++ 2°	"
	106	UTDL-YP05	Sc	6.9	2.56	1	1++ 2°	QA/QC required on 10% of samples (6)
	107	UTDL-YP06	Sc	5.2	0.792	1	0++ 1°	(6)
	108	UTDL-YP07	Sc	X 9.4	6.81	1	1++ 2°	(6-7)
	109	UTDL-YP08	Sc	8.2	6.06	1	1+ 2°	(6)
	110	UTDL-YP09	Sc	5	1.17	1	1* 1*	(6-7)
	111	UTDL-YP10	Sc	6.2	2.07	1	1* 1*	(6)
8	112	MTDL-NP02	Sc, CL	X 48	650	1	3* 3*	(7)
	113	MTDL-NP03	Sc, CL	44.3	520	1	2++ 3°	(6-7)
	114	MTDL-NP04	Sc, CL	47.2	610	1	2++ 3°	"
	115	MTDL-NP08	Sc, Cl	42.5	not recorded	1	3+ 3+	(6) Poss. 4°
	116	MTDL-WA01	Sc, Ds	30	250	1	2* 2*	(7)
	117	MTDL-WA02	Sc, Ds	X 30.8	258	1	2* 2*	(7)
	118	MTDL-WA03	Sc, Ds	X 31.3	264	1	2* 2*	(7)
	119	MTDL-WA05	Sc, Ds	29.4	240	1	2* 2*	(7)
	120	MTDL-WA07	Sc, Ds	46.3	1000	1	4* 4*	(7)

Samples Relinquished to Lab By: (Minnow Employee Signature)
Date:
Time:
Shipment Method: Purolator

Samples Received in Lab By: (Lab Employee Signature)
Date:
Time:
Sample Condition upon Receipt:

SUBMIT ORIGINAL TO LAB WITH SAMPLES AND RETAIN TWO PHOTOCOPIES AT MINNOW

MINNOW ENVIRONMENTAL INCORPORATED
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CHAIN OF CUSTODY RECORD

Laboratory: North Shore Environmental Services
#204-780 Gordon Street
Thunder Bay, Ontario P7E 6S1
Contact: Jon Tost
Phone: 807-345-9929 Fax: 807-345-9929

Page 5 of 8
Minnow Contact: Kim Connors
Minnow Project #: 2496

Date Results Required By: 15-Sep-13

Sample Number	Minnow Sample ID	Matrix	Total Length (mm)	Body Weight (g)	Number of Containers	Age	Comments
121	SchL-YP04	Sc	6.4	2.47	1		
122	SchL-YP07	Sc	10.7	11.94	1		
123	SchL-YP09	Sc	5.4	1.64	1		
124	UTDL-NP01	Sc, CL	78.9	3200	2		
125	UTDL-NP03	Sc, CL	45.2	600	1		
126	UTDL-NP05	Sc, CL	37	270	1		
127	UTDL-NP09	Sc, CL	36.6	255	1		
128	UTDL-NP10	Sc, CL	49.6	630	1		
129	UTDL-WA01	Sc, Ds	26.9	230	1		
130	UTDL-WA02	Sc, Ds	31	280	1		
131	UTDL-WA03	Sc, Ds	20	65	1		
132	UTDL-WA04	Sc, Ds	29.8	250	1		
133	UTDL-WA05	Sc, Ds	20.6	55	1		
134	UTDL-YP01	Sc	5.7	1.729	1		
135	UTDL-YP02	Sc	6.1	2.05	1		
136	UTDL-YP05	Sc	6.9	2.56	1		QA/QC required on 10% of samples
137	UTDL-YP06	Sc	5.2	0.792	1		
138	UTDL-YP07	Sc	8.4	6.81	1		
139	UTDL-YP08	Sc	8.2	6.06	1		
140	UTDL-YP09	Sc	5	1.17	1		
141	UTDL-YP10	Sc	6.2	2.07	1		
142	MTDL-NP02	Sc, CL	48	650	1		
143	MTDL-NP03	Sc, CL	44.3	520	1		
144	MTDL-NP04	Sc, CL	47.2	610	1		
145	MTDL-NP08	Sc, Cl	42.5	not recorded	1		
146	MTDL-WA01	Sc, Ds	30	250	1		
147	MTDL-WA02	Sc, Ds	30.6	258	1		
148	MTDL-WA03	Sc, Ds	31.3	264	1		
149	MTDL-WA05	Sc, Ds	29.4	240	1		
150	MTDL-WA07	Sc, Ds	46.3	1000	1		

Samples Relinquished to Lab By: (Minnow Employee Signature)
Date:
Time:
Shipment Method: Purolator

Samples Received In Lab By: (Lab Employee Signature)
Date:
Time:
Sample Condition upon Receipt:

SUBMIT ORIGINAL TO LAB WITH SAMPLES AND RETAIN TWO PHOTOCOPIES AT MINNOW

same as previous page
except for "sample number"

MINNOW ENVIRONMENTAL INCORPORATED 2 Lamb Street Georgetown, Ontario L7G 3M9 ph: 905-873-3371 fax: 905-873-6370	CHAIN OF CUSTODY RECORD

Laboratory: North Shore Environmental Services
#204-780 Gordon Street
Thunder Bay, Ontario P7E 6S1
Contact: Jon Tost
Phone: 807-345-9929 Fax: 807-345-9929

Page 6 of 8
Minnow Contact: Kim Connors
Minnow Project #: 2496

Date Results Required By: 15-Sep-13

Sample Number	Minnow Sample ID	Matrix	Total Length (mm)	Body Weight (g)	Number of Containers	Age	Comments
151	MTDL-WF01	Sc, PF	44.3	1150	1	9++ 10°	(6-7)
152	MTDL-WF02	Sc, PF ✗	40.5	900	1	5++ 6°	(7)
153	MTDL-WF03	Sc, PF	44.2	1080	1	10+ 11°	(6)
154	MTDL-WF04	Sc, PF	46.2	1190	1	10++ 11°	(6-7)
155	MTDL-YP02	Sc, Ds	9.8	10	1	2* 2*	"
156	MTDL-YP04	Sc, Ds	9.9	10.25	1	2+ 3°	" (Poss 2+)
157	MTDL-YP06	Sc, ~~Ds~~	5.6	1.6	1	0++ 1°	"
158	MTDL-YP07	Sc, Ds	5.5	1.4	1	1* 1*	(7)
159	MTDL-YP09	Sc, Ds	6.9	3.2	1	1* 1*	(6-7)
160	MTDL-YP10	Sc, Ds	6.5	2.7	1	1* 1*	(6)
161	MTDL-YP11	Sc, Ds	6.3	2.3	1	1* 1*	(7)
162	LTDL-NP05	Sc, ~~OL~~	53.5	790	1	4+ 4+	(6-7)
163	LTDL-NP06	Sc, ~~OL~~	34.6	230	1	2+ 3°	" (Poss. 2+)
164	LTDL-NP07	Sc, ~~OL~~	43.2	440	1	2++ 3°	(6-7)
165	LTDL-NP08	Sc, ~~OL~~	33.7	198	1	2++ 3°	"
166	LTDL-NP09	Sc, ~~OL~~	43	445	1	2++ 3°	(6) QA/QC required on 10% of samples
167	LTDL-WA01	Sc, Ds	46.5	940	1	5++ 6°	(7)
168	LTDL-WA02	Sc, Ds ✗	39.8	540	1	3* 3*	(7)
169	LTDL-WA03	Sc, Ds	42.4	620	1	4* 4*	(7)
170	LTDL-WA04	Sc, Ds	30	244	1	2* 2*	(7)
171	LTDL-YP01	Sc	6.9	3.09	1	0++ 1°	(6)
172	LTDL-YP04	Sc	6	2.04	1	1* 1*	(6)
173	LTDL-YP06	Sc	6.2	2.25	1	0++ 1°	(6-7)
174	LTDL-YP09	Sc	10.2	9.1	1	2+ 2+	"
175	LTDL-YP11	Sc	6.9	2.2	1	1* 1*	"
176	UNL1-YP01	Sc, Ds	8.4	5.6	1	1* 1*	(6)
177	UNL1-YP02	Sc, Ds	7.8	5	1	1* 1*	(6)
178	UNL1-YP03	Sc, Ds	8.5	7	1	1+ 1+	(6)
179	UNL1-YP04	Sc, Ds	8.4	6.5	1	1* 1*	(6)
180	UNL1-YP05	Sc, Ds	7.3	3.8	1	0++ 1°	(6-7)

(9)

(10)

Samples Relinquished to Lab By: (Minnow Employee Signature) Date: Time: Shipment Method: Purolator

Samples Received in Lab By: (Lab Employee Signature) Date: Time: Sample Condition upon Receipt:

SUBMIT ORIGINAL TO LAB WITH SAMPLES AND RETAIN TWO PHOTOCOPIES AT MINNOW

MINNOW ENVIRONMENTAL INCORPORATED
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CHAIN OF CUSTODY RECORD

Laboratory: North Shore Environmental Services
#204-780 Gordon Street
Thunder Bay, Ontario P7E 6S1
Contact: Jon Tost
Phone: 807-345-9920 Fax: 807-345-9929

Page 7 of 8
Minnow Contact: Kim Connors
Minnow Project #: 2486
Date Results Required By: 15-Sep-13

Sample Number	Minnow Sample ID	Matrix	Total Length (mm)	Body Weight (g)	Number of Containers	Age	Comments
181	UNL1-YP06	Sc, Ds	6.7	2.8	1	0++ 1°	(5-6) ← Sc=1* ✓✓
(11) 182	UNL2-NP02	Sc, CL ✓	51.2	730	1	6++ 7°	(6-7)
183	UNL2-NP03	Sc, CL ✓	✱ 37.4	280	1	3* 3*	(7)
184	UNL2-NP04	Sc, CL ✓	31.2	140	1	1++ 2°	(7)
185	UNL2-NP09	Sc, CL ✓	40.1	355	1	3+ 4°	(7)
186	UNL2-NP10	Sc, CL	34.1	225	1	3* 3*	(6-7)
187	UNL2-WA04	Sc, Ds	40.5	590	1	4* 4*	(7)
188	UNL2-WA05	Sc, Ds	✗ 47.1	910	1	4++ 5°	(7)
189	UNL2-WA06	Sc, Ds	52	1160	1	8++ 9°	(7)
190	UNL2-WA07	Sc, Ds	✗ 39.1	530	1	4* 4*	(7)
191	UNL2-WA08	Sc, Ds	39.5	550	1	4+ 5°	(7)
192	UNL2-YP01	Sc, Ds	14.1	32	1	3* 3*	(7)
193	UNL2-YP02	Sc, Ds	✗ 14.5	35	1	3* 3*	(7)
194	UNL2-YP03	Sc, Ds	15.6	45	1	4* 4*	(6-7)
195	UNL2-YP04	Sc, Ds	10.9	14	1	2* 2*	"
(12) 196	UNL3-NP01	✓ Sc, ~~CL~~	✗ 38	333	1	2++ 3°	QA/QC required on 10% of samples (7)
197	UNL3-NP02	Sc, ~~CL~~	33.2	199	1	2+ 3°	(6)
198	UNL3-NP06	Sc, ~~CL~~	✗ 41.3	340	1	3+ 4°	(6-7)
199	UNL3-NP07	Sc, CL	54.7	702	1	6+ 7°	(7)
200	UNL3-NP08	Sc, CL	✗ 45.4	445	1	5+ 6°	(6-7)
201	UNL3-YP03	Sc	5.7	1.5	1	1+ 1+	(6-7)
202	UNL3-YP05	Sc	7.1	3.3	1	1+ 1+	(7)
203	UNL3-YP08	Sc	7.1	3.3	1	1+ 1+	(7)
204	UNL3-YP09	Sc ✗	6.3	2.2	1	1+ 1+	(7)
205	UNL3-YP10	Sc ✗	9.1	6.5	1	2* 2*	(7)
206	UNL3-YP11	Sc	9.8	8.2	1	2+ 2+	(6-7)
(13) 207	WeeL-NP01	Sc, ~~CL~~	48.1	660	1	3+ 4°	"
208	WeeL-NP02	✓ Sc, ~~CL~~ ✗	52.7	860	1	2++ 3°	(7)
209	WeeL-NP03	Sc, ~~CL~~	52	830	1	3++ 4°	(6)
210	WeeL-NP04	✓ Sc, ~~CL~~ ✗	62.5	1240	1	5++ 6°	(7)

Fish all showing + growth on edge i.e. early June. Possibly 1 YR. older.

Samples Relinquished to Lab By: (Minnow Employee Signature) [signature] Date: Time:
Shipment Method: Purolator
Samples Received in Lab By: (Lab Employee Signature) Date: Time:
Sample Condition upon Receipt:

SUBMIT ORIGINAL TO LAB WITH SAMPLES AND RETAIN TWO PHOTOCOPIES AT MINNOW

Note: stopped trying to assess N. Pike bones @ Bay #9. Scales used in rest of lakes.

MINNOW ENVIRONMENTAL INCORPORATED
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CHAIN OF CUSTODY RECORD

Laboratory: North Shore Environmental Services
#204-780 Gordon Street
Thunder Bay, Ontario P7E 6S1
Contact: Jon Tost
Phone: 807-345-9929 Fax: 807-345-9929

Page: 8 of 8
Minnow Contact: Kim Connors
Minnow Project #: 2496
Date Results Required By: 15-Sep-13

14

Sample Number	Minnow Sample ID	Matrix	Total Length (mm)	Body Weight (g)	Number of Containers	Age	Comments
211	WeeL-NP05	Sc, CL	55.5	950	1	4++ 5°	(7)
212	WeeL-WF02	Sc, PF	44.6	850	1	8++ 9°	(6)
213	WeeL-WF05	Sc, PF	27	189	1	3++ 4°	(5-6)
214	WeeL-WF07	Sc, PF x	35	405	1	3* 3*	(6-7)
215	WeeL-WF11	Sc, PF	17.1	40	1	1++ 2°	(6)
216	WeeL-WF15	Sc, PF	48.4	1260	1	14++ 15°	(6-7)
217	WeeL-YP01	Sc, Ds	5.4	1.2	1	1* 1*	"
218	WeeL-YP02	Sc	5.3	1.2	1	1* 1*	(6)
219	WeeL-YP05	Sc	6.8	2.7	1	1* 1*	(6)
220	WeeL-YP08	Sc, Ds x	10.9	12.25	1	1++ 2°	(7)
221	WeeL-YP10	Sc	6.5	2	1	1++ 2°	(6)
222	WeeL-YP14	Sc	7.6	4	1	1* 1*	(6)
223	CKAL-NP01	SC, CL x	49.2	46.2	1	4++ 5°	(7)
224	NP05	SC, CL	54.6	62.0	1	5+ 6°	(6-7)
225	NP06	SC, CL x	47.7	45.1	1	3+ 4°	(7) QA/QC required on 10% of samples
226	NP07	SC, CL	45.5	42.9	1	3+ 4°	(6)
227	NP08	SC, CL x	53.0	49.9	1	5++ 6°	(7)
228	NP09	SC, CL	50.6	47.8	1	3+ 4°	(6-7)
229	YP01	SC, DS	5.7	5.4	1	1* 1*	(6)
230	YP02	SC, DS	6.6	5.3	1	0++ 1°	(6)
231	YP03	SC, DS	5.8	5.5	1	0++ 1°	(6)
232	YP06	SC, DS	6.1	5.9	1	1+ 1+	(6)
233	YP07	SC, DS	6.3	6.0	1	0++ 1°	(6)
234	YP09	SC, DS	7.1	6.8	1	0++ 1°	(6)
235	YP10	SC, DS	7.2	6.9	1	1++ 2°	(6)
236	YP12	SC, DS	7.7	7.2	1	1+ 1+	(6-7) Poss 2°
237	YP13	SC, DS	7.1	6.8	1	1+ 1+	" Poss 2°

Note: Edge a high call of yearly periods in early Ju

Samples Relinquished to Lab By: (Minnow Employee Signature)
Date:
Time:
Shipment Method: Purolator
Samples Received in Lab By: (Lab Employee Signature)
Date:
Time:
Sample Condition upon Receipt:

SUBMIT ORIGINAL TO LAB WITH SAMPLES AND RETAIN TWO PHOTOCOPIES AT MINNOW

October 18 201

NORTH SHORE
ENVIRONMENTAL SERVICES

Minnow Enviromental Inc.
#2 Lamb Street.
Georgetown, ON
L7G 3M9.

Attn: Kim Connors

RE: Fish Aging Tissues - Project 2496.

Dear Kim,

Please find attached the age data summary sheets for the above project.

The aging went O.K. but was very slow and we needed to prep a number of backup tissues.

As we discussed, the wrong bone was collected on N. Pike and although that tissue did show some zonation, scales appeared to be more reliable.

For Lake whitefish and the percids often only the small lead rays or spines were collected. These lead rays etc are not good for aging. We need the 1st 2 to 4 large rays and/or spines. Scales were pretty good backups when we needed them. The majority of

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CONT'D

walleye were fairly straight forward even though only 1 spine was available.

The yellow perch were very tricky on both spines and scales especially on the young fish, that made up the bulk of the collections.

The edge condition was a tough call on many of these fish as a number of tissues appear to show some marginal plus growth outside the last visible annulus in early June. Usually, this edge growth would be considered last year's but in 2013 that is a tough call.

Our apologies on the delays but it has been a crazy fall.

Should you have any questions, please give us a call.

As a note, we have identified a number of samples as possible QAQC candidates. On both sets of data sheets they are identified by an * or x next to the sample. We are not sure on the numbers for the various species but hope there are enough to cover off the QAQC requirements.

Best Regards

1.0

Project 2496

FISH AGING TALLY FORM

2013

	SAM	EFF	DATE	SPC	FISH	FLEN	TLEN	SEX	AGEMT	NCA	EDGE	CONF	AGEA	COMMENTS	
	1	Bog L	June 5	NP	04		63.60		Sc	5	+	(7)	6°		
	2	"	"	NP	05		54.00		Sc	2	++	(7)	3°		*
	3	"	"	NP	06		54.50		Sc	2	++	(7)	3°		*
	4	Bog L.	June 5	NP	07		65.30		Sc	6	++	(7)	7°		
	5	"	"	NP	08		43.00		Sc	2	*	(7)	2*		*
031	6	"	"	WA	01		29.00		D.Sp	1	++	(7)	2°		
032	7	"	"	WA	02		37.80		Sp.	3	*	(7)	3*		
033	8	"	"	WA	03		38.10		Sp.	3	*	(6-7)	3*	FC 0-1. 1st?	3*
	"	"	"	"	"		"		Sc	3	*	(7)	3*		
034	9	Bog L.	June 5	WA	04		27.60		Sp.	2	*	(6-7)	2*	FC 0-1; 1-2	2*
"	"	"	"	"	"		"		Sc	1	++	(7)	2°		
035	10	"	"	WA	05		34.70		Sp.	3	*	(7)	3*		
036	11	Bog L.	June 5	YP	03		7.80		Sp.	0	++	(6)	1°	FC Centre ??	2°
"	"	"	"	"	"		"		Sc	1	++	(7)	2°		
037	12	"	"	YP	04		5.25		Sp.	0	++	(6-7)	1°	FC.	
038	13	"	"	YP	05		6.87		Sp.	0	++	(7)	1°		
039	14	"	"	YP	06		6.58		Sp.	0	++	(6-7)	1°	FC 0-1.	1°
"	"	"	"	"	"		"		Sc	0	++	"	1°		
Bog1 040	15	Bog L.	"	YP	07		5.48		Sp.	0	++	(7)	1°		
Bog2.	"														
	16	Che L.	June 7	NP	07	58.1	61.20	?→	Cl	4	++	(5-6)	5°	wrong Tissue 1st?	7°
	"	"	"	"	"	"	"		Sc	6	+	(6-7)	7°	Poss. 8° 6 to edge	
	17	"	"	NP	08	63.0	66.10	?→	Cl	7	++	(5)	8°	Not the Cleithra.	8°
	"	"	"	"	"	"	"		Sc	7	+	(6-7)	8°	=	
	18	Che L.	"	NP	09	53.1	56.2	?→	Cl	5	++	(5-6)	6°		7°
	"	"	"	"	"	"	"	"	Sc	6	++	(6-7)	7°		
	19	"	June 7	NP	10	49.2	51.8	?→	Cl	4	++	(5)	5°	1st? · Poss. 4°	6°
	"	"	"	"	"	"	"	"	Sc	5	++	(6-7)	6°		
	20	"	"	NP	11	41.0	43.4	" ?	Cl	3	*	(6)	3*	1st?	4*
	"	"	"	"	"	"	"	"	Sc	4	*	(6-7)	4*	edge? Poss 5°	
041	21	Che L.	June 7	WHF	01	43.5	48.0		FR	10	++	(6-7)	11°	Poss. older (reading may taken-not good for aging)	
"	"	"	"	"	"	"	"		Sc	15	+	"	16°		
042	22	"	"	WHF	02	42.5	47.1		FR	11	++	(6)	12°	True annuli?	15? 16°
"	"	"	"	"	"	"	"		Sc	14	++	(6-7)	16°	edge	

Note: only 1 spine taken. Often less confidence when only 1 to look at.

Note: N.P. from Che L. - Bone taken as cleithra is not the cleithra bone. Structure has annular checks but unsure of accuracy, especially in year I. Do Scales.

2.0

Project 2496

FISH AGING TALLY FORM

	SAM	EFF	2013 DATE	SPC	FISH	FLEN	TLEN	SEX	AGEMT	NCA	EDGE	CONF	AGEA	COMMENTS	
D43	23	Che L.	June 7	WHF	05	403	45		FR.	11	+	(5)	12°	Poor edge - True annuli ?	12°
"	"	"	"	"	"	"	"		Sc	11	++	(6)	12°	Poss. older @ edge	
D44	24	"	"	WHF	06	416	465		FR	12	++	(5-6)	13°	Tight Zonation Poss I to 2	16°
"	"	"	"	"	"	"	"		Sc	15	++	(6)	16°	Poss. 1 to 18	
D45	25	Che L.	June 7	WHF	07	387	435		FR	7	++	(6)	8°	Slow 6-Edge - Tough Zon.	8° x
"	"	"	"	"	"	"	"		Sc	7	++	(7)	8°		
D46	26	Che L.	June 7	YP	01	248	255		Sp.	5	+	(6-7)	6°	Tough Zon	
D48	27	"	"	YP	02	267	277		Sp.	6	++	"	7°		
D47	28	"	"	YP	04	186	190		Sp.	4	++	(7)	5°		
D49	29	"	"	YP	08	88	9.1		Sp.	2	*	(6-7)	2*		3° (Poss 2+)
"	"	"	"	"	"	"	"		Sc	2	+	"	3°		
D50	30	Che L.	June 7	YP	10	94	9.9		Sp.	1	++	(7)	2°		
D51	31	"	"	YP	12	95	10		Sp.	1	++	(5-6)	2°	Poor Zon.	3° (Poss. 2+)
"	"	"	"	"	"	"	"		Sc	2	+	(6-7)	3°		
	32	"	"	YP	21	6.6	7.0		Sp	1	*	(7)	1*		
—	33	"	"	YP.	22	59	6.8		Sc	0	++	(6-7)	1°		
Bay 2 —	34	"	June 7	YP	25	4.6	4.8.		Sc	0	++	(6-7)	1°	Poss off	
Bay 3. —	35	"	"	YP.	26	4.6	4.9.		Sc	0	++	"	1°		
	36	Del L.	June 8	NP	01	693	721		? Cl	4	*	(5-6)	4*	Bone is not the cleithra.	8°
	"	"	"	"	"	"	"		Sc	7	+	(6-7)	8°		
	37	"	"	NP	03.	26	27.7		? Cl	1	+	(5-6)	2°		2°
	"	"	"	"	"	"	"		Sc	1	+	(6-7)	2°	Poss 1+	
	38	Del L.	June 8	NP.	04	32.0	341		? Cl	2	+	(5)	3°	Poss 2+	3° x
	"	"	"	"	"	"	"		Sc	2	+	(7)	3°	Poss 2+	
	39	Del L	"	NP	05	428	457		? Cl	5	+	(5-6)	6°	FCI-2	5° x
	"	"	"	"	"	"	"		Sc	4	++	(7)	5°		
	40	"	"	NP	06	383	46		? Cl	3	+	(5)	4°	Poss I 1 ???	6°
	"	"	"	"	"	"	"		Sc	5	++	(6-7)	6°	Slow 2-3; 4-5	
D52	41	Del L	June 08	YP	02	214	223		Sp.	6	*	(7)	6*		*
D53	42	"	"	YP	03	138	145		Sp.	2	++	(7)	3°	Poss 3* Ceph	
D54	43	"	"	YP	04	219	228		Sp.	7	++	(7)	8°		*
D55	44	"	"	YP	08	109	115		Sp.	3	*	(7)	3*		

Note: L.WHF - only small lead rays taken on wht fin rays: These lead rays are poor for aging. Need 1st 2 to 3 large rays.

Note: Wrong tissue taken for N. Pike. Bones are not cleithra. Scales are pretty good in Del L.

3.0 Project 2496.

FISH AGING TALLY FORM

	SAM	EFF	DATE (2013)	SPC	FISH	FLEN	TLEN	SEX	AGEMT	NCA	EDGE	CONF	AGEA	COMMENTS	
BAG #3 D56	45.	Del.L	June 8	YP.	10	10.3	10.8		Sp.	2	*	(7)	2*		
–	46	"	"	YP	16	–	5.7		Sc	1	+	(6.7)	1+	Poss 2°	
–	47	"	"	YP	21	–	5.3		Sc	1	+	(6.7)	1+	" "	
BAG 4.	48	Mes L.	June 8	NP	02	571	603.	No Cl	Cl?	2	+	(5)	3°	Moulding	5°
	"	"	"	"	"	"	"	"	Sc	4	++	(6-7)	5°	1st? Poss 4°	
	49	"	"	NP	04	680	712	No Cl.	Cl	4	++	(5)	5°	Moulding.	6°
	"	"	"	"	"	"	"	"	Sc	5	++	(6-7)	6°		
D57	50	Mes.L	June 8	WA	01	275	290		Sp.	2	*	(7)	2*		
D58	51	"	"	WA	02	506	541		Sp.	6	++	(7)	7°		
D59	52	"	"	WA	03	498	520		Sp.	6	++	(7)	7°		
D60	53	Mes L.	"	WA	04	360	378		Sp.	2	++	(7)	3°		
D61	54	"	"	WA	05	503	532		Sp.	7	++	(7)	8°		
D62	55	Mes L	June 8	WHF	01	430	478		FR	10	++	(6-7)	11°	1st? 7 toll slow.	
	56	"	"	WHF	02	438	475	No FR	Sc	13	+	(6)	14°	Eroded edge - prob. older.	
D63	57	"	"	WHF	03	430	475		FR	15	++	(6)	16°	16°: 16/17° Poss. 1 or 2	16°
"	"	"	"	"	"	"	"		Sc	14	+	(6)	15°	edge?	
D64	58	Mes L.	June 8	WHF	04	372	410		FR	17	+	(5)	18°	Three annuli??	18°
"	"	"	"	"	"	"	"		Sc	16	+		17°	17° edge ??	
D65	59	"	"	WHF	05	351	395		FR	6	+	(7)	7°	1st?	
	60	Mes.L.	June 07	SS	01		4892?		Sc.	0	++	(6)	1°		Scales only Probably not reliable for aging.
	61	"	"	SS	08		8204?		Sc	1	++	(6)	2°	1st? Poss FC. Poss 1°	
	62	"	"	SS	10		5456		Sc.	0	++	(6-7)	1°		
	63	"	"	SS	12		4514		Sc	0	++	(6)	1°		
	64	"	? 11/17	SS	16		4998		Sc	0	++	(6-7)	1°	2 Scales	1°
BAG 5.	65	Nev.L	June 6	NP	01		473	✓	Cl	4	+	(6-7)	5°	FC(a) 0-1·1-2·2-3.	
	66	"	"	NP	02		442		Cl	5	*	"	5*	FC 3-4.	
	67	"	"	NP	03		351		Cl	2	+	"	2+	Poss 3° but very little growth on edge.	
	68	"	"	NP	04		343		Cl	3	*	(5)	3*	Three annuli? FC 2-3 1st?	3°
	"	"	"	"	"		"		Sc	2	+	(7)	3°	Poss 2+	
	69	Nev.L	"	NP.	06		292		Cl.	1	+	(7)	1+	Poss 2° but only very marginal growth on edge	
	70	Nev.L	June 06	WA	01		431		Sp.	5	*	(7)	5*		

Note: L.WHF - Fin Rays poorly taken. Only (often) 2 very small lead rays taken. These lead rays are very poor for age assessment. Need the first 2-4 large rays on leading edge.

Note: SS. = species ??? Scales are likely poor for age assessment. Not sure what species these are.

Project 2496.

	SAM	EFF	DATE 2013	SPC	FISH	FLEN	TLEN	SEX	AGEMT	NCA	EDGE	CONF	AGEA	COMMENTS	
D67	71	Nev. L.	June 6	WA	02		421		Sp.	6	*	(7)	6*		
D68	72	"	"	WA	03		34		Sp.	3	*	(7)	3*	FC(a)	*
D69	73	"	June 5	YP	01		11.174		Sp.	2	*	(6-7)	2*	"	*
D70	74	"	"	YP	02		7.875		Sp.	1	*	(6)	1*	FC(a) ??	1°
"	"	"	"	"	"		"		Sc	0	++	(7)	1°		
D71	75	Nev. L	June 5	YP	03		8.21		Sp.	1	*	(6-7)	1*		
D72	76	"	,	YP	04		7.682		Sp.	1	*	(6-7)	1*	FC 0-1.	1*
"	"	"	"	"	"		"		Sc	1	*	(7)	1*	Poss 1+	
D73.	77	"	"	YP	05		7.14		Sp	1	++	(5)	2°	True annuli ??	1*
"	"	"	"	"	"		"		Sc	1	*	(6)	1*		
D74	78	Nev L	"	YP	06		7.212		Sp	1	*	(6)	1*	Poor Pr...	1+
"	"	"	"	"	"		"		Sc	1	+	(6-7)	1+	edge)? Poss 2°	
BAG #6	79	Sch. L.	June 7	NP	01	644	6.78		? Bone	8	++	(6)	9°		8°
	"	"	"	"	"	"	"		Sc	7	+	(6)	8°	Poss 3?	
	80	"	"	NP	03	430	458		? Bone	1	+	(5-6)	1+	FC(a)? Poss 2°	3°
	"	"	"	"	"	"	"		Sc	2	+	(7)	3°	Poss 3+	
	81	Sch. L	June 5	NP	05	413	438		? Bone	1	+	(4)	1+	FC(a) ??	3°
	"	"	"	"	"	"	"		Sc	2	+	(7)	3°	Poss 2+	
	82	"	June 7	NP	06	569	60.0		? Bone	3	++	(6)	4°		5°
	"	"	"	"	"	"	"		Sc	4	++	(7)	5°		
	83	Sch L	"	NP	07	541	576		? Bone	4	++	(5-6)	5°	FC 0-1 : 2-3 slow ??	5°
	"	"	"	"	"	"	"		Sc	4	+	(6-7)	5°	edge?	
D75	84	Sch L	June 7	WA	04	369	39		Sp.	3	*	(7)	3*		*
D76	85	"	"	WA	05	261	287		Sp.	2	*	(7)	2*	FC 0-1	
D77	86	"	"	WA	06	601	638		Sp.	10	++	(7)	11°	"	*
D78	87	"	"	WA	07	169	179		Sp.	1	*	(7)	1*		*
D79	88	Sch L	June 7	WA	09	423	45		Sp.	4	+	(6-7)	5°	Slow 4-5.	
	89	"	June 6	YP	01	94	99		Sc	1	++	(7)	2°		*
	90	"	"	YP	03	59	62		Sc	1	*	(7)	1*		
	91	"	"	YP	04	60	64		Sc.	1	*	(6-7)	1*		
	92	"	"	YP	07	10.2	10.7		Sc.	2	*	(7)	2*		
	93	"	"	YP	09	52	54		Sc.	1	+	(6)	1+	Poss 2° @ edge ??	

Note: Nev. L. - Y.P. spines. Only 1 spine collected. Very tough to age these fish from 1 spine. (Note: Walleye ok.).

: N. Pike - Sch. L: wrong bone taken. These are not cleithra. (do scales).

5.0

Project 2496

FISH AGING TALLY FORM

	SAM	EFF	2013 DATE	SPC	FISH	FLEN	TLEN	SEX	AGEMT	NCA	EDGE	CONF	AGEA	COMMENTS	
BAG07	94	UTD-L	June 5	NP	01	764	799								
	"	"	"	"	"	"	"		Bone	5	++	(4)	6°	Weak Jun.	8°
	95	"	"	NP	03	423	452		Sc	7	++	(6)	8°		
	"	"	"	"	"	"	"		Bone	3	++	(5)	4°	FC0-1' 3-E.	5°
	96	UTD-L	"	NP	05	349	370		Sc	4	++	(6-7)	5°	1st? Poss FC. Poss 4°	
	"	"	"	"	"	"	"		Bone	2	++	(5)	3°	Weak Jun	3°
	97	"	"	NP	09	344	366		Sc	2	+	(6-7)	3°	Poss 2+	
	"	"	"	"	"	"	"		Bone	2	+	(4-5)	3°	Weak Jun	3°
	98	"	"	NP	10	473	496		Sc	2	+	(7)	3°	Poss 2+	
	"	"	"	"	"	"	"		Bone	4	++	(5)	5°	Poss 4	5°
D80	99	UTD-L	June 5	WA	01	298	289		Sc	4	++	(7)	5°		
D81	100	"	"	WA	02	294	310		Sp.	3	*	(6-7)	3*	FC.	
"	"	"	"	"	"	"	"		Sp.	2	+	"	2+	FC0 edge?	2*
D82	101	"	"	WA	03	19	20		Sc	2	*	(7)	2*		
D83	102	"	"	WA	04	-	298		Sp.	1	*	(7)	1*	FC	
	"	"	"	"	"	"	"		Sp.	2	*	(6-7)	2*	FC edge	2°
D84	103	UTD-L	June 5	WA	05	195	20.6		Sc	1	++	(7)	2°		
	104	"	June 4	YP	01	55	57		Sp.	1	*	(6-7)	1*	FC	
	105	"	"	YP	02	58	61		Sc	1	*	"	1*		
	106	"	"	YP	05	62	69		Sc	1	++	"	2°		
	107	"	"	YP	06	49	52		Sc.	1	++	(6)	2°	FC edge ?	
	108	UTD-L	"	YP	07	90	94		Sc	0	++	(6)	1°	FC0 E.	
	109	"	"	YP	08	78	82		Sc.	1	++	(6-7)	2°		
	110	"	—	YP	09	49	5.0		Sc	1	+	(6)	2°	FC0-1 edge ?? Poss 3°	x
	111	"	June 4	YP	10	59	6.2		Sc.	1	*	(6-7)	1*		
									Sc	1	*	(6)	1*		
BAG8	112	MTD-L	June 6	NP	02	454	480	?	Bone	3	*	(5)	3*	1st? Weak	3*
	"	"	"	"	"	"	"		Sc.	3	*	(7)	3*		
	113	"	"	NP	03	413	443		Bone	2	+	(5)	3°	1st? edge	3°
	"	"	"	"	"	"	"		Sc	2	++	(6-7)	3°		
	114	"	"	NP	04	445	472		Bone	Unable to Age				True annuli ??	
	"	"	"	"	"	"	"		Sc	2	++	(6-7)	3°	FC0 2-3 Poss 4°	3°.
	115	MTD-L	"	NP	08	400	425		Bone	2	*	(5)	2*	1st?	
	"	"	"	"	"	"	"		Sc	3	+	(6)	3*	Poss 4°	3+

Note: NP - UTD-L and MTD-L - Wrong bone taken. These are not cleithra.
YP - UTD-L - Scales are tricky aging. Some appear to be showing start of new growth on edge in early June.

Project 2496

FISH AGING TALLY FORM

	SAM	EFF	DATE (2013)	SPC	FISH	FLEN	TLEN	SEX	AGEMT	NCA	EDGE	CONF	AGEA	COMMENTS	
BAG8 085	116	MTD-L	June 6	WA	01	282	300		Sp.	2	*	(7)	2*		
CONT'D 086	117	"	"	WA	02	287	306		Sp.	2	*	(7)	2*	FC 1-2	
D87	118	"	"	WA	03	298	313		Sp.	2	*	(7)	2*		x
D88	119	•	"	WA	05	278	294		Sp.	2	*	(7)	2*		x
D89	120	"	"	WA	07	435	463		Sp.	4	*	(7)	4*		
D90	151	MTD-L	June 6	WHF	01	393	443		FR	9	++	(6-7)	10°		10°
"	"	"	"	"	"	"	"		Sc	7	++	(7)	8°	Pool Rays; FC	
D91	152	"	"	WHF	02	364	405		FR	5	++	(7)	6°		
D92	153	"	"	WHF	03	395	442		FR	6	+	(6)	7°	FC	x
"	"	"	"	"	"	"	"		Sc	10	++	(6-7)	11°	edge?	11°
D93	154	"	"	WHF	04	415	462		FR	10	++	(6-7)	11°	Pks 12-13 @ edge	
D94	155	MTD L	June 6	YP	02	9.2	9.8		Sp.	2	*	"	2*		
D95	156	"	"	YP	04	9.4	9.9		Sp.	2	+	"	3°	FC @ 1st	
No Sp. D96	157	"	June 9	YP	06	5.4	5.6	No Sp	Sc	0	++	(6-7)	1°	edge? Poss 2+	
D97	158	"	"	YP	07	5.3	5.5		Sp	1	*	(7)	1*	Poss 1* on some.	
D98	159	"	"	YP	09	6.6	6.9		Sp	1	*	(6-7)	1*		
D99	160	MTDL	"	YP	10	6.2	6.5		Sp	1	*	(6)	1*		1+
"	"	"	"	"	"	"	"		Fc	1	+	(6-7)	1+	FC	
D100	161	"	"	YP	11	60	63		Sp.	1	*	(7)	1*	Poss 2°	
BAG09	162	LTDL	June 6	NP	05	505	535		Bone	-	-	-	-		
	"	"	"	"	"	"	"		Sc	4	+	(6-7)	4+	t.t.* @ edge; Poss 5°	
	163	"	"	NP	06	335	346		Bone	-	-	-	-		
	"	"	"	"	"	"	"		Sc	2	+	(7)	3°	Poss 2+ edge?	
	164	LTDL	"	NP	07	411	432		Bone	-	-	-	-		
	"	"	"	"	"	"	"		Sc	2	++	(6-7)	3°		
	165	"	"	NP	08	315	337		Bone	-	-	-	-		
	"	"	"	"	"	"	"		Sc	2	++	(6-7)	3°	1st?	
	166	"	"	NP	09	421	43		Bone	-	-	-	-		
	"	"	"	"	"	"	"		Sc	2	++	(6)	3°	1st? Poss 2° 1st in close	
D101	167	LTDL	June 6	WA	01	457	485		Sp.	5	++	(7)	6°	FC 5-6 @ edge; tt @ edge	
D102	168	"	"	WA	02	377	398		Sp.	3	*	(7)	3*		x
D103	169	"	"	WA	03	400	424		Sp.	4	*	(7)	4*		x

Note: MTD-WHF - Fin rays are tough to assess. Only 2 small leading rays taken. Not good for aging.
LTD-NP. - Wrong bones taken.

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FISH AGING TALLY FORM

	SAM	EFF	DATE (2013)	SPC	FISH	FLEN	TLEN	SEX	AGEMT	NCA	EDGE	CONF	AGEA	COMMENTS
BAG 9 (CONT'D) D104	170	LTOL	June 6	WA	04	283	300		Sp.	2	*	(7)	2*	FCa.
	171	"	June 5	YP	01	66	69		Sc	0	++	(6)	1°	FCO to edge Poss 2°.
	172	"	"	YP	04	57	59		Sc	1	*	(6)	1*	
	173	"	"	YP	06	59	62		Sc	0	++	(6-7)	1°	
	174	"	June 6	YP	09	96	102		Sc	2	+	"	2+	edge? Poss 2* or 3°
	175	LTOL	"	YP	11	61	69		Sc	1	*	"	1*	
BAG 10 D105	176	UNL-1	June 6	YP	01	-	84		Sp.	1	*	(6)	1*	
"	"	"	"	"	"	"	"		Sc	1	*	(7)	1*	
D106	177	"	"	YP	02	-	78		Sp.	1	*	(6)	1*	FC@ edge
"	"	"	"	"	"	"	"		Sc	1	*	(6-7)	1*	* to +1@ edge
D107	178	UNL-1	"	YP	03	-	85		Sp	1	+	(6)	1+	Marginal growth edge?
"	"	"	"	"	"	"	"		Sc	1	+	(6-7)	1+	edge ??
D108	179	"	"	YP	04	-	84		Sp.	1	*	(6)	1*	
D109	180	"	June 6	YP	05	-	73		Sp.	0	++	(6-7)	1°	
D110	181	"	"	YP	06	-	67		Sp.	0	++	(5-6)	1°	FCa.
"	"	"	"	"	"	"	"		Sc	1	*	(7)	1*	
BAG 11	182	UNL-2	June 7	NP	02		512		Cl	6	++	(6-7)	1°	Slow 1-2; 4 Edge
	183	UNL 2	"	NP	03		374		Cl	3	*	(7)	3*	
	184	"	"	NP	04		312		Cl	1	++	(7)	2°	
	185	"	"	NP	09		401		Cl	3	+	(7)	4°	Poss 4*C edge; Very slow 3-4
	186	UNL 2	"	NP	10		341		Cl	3	*	(6-7)	3*	Tough read FCa
D111	187	UNL 2	June 7	WA	04		391		Sp.	4	*	(7)	4*	
D112	188	"	"	WA	05		471		Sp.	4	++	(7)	5°	
D113	189	"	"	WA	06		520		Sp	3	++	(7)	5°	FCa
D114	190	"	"	WA	07		391		Sp.	4	*	(7)	4*	
D115	191	"	"	WA	08		395		Sp.	4	+	(7)	5°	FCa 4 Edge
D116	192	UNL-2	June 7	YP	01		141		Sp.	3	*	(7)	3*	
D117	193	"	"	YP	02		145		Sp	3	*	(7)	3*	
D118	194	"	"	YP	03		156		Sp.	4	*	(6-7)	4*	FC2-3.
D119	195	"	"	YP	04		109		Sp.	2	*	"	2*	FC0-1

1*

1* Body/spine taken. Tough aging Broken spine

1*

x

x

x

x

0 -

Project 2496

BAG 12 ↓

FISH AGING TALLY FORM

	SAM	EFF	DATE (2013)	SPC	FISH	FLEN	TLEN	SEX	AGEMT	NCA	EDGE	CONF	AGEA	COMMENTS	
	196	UNL-3	June 8	NP	01	371	390		Bone	–	–	–	–		
	"	"	"	"	"	"	"		Sc	2	++	(7)	3°		
	197	UNL-3	"	NP	02	319	332		Bone	–	–	–	–		
	"	"	"	"	"	"	"		Sc	2	+	(6)	3°	Poss. 2+ (1st in closer?)	
	198	"	"	NP	06	387	413		Bone	–	–	–	–		
	"	"	"	"	"	"	"		Sc	3	+	(6-7)	4°		
	199	UNL-3	June	NP	07	521	547		Bone	–	–	–	–		
	"	"	"	"	"	"	"		Sc	6	+	(7)	7°	edge?	
	200	"	June 9	NP	08	430	454		Bone	–	–	–	–		
	"	"	"	"	"	"	"		Sc	5	+	(6-7)	6°	edge?	
	201	UNL-3	June 8	YP	03	54	57		Sc	1	+	(6-7)	1+	edge? Some + growth on edge	
	202	"	"	YP	05	67	71		Sc	1	+	(7)	1+		
	203	"	"	YP	08	67	71		Sc	1	+	(7)	1+	1* to 1+ @ edge	
	204	UNL-3	"	YP	09	60	63		Sc	1	+	(7)	1+		
	205	"	"	YP	10	86	91		Sc	2	*	(7)	2*	* to + @ edge	
	206	"	"	YP	11	92	98		Sc	2	+	(6-7)	2+	considerable + growth Poss. 3°	
BAG 13.	207	Wee L.	June 5	NP	01	454	481		Bone	–					
	"	"	"	"	"	"	"		Sc	3	+	(6-7)	4°	Poss 3+	
	208	Wee L	"	NP	02	496	527		Bone	–	–	–	–		
	"	"	"	"	"	"	"		Sc	2	++	(7)	3°		
	209	Wee L	"	NP	03	492	520		Bone	–	–	–	–		
	"	"	"	"	"	"	"		Sc	3	++	(6)	4°	1st? Poss. FCo Poss 3°	
	210	"	"	NP	04	585	625		Bone	–	–	–	–		
	"	"	"	"	"	"	"		Sc	5	++	(7)	6°	Poss 7°	
	211	Wee L.	June 5	NP	05	523	555		Bone	–	–	–	–		
	"	"	"	"	"	"	"		Sc	4	++	(6-7)	5°		
D120	212	Wee L.	June 5	WHF	02	402	446		FR	8	++	(6)	9°	Poss. 10th @ edge	9°
"	"	"	"	"	"	"	"		Sc	8	+	(6)	9°	eroded edge + Poss. older	
D121	213	"	"	WHF	05	240	270		FR	2	++	(5)	3°	True annuli –	4°
"	"	"	"	"	"	"	"		Sc	3	++	(6)	4°	FCo-1 - Poss 5°	
D122	214	Wee L.	June 5	WHF	07	309	350		FR.	3	*	(6)	3*	FCO-1.	3* *
"	"	"	"	"	"	"	"		Sc	3	+	(6)	3+	FC(2) 0-1, 1-2 edge?	

Note: UNL-3 - Y Perch - all appear to be showing some + growth on the edge after the last annulus in early June. Would usually call this last years growth this early in season but it looks like new growth in 2013.

Wee L. - NP - wrong bone taken.
WHF - not enough fin rays taken.

Project # 2496

FISH AGING TALLY FORM

BAG #13 CONT'D

	SAM	EFF	2013 DATE	SPC	FISH	FLEN	TLEN	SEX	AGEMT	NCA	EDGE	CONF	AGEA	COMMENTS	
D123	215	Wee L	June 5	WHF	11	154	17.1		FR	0	++	(5-6)	1°	FC0-E. Poss 2°	2° ×
"	"	"	"	"	"	"	"		Sc	1	++	(7)	2°		
D124	216	"	"	WHF	15	432	48.4		FR	14	++	(6-7)	15°	Poor edge. Not enough rays taken	15°
"	"	"	"	"	"	"	"		Sc	13	++	(6)	14°	eroded edge	
D125	217	Wee L	June 4	YP	01	5.0	5.4		SP.	1	*	(6-7)	1*		
D126	218	"	"	YP	02	5.0	5.3	No Sp.	Sc	1	*	(6)	1*		
D127	219	"	"	YP	05	6.4	6.8	"	Sc	1	*	(6)	1*	Poor Scales	
D128	220	"	June 5	YP	08	10.3	10.9		SP.	1	++	(7)	2°	Poss 1+ 2° @ edge	
	221	Wee L	"	YP	10	6.1	6.5	No SP	Sc	1	++	(6)	2°	1st?	×
	222	"	"	YP	14	7.1	7.6	"	Sc	1	*	(6)	1*		

BAG 14

	SAM	EFF	DATE	SPC	FISH	FLEN	TLEN	SEX	AGEMT	NCA	EDGE	CONF	AGEA	COMMENTS	
	223	CLAL	June 8	NP	01	462	492		Bone	-	—	-	-		
	"	"	"	"	"	"	"		Sc	4	++	(7)	5°		
		CLAL	June 9	NP	05	520	546		Bone	-	-	-	-		
		"	"	"	"	"	"		Sc	5	+	(6-7)	6°	Poss 5* Edge	
		"	"	NP	06	451	477		Bone	-	-	-	-		
		"	"	"	"	"	"		Sc	3	+	(7)	4°	FC 3-Edge	×
		CLAL	"	NP	07	429	455		Bone	-	-	-	-		
		"	"	"	"	"	"		Sc	3	+	(6)	4°	Weak Zone	
	227	"	June 9	NP	08	499	530		Bone	-	-	-	-		
		"	"	"	"	"	"		Sc	5	++	(7)	6°		×
		"	"	NP	09	478	506		Bone	-	-	-	-		
		"	"	"	"	"	"		Sc	3	+	(6-7)	4°		
D129	229	CLAL	June 8	YP	01	54	57		SP	1	*	(6)	1*	FC?	1*
"	"	"	"	"	"	"	"		Sc	0	++	(6)	1°		
D130	230	"	"	YP	02	53	5.6		Sp.	0	++	(5)	1°	Poss 2° FC?	1*
"	"	"	"	"	"	"	"		Sc	1	*	(5-6)	1*	Few Scales	
D131	231	"	"	YP	03	55	5.8		SP.	0	++	(6)	1°		
D132	232	"	"	YP	06	59	6.1		Sp.	1	+	(6)	1+	FC?	
D133	233	CLAL	June 8	YP	07	60	6.3		SP	1	++	(6)	2°	1st?	1° (Poss 2°)
"	"	"	"	"	"	"	"		Sc	0	++	(6-7)	1°		
D134	234	"	"	YP	09	68	7.1		SP	1	++	(6)	2°		1° "
"	"	"	"	"	"	"	"		Sc	0	++	(6-7)	1°	FC0-Edge	

Note: CLAL is not on data sheets.

BAG 14
CONT'D

FISH AGING TALLY FORM

	SAM	EFF	2013. DATE	SPC	FISH	FLEN	TLEN	SEX	AGEMT	NCA	EDGE	CONF	AGEA	COMMENTS	
0135	235	CLAL	June 8	YP	10	69	72		Sp.	1	++	(6)	2°	1st?	2°
"	"	"	"	"	"	"	"		Sc	1	+	(6-7)	2°	Poss 1+	
0136	236	"	"	YP	12	72	77		Sp	0	++	(6-7)	1°		1+
"	"	"	"	"	"	"	"		Sc	1	+	"	1+	Poss 2°	
0137	237	CLAL	"	YP	13	68	71		Sp	1	++	(5-6)	2°	True annuli ?? Poss 1°	1+
"	"	"	"	"	"	"	"		Sc	1	+	(6-7)	1+		

Note: Edge condition a tough call in young perch in early June.

Data Report

Date: January 5, 2017

To: Steve Woolfenden, IAMGOLD Corporation

From: Kim Connors, Minnow Environmental Inc.

Cc: Cynthia Russel, Minnow Environmental Inc.

Re: Côté 2016 Aquatic Baseline

IAMGOLD Corporation (IAMGOLD) is planning to construct, operate and eventually reclaim a new open pit gold mine as part of the Côté Gold Project. The project is located approximately 20 km southwest of Gogama, 130 km southwest of Timmins, and 200 km northwest of Sudbury. While substantial baseline work has been completed in support of the Environmental Assessment (EA), a revised site plan has shifted areas of interest (Tailings Management Facility [TMF] and Mine Rock Areas [MRA]), necessitating additional lakes/streams to be assessed (Figure 1) relative to potential *Fisheries Act* and Schedule 2 implications. Specifically, baseline fisheries assessments were conducted for Moore Lake, Chain Lake, Attach Lake, an upper section of Chester Lake, Sawpeter Lake, Unnamed Lake #4, water bodies west of West Beaver Pond and the inlet area of Dividing Lake (Figure 1). In addition, any inlets or outlets, as well as sections of the Mollie River were assessed that were in proximity to the areas of interest (i.e., TMF and MRA; Figure 1). The objective of the baseline program was to provide information necessary to develop an offsetting plan in support of a *Fisheries Act* Authorization (FAA) and/or a Schedule 2 amendment. All the areas were assessed to characterize fish habitat, community and health. Increased emphasis was placed on characterizing habitat and presence/absence of fish in the habitat potentially lost due to the development. In addition, baseline fish tissue sampling for total mercury, metals and moisture was collected for each lake outlined above to be consistent with the baseline information previously collected in support of the EA (Minnow 2014).

Methods

Water Quality

Water quality was assessed through *in situ* field measures and water sampling was undertaken in all the water bodies assessed as part of the 2016 aquatic baseline work.

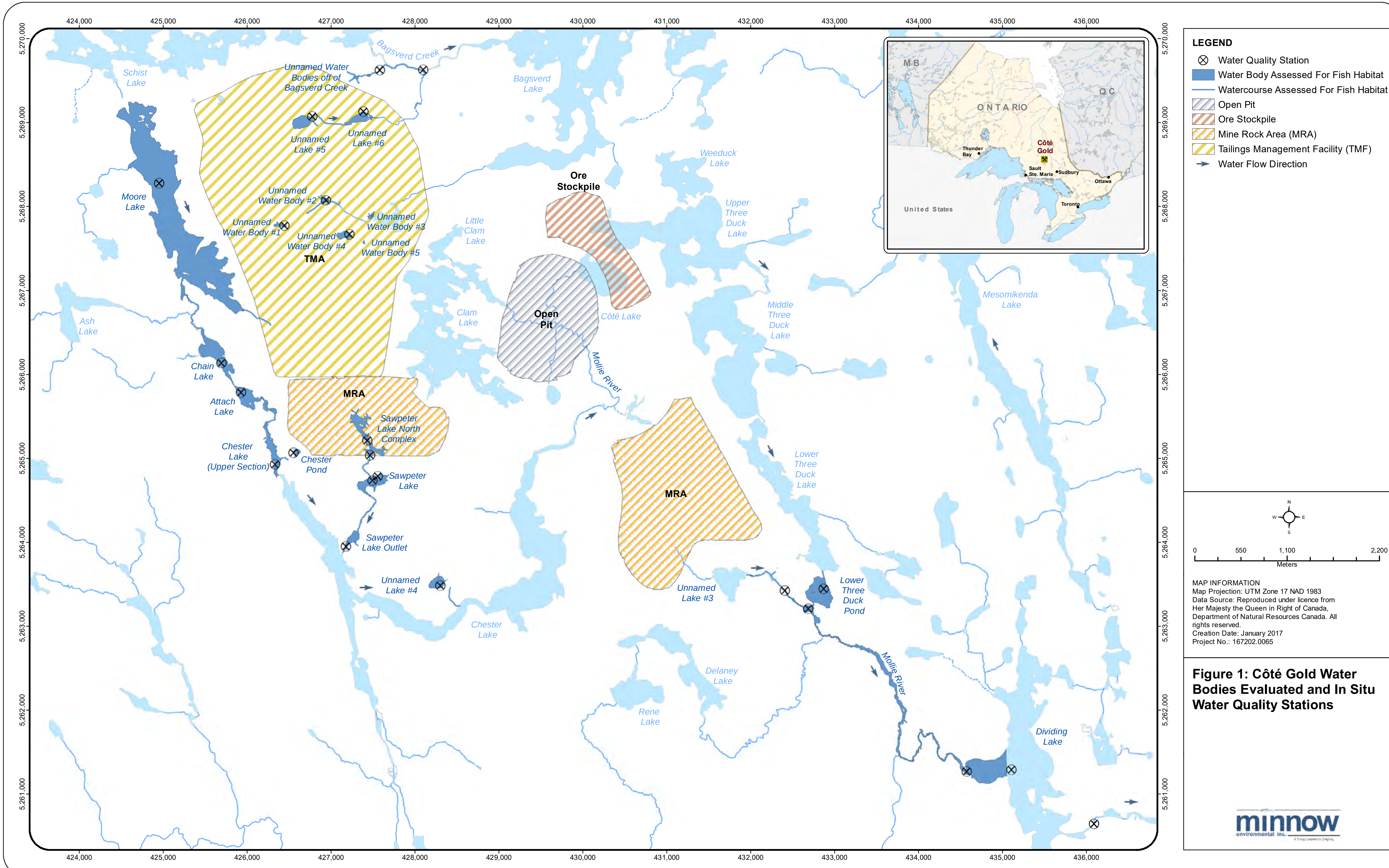

Figure 1: Côté Gold Water Bodies Evaluated and In Situ Water Quality Stations

Each station was geographically referenced using a GPS (Figure 1). *In situ* water temperature, dissolved oxygen, pH and specific conductance were measured at fish habitat characterization areas (Figure 2). Vertical profiles were completed in the deepest basins of each lake at one metre intervals, while measurements were collected at the surface or mid-column in streams, rivers and shallow waterbodies. A calibrated YSI 650 MDS (Multiparameter Display System) equipped with a YSI 600QS Sonde or a YSI Professional Plus Multiparameter Instrument (YSI Inc., Yellow Springs, OH) was used to collect the *in-situ* measurements. Secchi depth and/or observations of water colour and clarity were recorded at each water quality station.

Water quality samples were collected at all waterbodies surveyed, with sample bottles submerged below the water surface to avoid floating material, and facing upstream to avoid any potential influence of the individual collecting the sample (Figure 1). Samples were collected into labelled bottles provided by AGAT Laboratories (AGAT). Immediately after sampling, the samples were placed into a cooler for transport to the mine laboratory where they were placed in a refrigerator prior to shipping. Samples were shipped to AGAT in Mississauga, Ontario within four days of collection. Water samples were analyzed for acidity, alkalinity, ammonia, chloride, conductivity, cyanide (free and total), dissolved organic carbon, fluoride, hardness, nitrate, nitrite, pH, total dissolved solids, total phosphorus, total organic carbon, total suspended solids, turbidity and metals (through an Inductively Coupled Plasma - Mass Spectrometry scan [ICP-MS]). One duplicate was taken for quality control assurance (see Appendix B).

Water quality data were compared to Provincial Water Quality Objectives (PWQO; OMOEE 1994) for the protection of aquatic life. In addition, water quality profiles were evaluated graphically to determine the depth of the thermocline and depth at which hypoxic (very low dissolved oxygen concentrations e.g., <2 mg/L) conditions occur.

Fish Habitat, Community and Health Sampling

Fish habitat was characterized as part of the 2016 baseline for all water bodies potentially influenced by the changes to the Côté Gold Project (Figure 1). In addition, fish community composition was assessed, as well as fish meristics and tissue were collected for key fish species within the water bodies assessed.

Assessment of the biophysical habitat was conducted by experienced aquatic biologists using standard habitat evaluation procedures (e.g., Dodge et al. 1989; OMNR 1993; Bain and Stevenson 1999). The habitat assessment was conducted by visually assessing the wetted area/perimeter of each water body by foot and/or by boat, with the characterization focused on identifying general habitat types and any unique or significant physical or biological features (e.g., tributaries, groundwater seeps, fish barriers, etc. or macrophyte beds, woody debris etc.) within the given water body, with key features recorded on habitat maps. In addition, habitat notes were taken in terms of the habitat requirements of the key species found within the watersheds assessed (see Table A.1).

For each water body, the surface area was determined from digitized aerial photographs using computer software (e.g., AutoCAD LT, Autodesk Inc., San Rafael, CA), with other areal dimensions determined using Geographic Information System (GIS) software, or measured during the field program using a rangefinder (Yardage Pro, Bushnell Performance Optics, Richmond Hill, ON), a tape measure (for streams), or with the aid of a GPS unit. Spot depths were measured to the nearest decimetre using a portable sounding unit, or to the nearest centimetre using a meter stick (streams and shallow ponds). Substrate material was characterized visually. A visual assessment was also used to characterize shoreline material and relative stability, as well as to document riparian features. Documentation of key biological features (e.g., aquatic macrophyte species and relative spatial extent, large woody debris, etc.) was also conducted, with emphasis placed on those related to fish habitat. Field guides used to assist in the identification of aquatic macrophytes and riparian vegetation included those by Newmaster et al. (1997), and Lahring (2003). Photographs of key habitat features were also taken to further support habitat descriptions. For each water body, habitat maps were created using GIS software (see Appendix A).

Fish community composition and relative abundance were assessed using standard fish collection methods implemented with care to minimize fish mortality. Fish communities were sampled using baited minnow traps, seine nets, and gill nets (Table 1). For each method, sampling effort (i.e., set duration, number of seine hauls, approximate area sampled), and GPS coordinates were recorded (Appendix Tables D.1 to D.3). Fishing techniques and equipment were selected based on the habitat of the given water body (e.g., size and depth; stream vs. lake) and the target species (e.g., large- vs. small-bodied fish; Table 1). All captured small- and large-bodied fish were identified and enumerated. Catch-per-unit-effort (CPUE), representing the number of fish caught over a specified unit of time and/or area, was later calculated for each fish species by fishing method and water body.

Length and weight were measured on a sub-set of fish from each water body assessed. Fork and/or total length was measured to the nearest millimetre using a measuring board or, for fish less than 12 cm long, to the nearest hundredth of a millimetre using digital callipers. Similarly, fresh body weight for fish less than approximately 30 g was measured using a Scout Pro balance (to the nearest 0.001 gram with ± 1% precision), whereas fish greater than 30 g were weighed using appropriately sized Pesola™ spring scales (precision

Table 1: Fishing equipment and techniques employed in the baseline for the Côté Gold Project.

Equipment Details	Dimensions/Details	Target/Use
Seine Net	50’ [15 m] x 3’ [0.9 m], 0.3 cm mesh size	Near-shore hauls for characterization of small-bodied fish community.
Gill Net	Experimental: 150’ x 6’ [45.4 m x 1.82 m] with mesh size from 1” [2.5 cm] to 4” [10.2 cm]	Short sets (< 4 hrs) for population studies and short + overnight sets for community characterization
Minnow Trap	16.5” [42 cm] length, 0.25” [0.6 cm] mesh, 1” [2.5 cm] diameter opening	Near-shore deployment for characterization of small-bodied fish commmunity.

to the nearest 1 % to 5 % of total weight). The external condition of each fish was also assessed, with any abnormalities recorded. Five large-bodied fish (northern pike [*Esox lucius*]) and five forage fish (juvenile yellow perch [*Perca flavenscens*]) samples were targeted in each water body for ageing and fish tissue analysis. Ageing structures (dorsal spines [yellow perch,], cliethra [northern pike] and scales [all fish]) were collected from each sacrificed fish and/or a subset of all fish captured by water body. Tissue samples were collected using clean implements (cutting boards, filet knives and tweezers). Approximately 5 g of boneless, skinless muscle tissue was collected from large-bodied fish and whole bodies were collected for forage fish samples. If the forage fish had to be composited to obtain a 5 g sample, similar sized fish were composited together for one sample. Samples were placed in clean, labeled Whirl-Pak™ bags and frozen until submitted for analysis. Quality Assurance/Quality Control (QA/QC) measures included 10 % field duplicate samples (duplicate filets; see Appendix B).

Tissue samples collected were submitted to SRC in Saskatoon, Saskatchewan, along with a chain-of-custody record. Tissue samples were analyzed for total mercury, total metals, and percent moisture. Ageing structures were shipped to Bob Irwin in Maynooth, Ontario, along with a chain-of-custody record for determination of fish ages.

Fish tissue data are provided in Appendix Table D.12. Mercury tissue concentrations were screened against the advisory levels published by the Ministry of Environment and Climate Change (2016), all other analytes were screened against consumption benchmarks established in the 2013 baseline report (Appendix Table D.11; Minnow 2014). In addition, relationships between mercury concentrations in fish muscle tissue and age were explored graphically. The relationship between individual fish weight and length (i.e., condition) and age at length (i.e., growth) was plotted for each northern pike and yellow perch by water body, and compared among lakes to evaluate any spatial differences that might suggest areas of differing productivity, or otherwise unusual population features.

Results

Water Quality

As described in the previous baseline studies, the lakes surveyed in 2016 were shallow (<10 m) and mesotrophic[1] with water that is yellow-brown in colour. The yellow-brown colour is typical of northern lakes found within the local study area and is associated with the abundance of dissolved organic matter such as humus, peat or decaying plant matter from aquatic vegetation, runoff from forests or wetland areas in proximity to the water

[1] Mesotrophic lakes are lakes with an intermediate level of primary productivity, defined by measures of nutrient content (total phosphorus, nitrogen), chlorophyll a and Secchi depth.

bodies. Light penetration varied depending on the water body (e.g., Secchi depth range from 1.4 to 3.7 m), and was well within what was reported for the mean light penetration noted in previous baseline work (mean Secchi depth = 2.24 m; Minnow 2014).

Water bodies within the local study are dimictic[2] and typically stratified during the summer and winter months. All of the water bodies with water depth greater than 2 m surveyed in 2016 had an established thermocline[3] with the exception of Lower Three Duck Pond (Appendix Tables C.1 to C.7). Surface water temperatures ranged from 18 to 27°C (Appendix Tables C.1 to C.11) due to the relatively shallow depths and the limited flow. Surface waters were generally well oxygenated above the thermocline (Appendix Figure C.1 and Appendix Tables C.1 to C.7). However, below the thermocline, dissolved oxygen concentrations approached hypoxic conditions (<2 mg/L) in Attach Lake, Lower Three Duck Pond, and Sawpeter Lake (Appendix Figure C.1).

Surface water pH and specific conductivity varied within the lakes surveyed (Appendix Tables C.1 to C.11). Occasionally changes in pH and specific conductivity were observed with depth in lake profiles and were likely associated with lower dissolved oxygen concentrations causing reducing conditions at greater depth (e.g., Attach Lake; Appendix Tables C.1 to C.7).

Baseline water quality within the local study area was characterized by Golder (2013). Benchmarks were established based in the most recent water quality guideline or 95th percentile of background concentrations, whichever was higher. Background concentrations (95th percentile of baseline) of total phosphorus, aluminum, iron and zinc were found to be elevated compared to established water quality objectives (Minnow 2014; Appendix Table C.12).

Concentrations of substances measured in the summer of 2016, were very similar to the fall of 2013 with concentrations typically lower than the established water quality benchmarks in the lakes and streams surveyed (Appendix Table C.12). Consistent with previous observations, aluminum was observed at concentrations greater than the benchmark (95th percentile of baseline; Appendix Table C.12), indicating these substances can be naturally elevated within the local study area (Minnow 2014). In addition, total organic carbon in Dividing Lake, and alkalinity, conductivity, harness, calcium and sodium

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[2] Lakes that undergo two periods of mixing, one in the spring and one in the autumn are referred to as dimictic. These lakes circulate freely twice a year and are directly stratified in the summer and inversely stratified in the winter.
[3] The thermocline is a transition layer between the mixed layer at the surface and the deep water layer. The water temperature change within this transition layer is greater than 1 °C in one metre of water depth.

in the Mollie River were observed at concentrations higher than background benchmark (i.e., these substances do not have guidelines; Appendix Table C.12).

Similar to the 2013 findings (Minnow 2014), measured phosphorus and zinc concentrations in all samples taken in 2016 fell below the Provincial Water Quality Objectives (PWQO). In particular, phosphorus concentration were below the PWQO of 0.03 mg/L for lakes and 0.02 mg/L for streams (Appendix Table C.13). Zinc concentrations were an order of magnitude below the 95th percentile of background (Appendix Table C.13). This reflects improved method detection limits since the baseline survey. As anticipated, with lower method detection limits, concentrations of total phosphorus and zinc would be lower.

Fish Habitat

The lentic (lakes and ponds) and lotic habitat (stream) surveyed in 2016 were very similar to what was reported in Minnow 2014. The lentic habitats were typically shallow (<10 m) connected by slow meandering streams. A total of 17 lakes and ponds, several first order streams, and sections of the Mollie River were assessed in 2016 (Figure 1; see Appendix A for each individual habitat assessment).

Lake shoreline habitat generally consisted of cobble and/or boulder substrate embedded in silty-sand, sand or silts. Granitic bedrock outcrops are commonly found along the perimeter or in association with small islands. Littoral substrate (<2 m) primarily consisted of what was observed on shore, transitioning to sandy-silt, with more silt with depth. The smaller headwater lake shoreline habitat largely consisted of organics with woody debris, with few smaller bedrock outcrops or cobble substrate. Most lakes are treed to the shoreline with varying densities of black spruce (*Picea mariana*), jack pine (*Pinus banksiana*) and eastern white cedar (*Thuja occidentalis*). White birch (*Betula papyrifera*) and trembling aspen (*Populus tremuloides*) are found in lower densities. Leatherleaf (*Chamaedaphne calyculata*) commonly overhangs shorelines in addition to other common understory species such as sedges (*Carex* sp.), sweet gale (*Myrica gale*), bog laurel (*Kalmia polifolia*) and speckled alder (*Alnus incana*). In areas where wetlands are found adjacent to the water body, vegetation is generally comprised of dense sedges, sweet gale, leatherleaf, bog laurel and scattered alder that overhangs the water's edge.

Macrophytes densities vary within and among lakes, and can generally be found in shallower bays or surrounding inlets or outlets. The smaller headwater lakes often had dense aquatic vegetation where coverage was frequently >80 % throughout the water body. Submergent macrophyte beds consist of burreed (*Sparganium* sp.), pondweed (*Potamogeton* sp.) and/or milfoil *(Myriophyllum* sp.). Floating macrophytes are largely made up of yellow pond lily (*Nuphar variegatum*) and white pond lily (*Nymphaea odorata*).

Fewer beds of emergent macrophytes such as bulrushes (*Scirpus* sp.) are found on certain lakes; however they are often found lining the shoreline of smaller headwater lakes. Wetland areas surrounding the ponds included floating mats of sedges, sweet gale, alder and dead black spruce with some marsh cinquefoil (*Potentilla palustris*) and bog laurel.

The Mollie River was generally comprised of low-gradient habitat with scattered patches of moderate- and high-gradient habitat. The low-gradient habitat consisted of slow run, small to large pools, and frequently ponded areas as a result of beaver activity. Substrate of lower gradient habitat included organic muck (i.e., silt with high organic content) of varying thickness over hard-packed clay. Instream vegetation included yellow and white pond lilies, pondweed, milfoil, burred, as well as some pickerelweed (*Pontederia cordata*).

The moderate-gradient habitat was characterized by run habitat interspersed with small pools. Substrate in these areas typically included silt over densely packed clay. Substantial amounts of small- and large-woody debris were found within moderate-gradient habitat. Again, aquatic vegetation included dense growth of burreed and pondweed. Floating vegetation, such as yellow pond lily, were found in patches or mixed amongst the dominant emergent and submergent vegetation types indicated above.

The wetland plant community adjacent to the low- and moderate reaches generally included a predominantly sedge, sweet gale and meadowsweet mix, and speckled alder comprised the sub-dominant species. Forest next to the wetlands was generally dominated by coniferous species including black spruce, jack pine and eastern larch (*Larix laricina*).

A few sections of high-gradient habitat within the Mollie River were surveyed in 2016 and generally contain riffle and/or riffle run stream morphology with some little pool habitat. Substrate of high-gradient habitat generally consisted of large cobble and boulder occasionally embedded in sand. Instream vegetation was generally limited and consisted of sparse growth of burreed. Mixed forest typically extends to the shoreline, with the overstory commonly including black spruce, speckled alder, eastern white cedar, white birch, trembling aspen and, in some areas, eastern larch.

The first order streams were predominantly low-gradient, narrow (< 1m), shallow (<1 m) habitat. An abundance of large-woody debris often lay over and in the channel providing instream cover. Fewer areas of moderate- to high-gradient habitat were present and were characterized by riffle sections of cobble-boulder mix embedded in soft organic muck. Some instream vegetation was present and generally consisted of yellow and white pond lilies, burred, milfoil and bulrush. Stream banks were generally bordered by overhanging sedges and shrubs, such as leatherleaf, sweet gale, speckled alder, and/or bog laurel through wetland areas or areas treed to the bank, with common overstory species such as black spruce, eastern white cedar and speckled alder.

Fish Community and Health

The fish communities within the water bodies surveyed in 2016 were generally characterized by the same warm water species noted in previous baseline studies (Table 2; Minnow 2014). The large bodied community was dominated by northern pike (*Esox lucius*) and yellow perch (*Perca flavenscens*). Fewer white sucker (*Catostomus commersonii*) and lake whitefish (*Coregonus clupeaformis*) were also caught in 2016, and were limited to Attach, Chain and Sawpeter (Tables 2, 3 and Appendix Tables D.1 to D.3). Although walleye (*Sander vitreus*) were not captured during the survey, it has been noted that they are present within Moore Lake (R. Hobbs, IAMGOLD, pers. comm. 2016).

The small-bodied fish community varied based on habitat conditions, however it primarily consisted of dace (finescale dace [*Chrosomus neogaeus*], northern redbelly dace [*Chrosomus eos*], and pearl dace [*Margariscus nachtriebi*]), blacknose shiner (*Notropis heterolepis*), golden shiner (*Notemigonus crysoleucas*) and Iowa darter (*Estheostoma exile*; Tables 2, 3, and Appendix Tables D.1 to D.3). Central mudminnow (*Umbra limi)*, fathead minnow (*Pimephales promelas)*, and johnny darter (*Etheostoma nigrum*) were also observed in 2016 (Tables 2, 3, and Appendix Tables D.1 to D.3).

All species noted in 2016 were previously observed within the each of the watersheds (Tables 2 and 3). No endangered, threatened or special concern fish species (COSEWIC 2016) were observed in any of the water bodies surveyed in 2016.

Northern pike total length sampled in 2016 ranged from approximately 26 to 77 cm (Figure 2). Size and weight of northern pike captured within the water bodies surveyed in 2016 overlapped broadly with previous data collected from the area (Figure 2 and Appendix Tables D.4 to D.10). Body condition (i.e., length-at-weight) was comparable among lakes, with the exception of Clam Lake (Figure 2). Northern pike captured in Clam Lake showed higher condition than pike of similar total length from other lakes in the region. However, overall the data suggests that the health of northern pike within the project area is consistent among years and with other lakes within the study area. Age at length of northern pike suggest that northern pike from Chain Lake were generally larger than all the other lakes sampled, and that those from Unnamed Lake #2, #3 and Neville Lake were the smallest at age (Figure 2). Overall, age at length (i.e., growth) for northern pike among lakes varied, however this is not surprising as northern pike growth is dependent on many factors including density, climate (growing-degree-days above 5 °C) and available habitat (percent littoral zone; Malette and Morgan 2005).

Table 2: Summary of fish species presence/absence in Côté Gold area lake habitat[a].

Watershed		Mollie River Watershed																				Neville Lake Watershed												Mettagami River Watershed
Size	Species	**Moore Lake**	**Chain Lake**	**Attach Lake**	**Chester Pond**	**Unnamed Lake #4**	**Sawpeter Lake[d]**	Chester Lake	East Beaver Pond	Unnamed Pond	Beaver Pond	Clam Lake	Cote Lake	North Beaver Pond	Weeduck Lake	Three Duck Lakes			Unnamed Lake #3	Delaney Lake	**Dividing Lake**	Schist Lake	West Beaver Pond	**Watershed west of West Beaver Pond**	**Unnamed water bodies off of Bagsverd Creek[c]**	Little Clam Lake	Bagsverd Pond	Bagsverd Lake	**Unnamed Lakes**				Neville Lake	Mesomikenda Lake
																Upper	Middle	Lower											#2	#1	**#5**	**#6**		
Large-bodied Fish Species	Burbot *Lota lota*											✓	✓																					
	Lake trout *Salvelinus namaycush*																																	✓
	Lake whitefish *Coregonus clupeaformis*			✓				✓					✓		✓	✓	✓	✓			✓	✓						✓					✓	✓
	Northern pike *Esox lucius*	✓	✓	✓		✓	✓	✓		✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓			✓	✓
	Smallmouth bass *Micropterus dolomieu*											✓					✓[b]																✓	
	Walleye *Sander vitreus*												✓			✓	✓	✓			✓	✓						✓	✓	✓			✓	✓
	White sucker *Catostomus commersonii*		✓				✓	✓		✓			✓		✓	✓	✓	✓		✓	✓	✓	✓				✓	✓	✓	✓			✓	✓
	Yellow perch *Perca flavescens*	✓	✓	✓			✓	✓		✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓			✓	✓
Small-bodied Fish Species	Blacknose shiner *Notropis heterolepis*							✓				✓	✓		✓	✓	✓	✓				✓				✓		✓	✓	✓			✓	✓
	Brook stickleback *Culaea inconstans*																																	✓
	Central mudminnow *Umbra limi*																						✓	✓			✓			✓				
	Common shiner *Luxilus cornutus*																✓																	
	Fathead minnow *Pimephales promelas*								✓		✓												✓	✓			✓	✓			✓	✓		
	Finescale dace *Chrosomus neogaeus*	✓					✓		✓		✓			✓								✓	✓	✓			✓				✓	✓		
	Golden shiner *Notemigonus crysoleucas*	✓		✓			✓	✓				✓	✓		✓				✓	✓		✓	✓			✓		✓		✓			✓	✓
	Iowa Darter *Etheostoma exile*	✓	✓	✓			✓	✓		✓	✓	✓			✓	✓	✓	✓	✓			✓	✓			✓	✓	✓	✓	✓	✓			✓
	Johnny darter *Etheostoma nigrum*						✓					✓																						
	Northern redbelly dace *Chrosomus eos*						✓		✓		✓			✓									✓	✓			✓				✓	✓		
	Pearl dace *Margariscus nachtriebi*										✓												✓	✓							✓	✓		
	Sculpin sp. *Cottus bairdii* *Cottus cognatus*														✓			✓												✓				
	Spottail shiner *Notropis hudsonius*							✓				✓			✓	✓	✓					✓						✓	✓				✓	✓
	Trout-perch *Percopsis omiscomaycus*							✓																										✓

Bold denotes areas fished during the 2016 field survey.

[a] This table reflects fish species absence/presence in the current configurations of the Mollie River and Neville Lake watersheds.

[b] AMEC 2011.

[c] Unidentified fish observed but not captured in 2016 field survey.

[d] Includes North Complex, Sawpeter Lake, and South Outlet.

Table 3: Summary of fish species presence/absence in Côté Gold area stream habitat[a].

	Watershed	Mollie River Watershed			Neville Lake Watershed		
Size	**Species**	Mollie River[c]	Clam Creek[b]	**Unnamed Lake #3 Outlet[d]**	Bagsverd Creek (Lower)	Bagsverd Creek (Upper)	Unnamed Stream to Bagsverd Creek
Large-bodied Fish Species	Burbot *Lota lota*				✔	✔	
	Northern pike *Esox lucius*	✔			✔	✔	✔
	White sucker *Catostomus commersonii*	✔			✔	✔	
	Yellow perch *Perca flavescens*	✔			✔	✔	
Small-bodied Fish Species	Blacknose shiner *Notropis heterolepis*	✔					✔
	Central mudminnow *Umbra limi*					✔	✔
	Finescale dace *Chrosomus neogaeus*						✔
	Golden shiner *Notemigonus crysoleucas*	✔			✔	✔	✔
	Iowa Darter *Etheostoma exile*	✔			✔		
	Longnose dace *Rhinichthys cataractae*				✔	✔	
	Northern redbelly dace *Chrosomus eos*						✔

Bold denotes areas fished during the 2016 field survey.

[a] This table reflects fish species absence/presence in the current configurations of the Mollie River and Neville Lake watersheds.

[b] Minnow trapping was conducted in Clam Creek in 2013, but no fish were caught after 40.03 trap hours.

[c] Mollie River was fished in 2016, however no new species were observed.

[d] Minnow trapping was conducted in Unnamed Lake #3 outlet in 2016, but no fish were caught after 3.6 trap hours.

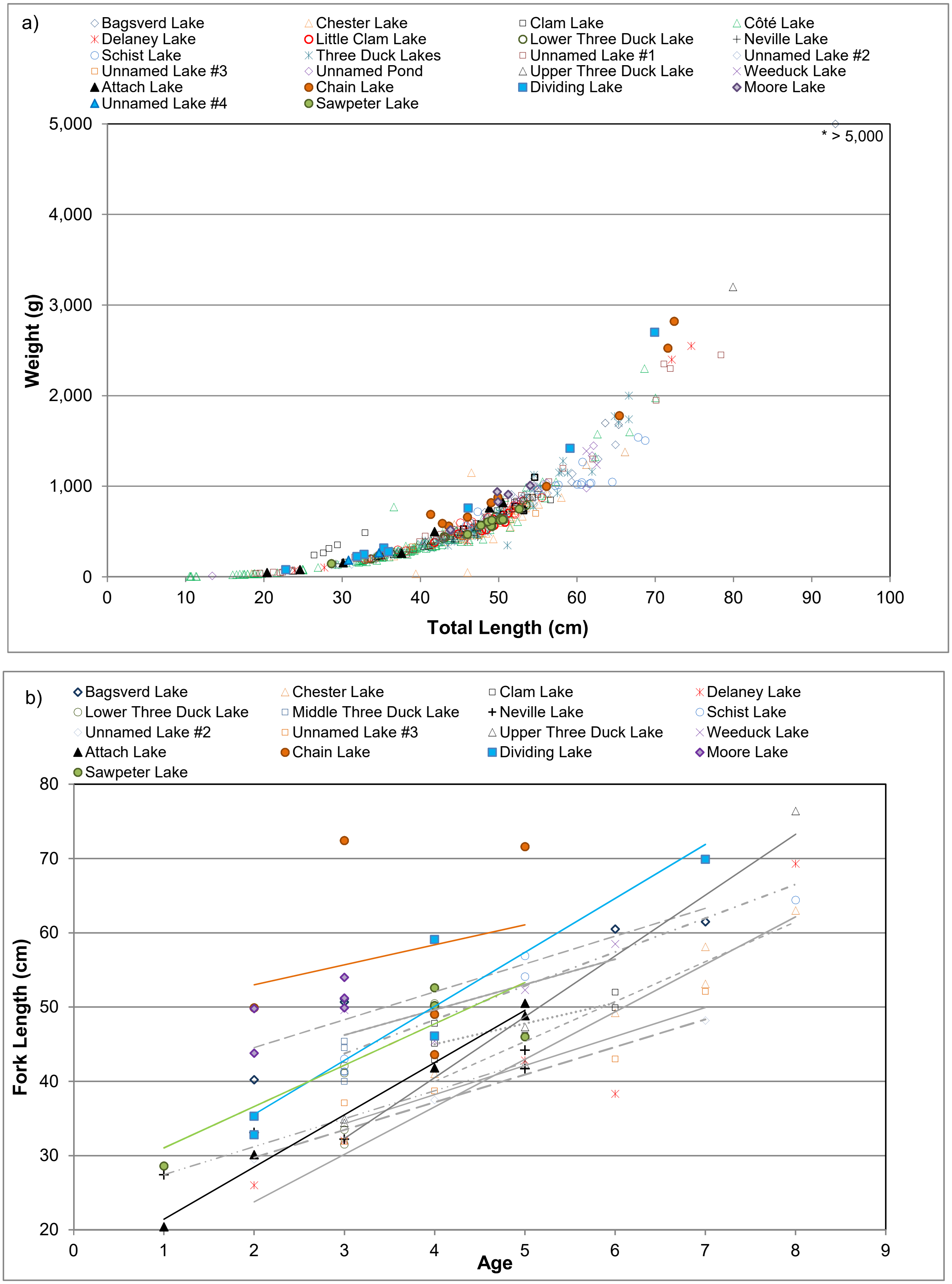


Figure 2: Northern pike a) length at weight relationships (August 2010, July 2012, June 2013 [open symbols], and July 2016 [closed symbols]) and b) age at length relationships (2013, [open symbols], and 2016 [closed symbols]) for all water bodies sampled in the vicinity of the Côté Gold project. Note: regression only noted where sample size was greater than 3 and a strong regression relationship exists.

Yellow perch were caught in 2016; however smaller sizes were targeted for sampling, therefore not all size ranges were necessarily represented (i.e., YOY, juvenile and adults; Appendix Tables D.4 to D.10). Based on available data, condition was comparable among areas fished in 2016, as well as with previously reported yellow perch condition (Figure 3). Age at length data for yellow perch would suggest similar growth among lakes (Figure 3).

In summary, similar to previous findings (Minnow 2014), data collected would suggest northern pike and yellow perch have similar conditions among lakes within the local study area. Based on the age data collected, northern pike growth was variable among lakes.

Muscle Tissue Screening

Consumption advisory and restriction levels for mercury have been established for sport fish muscle tissue and are based on consuming 16 to 32 meals per month (Ministry of the Environment and Climate Change [MOECC] 2015). Two groups of advisory levels have been established; one for sensitive populations comprising women of child-bearing age and children under 15, the other for the general population (MOECC 2015). Ontario's fish advisory benchmarks for mercury consumption were updated for 2015. Under the previous guidelines, it was assumed that 90% of the total mercury value was methylmercury (i.e., the bioavailable form). Recent research indicates that this fraction of methylmercury actually represents 95% of total mercury concentrations (S. Bhavsar, MOECC personal comm. March 17, 2015). Since the methylmercury fraction has increased from 90 to 95%, there is more bioavailable mercury present in the fish tissue than was previously assumed. Therefore, the mercury consumption advisory levels were lowered to reflect this change (Appendix Table D.11).

Under the current advisory limits, all northern pike and yellow perch tissue concentrations, with the exception of yellow perch from Dividing Lake, exceeded the lowest advisory level for sensitive populations, which is 0.06 mg/kg wet weight of mercury in muscle tissue (Figure 4 and Appendix Table D.12). For the general population, the updated advisory level is 0.15 mg/kg wet weight mercury in muscle tissue (MOECC 2015). Muscle mercury concentrations exceeded the general population advisory limit in all northern pike samples for all lakes sampled in 2016 (Figure 4 and Appendix Table D.12). Whereas, only one yellow perch from Chain Lake exceeded the general population guideline (Figure 4 and Appendix Table D.12). At these concentrations, the MOECC recommend that sport fish consumption (i.e., consumption by recreational resource users) should be limited (MOECC 2015). None of the fish sampled in 2016 had mercury concentrations in muscle above the restriction level of 1.8 mg/kg wet weight (Appendix Table D.12).

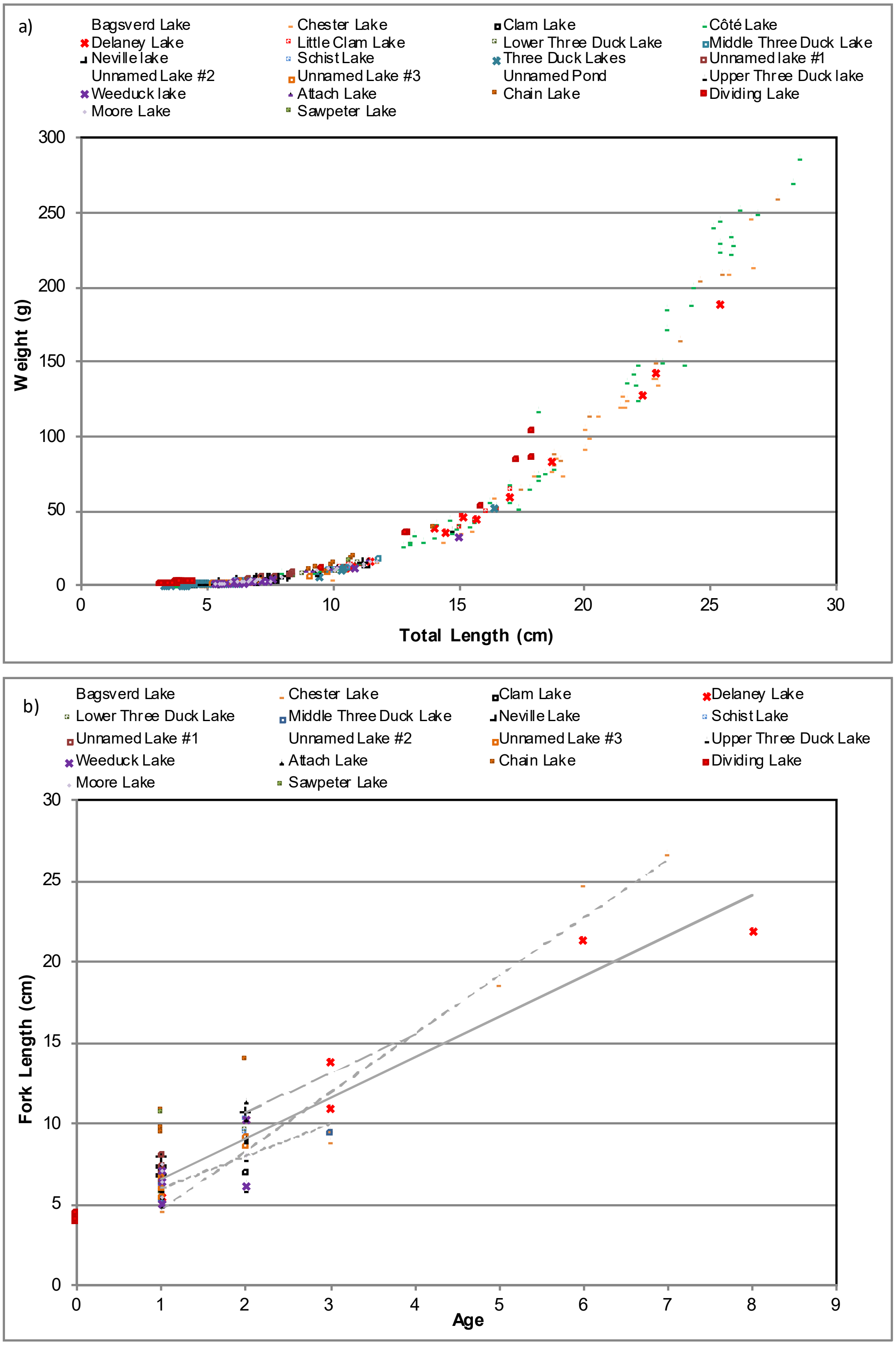


Figure 3: Yellow perch a) length at weight relationships (August 2010, July 2012, June 2013 [open symbols], and July 2016 [closed symbols]) and b) age at length relationships (2013, [open symbols], and 2016 [closed symbols]) for all water bodies sampled in the of the Côté Gold project. Note: regression only noted where sample size was greater than 3 and a strong regression relationship exists.

a)

b)

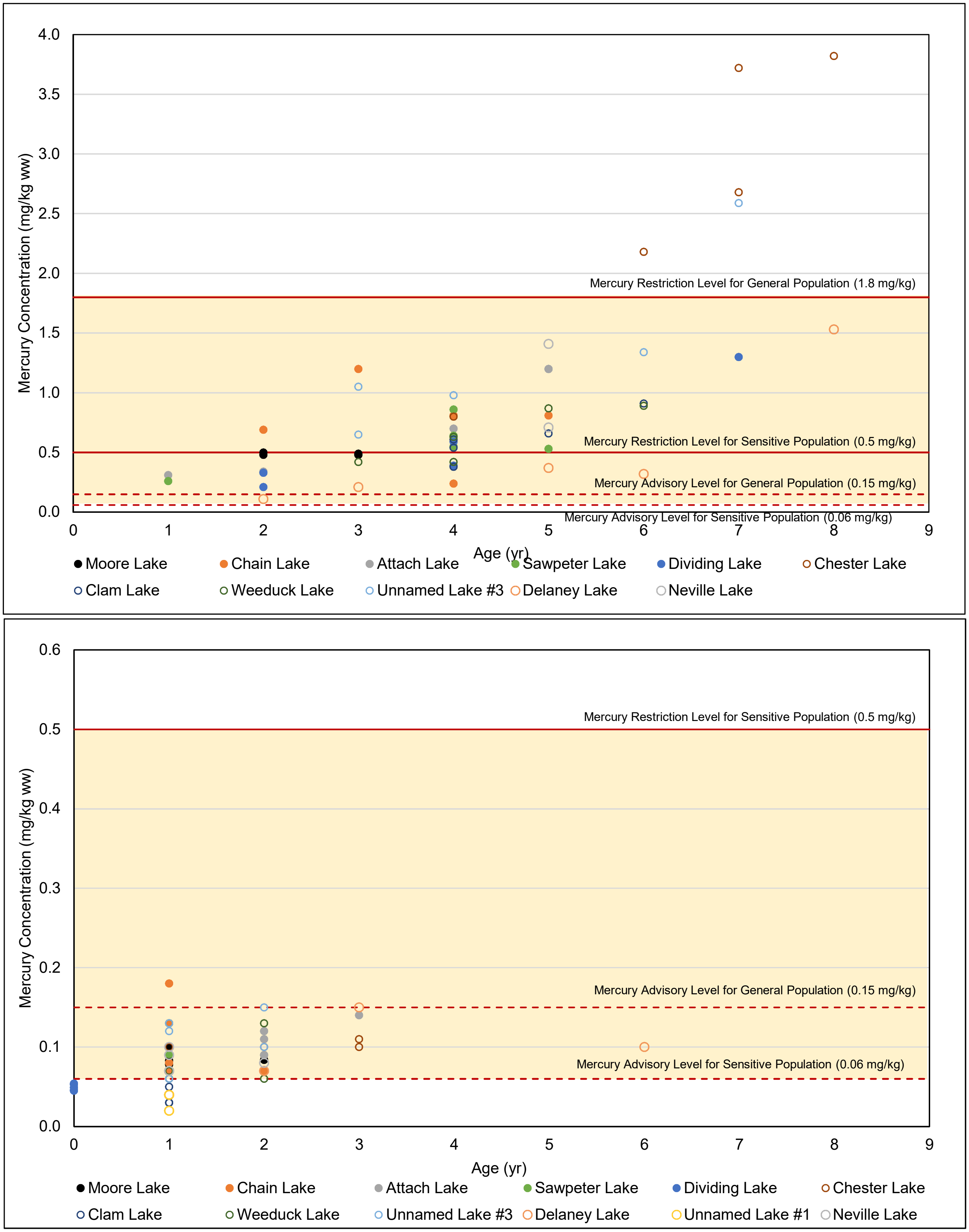


Figure 4: Muscle mercury concentrations (mg/kg) at age for a) northern pike and b) yellow perch, for fish sampled in July 2016 (closed symbols), as well as July 2012 and June 2013 (open symbols), Côté Gold Baseline Study, 2016.

It must be noted that naturally elevated mercury concentrations are often observed in predatory fish species in northern lakes due to naturally high mercury levels, atmospheric deposition of mercury and biogeochemical conditions that favour mercury methylation (Evers et al. 2011). Methylated mercury is biomagnified through the food chain resulting in elevated concentrations in predatory fish species such as walleye and northern pike. Tissue mercury concentrations (in northern pike and yellow perch) in 2016 often occurred at concentrations greater than consumption benchmarks, however this is consistent to what was previously reported (Figure 4; Minnow 2014).

Similar to previous findings (Minnow 2014), all other metals, with the exception of arsenic, did not exceed the Tolerable Daily Intake (TDI; Appendix Table D.12).

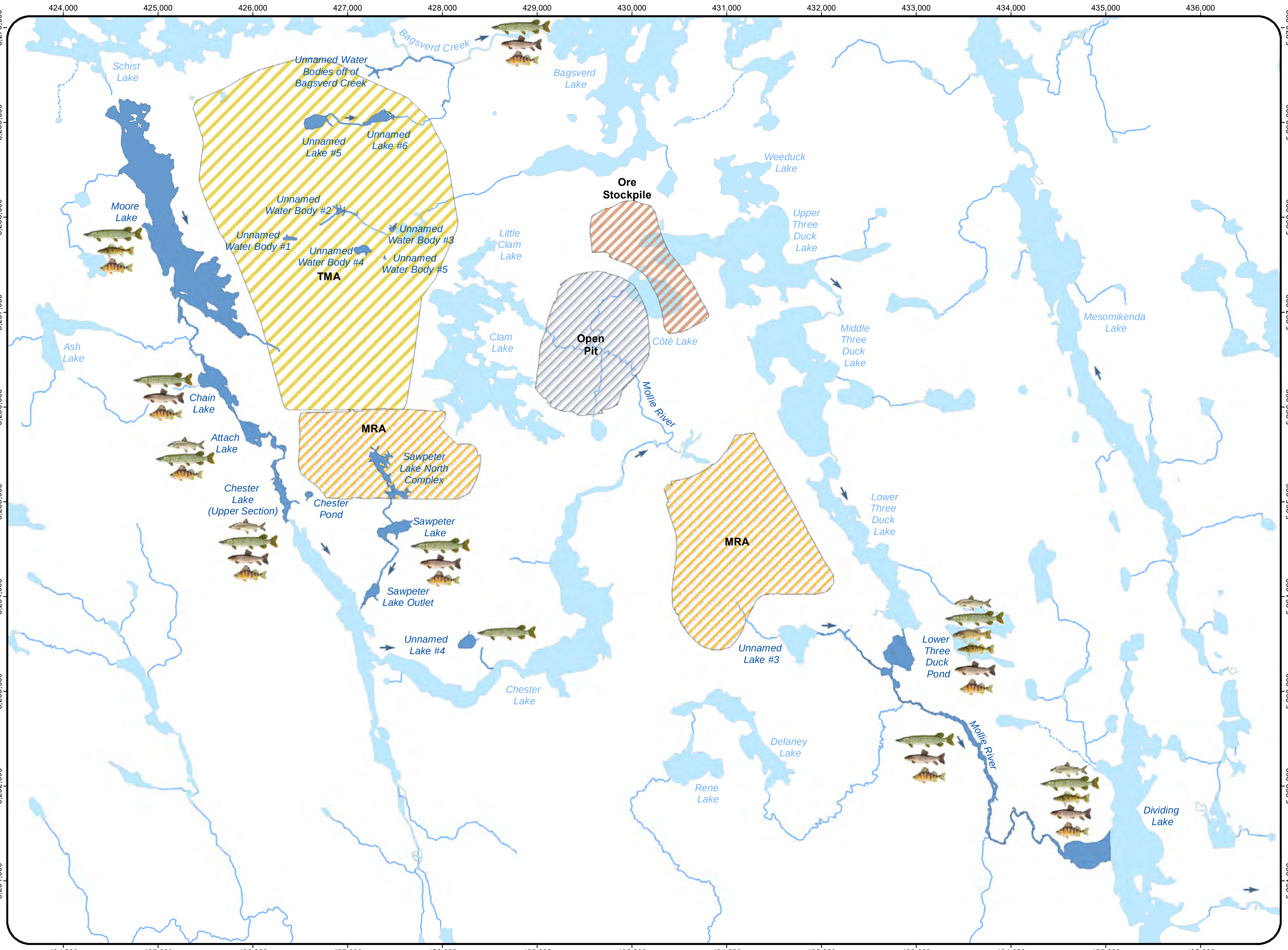
Fish Habitat Evaluation

Key sport fish species found within the local study area include northern pike, yellow perch, walleye, and lake whitefish (Figure 5). Smallmouth bass (*Micropterus dolomieu*) were also found, however this species was only observed in Clam, Three Duck and Neville lakes (Tables 1 and 2). Lake trout (*Salvelinus namaycush*) were confined to Mesomikenda Lake (Table 1; Minnow 2014). Other large-bodied species include white sucker and burbot (*Lota lota*). Smaller fish species vary depending on habitat conditions (Tables 2 and 3).

Fish were present in nearly all the water bodies surveyed in 2016, with the exception of Chester Lake Pond and unnamed water bodies #1 and #5 west of West Beaver Pond (Figure 5 and Tables 2 and 3). These ponds have limited overwintering habitat (<2 m water depth), and are disconnected to the rest of the watershed, limiting the ability for these water bodies to support fish species.

The fish habitat available in lakes surveyed in 2016 generally provides adequate quantities of spawning (including incubation), rearing, foraging and overwintering habitat for northern pike and yellow perch (Figure 5 and Appendix Table A.1). This is not surprising as these are the two dominant species within the local study area. Stream habitat also provides adequate spawning, rearing and adult foraging habitat for these species. Overwintering habitat within the Mollie River surveyed in 2016 is limited in areas of shallower depth (especially less than 1.5 m). Shallow water depths and high summer water temperatures may also seasonally reduce the quality of habitat for larger adults; however deeper, cooler habitat is usually available nearby within the local study area.

Fish habitat for walleye, lake whitefish, and white sucker within the area surveyed in 2016 is generally adequate for rearing and adult foraging (Appendix Table A.1). However, species such as lake whitefish prefer deeper lakes where they can escape warmer water



LEGEND

- Water Body Assessed For Fish Habitat
- Watercourse Assessed For Fish Habitat
- Open Pit
- Ore Stockpile
- Mine Rock Area (MRA)
- Tailings Management Facility (TMF)
- Water Flow Direction

Large-Bodied Fish

- Burbot
- Lake Whitefish
- Northern Pike
- Smallmouth Bass
- Walleye
- White Sucker
- Yellow Perch

N S E W

0 550 1,100 2,200
Meters

MAP INFORMATION
Map Projection: UTM Zone 17 NAD 1983
Data Source: Reproduced under licence from Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada. All rights reserved.
Creation Date: January 2017
Project No.: 167202.0065

Figure 5: Large-Bodied Fish Species in Assessed Areas

minnow environmental inc.

temperatures in the summer, and these habitats are limited to the deeper lakes not surveyed in 2016 (Appendix Table A.1). Minimal spawning habitat for lake whitefish was observed in the lakes surveyed and confined to the margins (i.e., whitefish were only observed in Attach and Dividing lakes; Figure 5). A few locations within the Mollie River were identified as marginal to good spawning habitat for walleye and white sucker (Appendix Table A.1; see Appendix A.5).

Overall, there is generally no limiting habitat found within area surveyed in 2016 for the key species identified, with the exception that few suitable spawning habitat locations were observed for walleye and white sucker within the areas evaluated. Similar to the previous baseline studies, northern pike and yellow perch dominated the fish communities within the area surveyed in 2016 as an abundance of habitat is available for these species.

Summary

A number of new water bodies were evaluated within the local study area (i.e., areas potentially affected by the project), which were all located within the Mollie River and the Neville Lake watersheds. The baseline work completed in 2016 provided information on water quality, fish habitat and fish community structure. The conclusions of the aquatic baseline 2016 monitoring are summarized as follows:

- Similar to previous baseline work, surface water temperatures during summer months were warm, however water bodies remain well oxygenated above the thermocline. In water bodies where a thermocline was present, dissolved oxygen concentrations can approach hypoxic conditions (<2 mg/L). Surface pH and specific conductivity varied within the water bodies surveyed.

- Concentration of substances measured in water during the summer of 2016 were very similar to the fall of 2013, and were typically lower than the established water quality benchmarks in the lakes and streams surveyed. Consistent with previous observations, aluminum was observed at concentrations greater than the benchmark indicating these substances can be naturally elevated within the local study area. In addition, total organic carbon in Dividing Lake, and alkalinity, conductivity, hardness, calcium and sodium in the Mollie River were observed at concentrations higher than the background benchmark. Lastly, measured phosphorus and zinc concentrations in all samples collected fell below the Provincial Water Quality Objectives which reflects improved method detection limits.

- The fish community within the area surveyed in 2016 was generally characterized by warm water species. Both the lentic and lotic habitat were dominated by northern pike and yellow perch. White sucker were also common, and varied in abundance depending on the lake, whereas walleye and lake whitefish were only noted in Moore, Attach and Dividing lakes. The small-bodied fish community varied based on habitat conditions; however it primarily consisted of dace (northern redbelly and finescale), golden shiner and Iowa darter. No endangered, threatened or special concern fish species (COSWIC 2016) were observed in any of the water bodies evaluated.

- Northern pike and yellow perch within the local study area generally have similar conditions (length at weight) among lakes. Growth, measured as age at length, indicated that northern pike growth was variable. Yellow perch age at length data suggests similar growth rates among lakes.
- Tissue mercury concentrations in northern pike and yellow perch in 2016 often occurred at concentrations greater than consumption advisory levels (both for the general population and sensitive population), however this is consistent to concentrations previously reported (Minnow 2014). Similar to previous baseline studies for Côté Gold, all other metals, with the exception of arsenic, did not exceed TDI-based consumption benchmarks.
- Fish were present in nearly all the water bodies surveyed, with the exception of Chester Lake Pond and unnamed water bodies #1 and #5. The fish habitat within the lakes surveyed generally provides adequate quantities of spawning (including incubation), rearing, foraging and overwintering habitat for the fish communities present within each of the lakes. The exception is a limited amount of spawning habitat available for walleye and white sucker observed within the area surveyed in 2016. Spawning habitat was identified for these species in the upper sections of the Mollie River. Northern pike and yellow perch dominated the fish community of the areas visited in 2016 as an abundance of habitat is available for both of these species.

Recommendations

As Côté Gold project moves towards the permitting phase, additional baseline information will be required to support permit applications (e.g. Certificate of Approval [COA] or Environmental Compliance Approval [ECA], Fisheries Act Authorization [FAA], Metal Mining Effluent Regulations, Permit To Take Water [PTTW] and the Closure Plan). These permits will require impact assessments based on the fisheries, water, sediment and benthic invertebrate baseline information collected for all areas that may be influenced by the mine operations or closure conditions (e.g. effluent and storm water discharge and seepage from tailings and mine rock storage areas). This baseline work has largely been completed for the previous site plan, however it should be updated depending on Côté Gold timelines. Therefore, Minnow recommends the following work as the project proceeds:

- Existing baseline information may require updating (e.g., sediment and fish tissue chemistry), specifically in areas of the proposed discharge location, to ensure baseline data remains current (e.g., Moore, Chester, Clam, South Arm of Bagsverd, Upper, and Lower Three Duck, and Dividing lakes).
- Conduct preliminary work to support the national environmental effects monitoring (EEM) requirements to allow for a before/after control impact assessment of all potential sources. This will allow for statistical confirmation of changes in the future (or lack thereof), and be fully consistent with requirements of Environment Canada under the EEM program, Ministry of Northern Development and Mines requirements for closure plan assessments and Ministry of the Environment impact assessment requirements for an ECA.
- With the changes to the site plan, we recommend that IAMGOLD revise and prepare an offsetting plan to address the changes to fish habitat losses. In addition, this plan should be discussed and consulted with the Department of Fisheries and Oceans (DFO) and Environment Canada (EC) to ensure all requirements are met for a *Fisheries Act* Authorization and/or a Schedule 2 amendment.
- Should realignments result in flooding of terrestrial vegetation, the Ministry of the Environment (MOE) will have concerns with possible mercury accumulation in fish tissue. Therefore, it is recommended that the MOE, Northern Region guidance (MOE 2010) be followed to sample fish tissue to provide a baseline of mercury concentrations in fish tissue. We propose that northern pike and young-of-the-year forage fish (i.e., yellow perch) be targeted.

References

AMEC (AMEC Americas Limited. Earth & Environmental Division). 2011. Phase II Baseline Aquatics Report Chester Project. Chester Township, District of Sudbury, Ontario. Prepared for Trelawney Mining and Exploration Inc., July 2011.

ATSDR 2005. Toxicological Profile for Tin and Tin Compounds. Agency for Toxic Substances and Disease Registry. Atlanta, GA., USA. Last updated August 2005.

ATSDR 2004. Toxicological Profile for Copper (CAS# 7440-50-8). Agency for Toxic Substances and Disease Registry. Atlanta, GA., USA. Last updated September 2004.

ATSDR 2008. Toxicological Profile for Manganese (CAS# 7439-96-5). Draft for Public Comment. Agency for Toxic Substances and Disease Registry. Atlanta, GA., USA. Last updated September 2008.

Bain, M.B. and N.J. Stevenson (Eds.). 1999. Aquatic Habitat Assessment: Common Methods. American Fisheries Society, Bethesda, Maryland.

BCMOE (British Columbia Ministry of Environment) 2006. A Compendium of Working Water Quality Guidelines for British Columbia. Updated August 2006

BCMOE (British Columbia Ministry of Environment) 2013. Ambient Water Quality Guidelines for Sulphate. Technical Appendix Update. April 2013. Prepared by Cindy Meays and Rick Nordin.

Bhavsar, Satyendra. 2016. Personal Communication in regards to Hg changes in the Guide to Eating Ontario Sportfish, MOECC. Satyendra.Bhavsar@ontario.ca.

CCME (Canadian Council of Ministers of the Environment) 2000. Canadian tissue residue guidelines for the protection of wildlife consumers of aquatic biota: Methylmercury. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg.

CCME (Canadian Council of Ministers of the Environment). 2012. Draft Scientific Criteria Document for the Development of the Canadian Water Quality Guidelines for the Protection of Aquatic Life: Cadmium. CCME, Winnipeg.

CCME (Canadian Council of Ministers of the Environment). 2013. Canadian Water Quality Guidelines for the Protection of Aquatic Life. Accessed at http://st-ts.ccme.ca/, September 2013.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2016. Canadian Wildlife Species at Risk. http://www.registrelep-sararegistry.gc.ca/sar/index/default_e.cfm Accessed November 24, 2016.

Dodge, D.P., Tilt, J.C., MacRitchie, I., Goodchild, G.A. and D.G. Waldriff. 1989. Manual of Instructions: Aquatic Habitat Inventory Surveys. 9th Edition. Ontario Ministry of Natural Resources, Fisheries Branch. Official Procedural Manual Policy FI. 2.03.01.

Evers, David C., J. G. Wiener, N. Basu, R.A., Bodaly, H.A. Morrison, and K.A. Williams. 2011. Mercury in the Great Lakes region: bioaccumulation, spatiotemporal patterns, ecological risks, and policy. Ecotoxicology 20, 1487-1499.

Health Canada. 2010. Part V: Guidance on Human Health Detailed Quantitative Risk Assessment for Chemicals (DQRA$_{chem.}$). Federal Contaminated Site Risk Assessment in Canada. September 2010.

Hobbs, Robert. 2016. Personal Communication. Environmental Manager, IAMGOLD Corporation. Côté Gold Project. Robert.Hobbs@iamgold.com

Lahring, H. 2003. Water and Wetland Plants of the Prairie Provinces. Canadian Plains Research Center, Regina, Saskatchewan.

Malette, M.D. and Morgan, D.E. 2005. Provincial Summary of Northern Pike Life History Characteristics Based on Ontario's Fall Walleye Index Netting (FWIN) Program 1993 to 2002. Cooperative Freshwater Ecology Unit. Laurentian University, Sudbury. January 2005.

Ministry of the Environment (MOE) 2010. Guidance for Conducting Baseline and Post-Development Monitoring of Water Quality and Fish Tissue for Proposed Waterpower Project. Ministry of the Environment, Northern Region. Updated November 2010.

Ministry of the Environment and Climate Change (MOECC) 2015. Guide to Easting Ontario Sportfish. 2015-2016., Revised.

Minnow 2014. Côté Gold Aquatic Baseline Report. Prepared for IAMGOLD Corporation, March 2014.

Newmaster, S.G., Harris A.G., and Kershaw L.J. 1997. Wetland Plants of Ontario. Lone Pine Publishing, Edmonton, Alberta.

OMNR (Ontario Ministry of Natural Resources). 1993. Ontario Wetland Evaluation System: Northern Manual. First Edition. Ontario Ministry of Natural Resources. March 1993.

OMOEE (Ontario Ministry of Environment and Energy). 1994. Water Management, Policies, Guidelines. Provincial Water Quality Objectives of the Ministry of Environment and Energy. Reprinted March 1998.

US EPA (United States Environmental Protection Agency) 2004. Draft Aquatic Life Water Quality for Selenium. U.S. Environmental Protection Agency Office of Water, Office of Science and Technology, Washington, D.C. November 2004.

US EPA IRIS (United States Environmental Protection Agency Integrated Risk Information) 1991. Nickel refinery dust (no CASRN). Carcinogenicity Assessment. United States Environmental Protection Agency Integrated Risk Information System.

US EPA IRIS. 1993. Lead and Compounds (inorganic) (CASRF 7439-92-1). Carcinogenicity Assessment. United States Environmental Protection Agency Integrated Risk Information System. US EPA IRIS. 1996. Manganese (CASRN 7439-96-5). Carcinogenicity Assessment. United States Environmental Protection Agency Integrated Risk Information System.

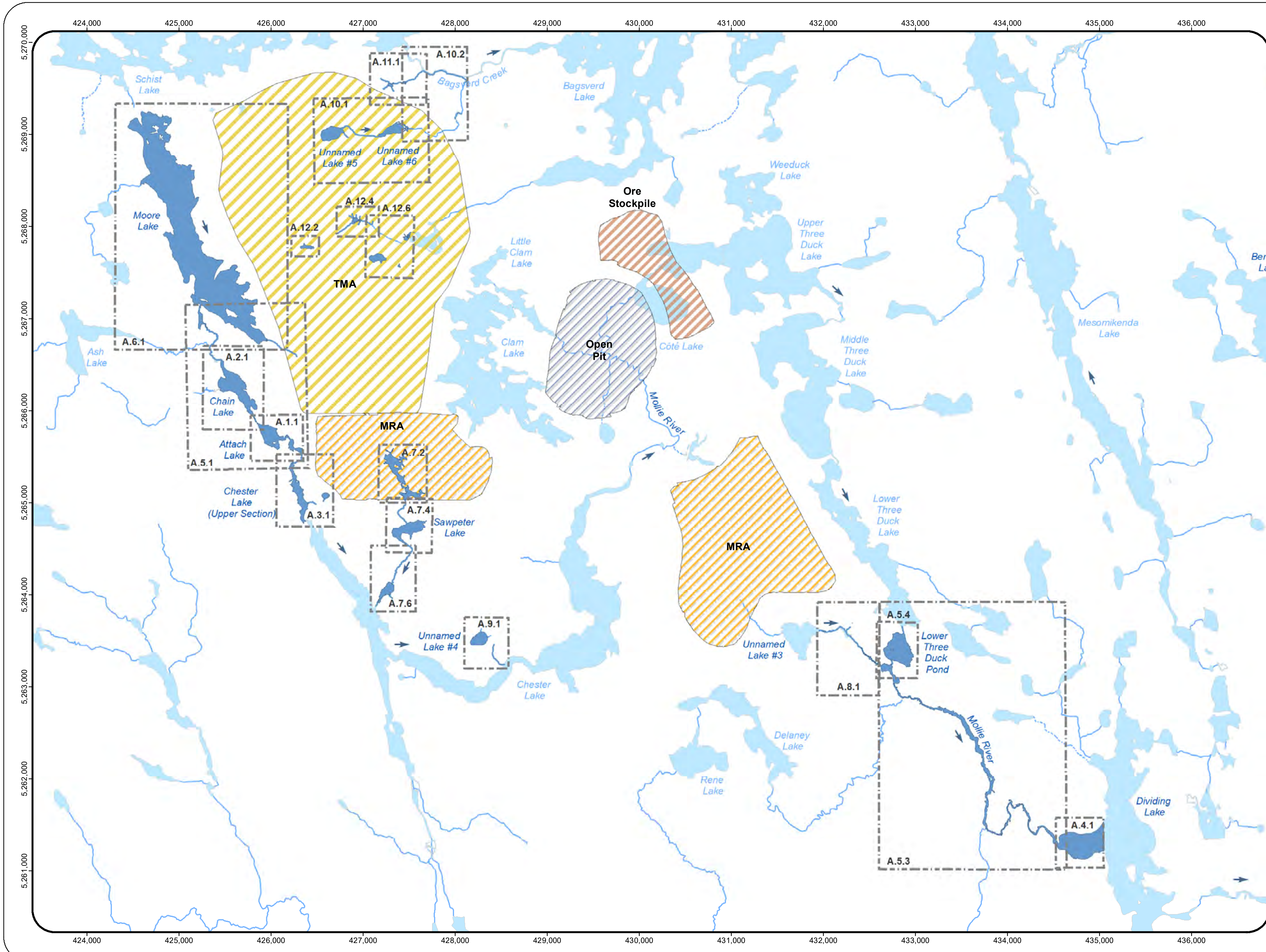
US EPA IRIS (United States Environmental Protection Agency Integrated Risk Information) 1996. Manganese (CASRN 7439-96-5). Carcinogenicity Assessment. United States Environmental Protection Agency Integrated Risk Information System.

US EPA IRIS (United States Environmental Protection Agency Integrated Risk Information) 1996. Nickel, soluble salts (CASRN various). Oral RfD Assessment. United States Environmental Protection Agency Integrated Risk Information System.

US EPA IRIS (United States Environmental Protection Agency Integrated Risk Information) 1998. Arsenic, inorganic (CASRN 7440-38-2). Carcinogenicity Assessment. United States Environmental Protection Agency Integrated Risk Information System.

APPENDIX A

HABITAT CHARACTERISTICS OF WATER BODIES



LEGEND

Reference To Water Body
Water Body Assessed For Fish Habitat
Watercourse Assessed For Fish Habitat
Open Pit
Ore Stockpile
Mine Rock Area (MRA)
Tailings Management Facility (TMF)
Water Flow Direction

N S E W

0 550 1,100 2,200
Meters

MAP INFORMATION
Map Projection: UTM Zone 17 NAD 1983
Data Source: Reproduced under licence from Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada. All rights reserved.
Creation Date: January 2017
Project No.: 167202.0065

Figure A.1: Côté Gold Appendix Reference Map

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Table A.1: Summary of habitat requirements for various life stages of fish found in the vicinity of the Côté Gold Mine Project.

Size	Species	Spawning/Incubation	Juvenile/Rearing	Adult/Foraging	Overwintering
Large-bodied Fish Species	Burbot *Lota lota*	Spawns midwinter (January - March) under ice cover in 1 – 10 feet of water depth over sand or gravel. This is usually done in lakes, but the species is known to also move into rivers to spawn.	Young of the year and yearling burbot are frequently found along rocky shores, and sometimes in weedy areas of tributary streams.	Adults reside in deep, hypolimnic habitat during the summer, but sometimes move into shallower waters when active at night. In southern and central regions, burbot habitat is primarily in lakes while in the north it also includes large, cool rivers.	No info. Likely prefer dissolved oxygen concentrations > 6 mg/L.
	Lake trout *Salvelinus namaycush*	Spawning occurs in autumn over boulder or rubble bottom at depths ranging from 1 to 40 feet (0.3 to 12 m).	Young seek out deeper water within a month of being hatched.	During warmer summer months adults inhabit the hypolimnion (below the thermocline) and disperse throughout the lake during the winter months.	Require cold, well oxygenated waters. Dissolved oxygen boundary of 4 to 7 mg/L.
	Lake whitefish *Coregonus clupeaformis*	Spawning occurs in the fall (usually November-December) at shallow depths of less than 25 feet (7.6 m) over hard or stony bottom but sometimes over sand.	Young whitefish generally leave the shallow inshore waters by early summer and move into deeper water.	Whitefish are a cool water species that descend into cooler waters of the hypolimnion (below the thermocline) during the summer months. They move from deep to shallow waters in early spring and back to deeper water as warming occurs.	No info. Likely prefer dissolved oxygen concentrations > 6 mg/L.
	Northern pike *Esox lucius*	Spring spawner during daylight hours on heavily vegetated floodplains of rivers, marshes and bays of larger lakes.	Young remain in shallow spawning areas for several weeks. Generally establish a vague territory where cover and food are adequate.	Inhabit clear, slow, heavily vegetated rivers or warm, weedy bays of lakes. Generally occur in shallower water in spring and fall but move to deeper cooler water at the height of summer temperatures.	Very tolerant of low dissolved oxygen (0.1-0.4 mg/L for several days).
	Smallmouth bass *Micropterus dolomieu*	Typically spawn in late spring and early summer. Nests are built on sandy, gravelly or rocky bottom of lakes and rivers usually near the protection of rock, logs or more rarely near dense vegetation.	Juveniles can be found in shallow areas with cover.	After spawning adult fish move to moderately shallow areas that are rocky and sandy. They will move to greater depths as the weather gets warmer. In winter they congregate near the bottom and are very inactive.	Prefer dissolved oxygen concentrations above 6 mg/L. Can survive extreme winter condition but do not actively feed at <10°C.
	Walleye *Sander vitreus*	Spawning occurs in spring shortly after ice-out, either in white water below impassable barriers or coarse, rocky shoals of lakes.	Occupy the shallow edge of rivers close to vegetation or other forms of cover, and inshore areas of lakes less than two meters deep.	Generally found in large, shallow, turbid lakes or streams. Also thrive in clear lakes and rivers, but in such a habitat walleye will only feed at night due to sensitivity to light.	Generally require dissolved oxygen levels > 5 mg/L, but can tolerate low as 2 mg/L for a short time. Adults tend to avoid turbulent areas in the winter.
	White sucker *Catostomus commersonii*	Typically spawn in the spring from early May to early June. Adults migrate from lakes into streams to spawn in shallow water over gravel. They have also been known to use lake margins.	Young start to migrate to the lake about a month after spawning. Juveniles can be found in association with a variety of other species and are typically found in the same habitat as adults.	Adults usually inhabit warmer shallow lakes or warm, shallow bays, and tributary rivers of larger lakes. They are usually found in the top 20 to 30 feet (6 to 9 m).	Tolerant of low dissolved oxygen and a broad range of environmental conditions. Will avoid dissolved oxygen concentrations lower than 2.4 mg/L.
	Yellow perch *Perca flavescens*	Yellow perch spawn in the spring usually from April to early May in shallow water of lakes or rivers over rooted vegetation, submerged brush or fallen trees, but at times over sand and gravel.	Juvenile habitat requirements are similar to adults. They school in shallower water and nearer to shore than adults and the schools often contain many individuals of different species of minnow.	Perch are adaptable and able to utilize a wide variety of habitat. Most abundant in the open water of clear lakes with moderate vegetation and bottoms of muck to sand and gravel. In response to seasonal temperature, movements occur out of and in to deeper water.	Tolerant of low dissolved oxygen, 5 mg/L is the lower optimum limit. Concentrations from 0.2 to 1.5 mg/L are lethal.

Table A.1: Summary of habitat requirements for various life stages of fish found in the vicinity of the Côté Gold Mine Project.

Size	Species	Spawning/Incubation	Juvenile/Rearing	Adult/Foraging	Overwintering
Small-bodied Fish Species	Blacknose shiner *Notropis heterolepis*	Blacknose shiners spawn in spring and summer spawn over sandy bottoms.	Life cycle information is limited for this species.	Prefers clear, vegetated waters in the sandy shallows of lakes.	Adequate water depth. Oxygen thresholds of many freshwater fish as reported from field studies lie between 1.0 and 2.0 ppm with some less tolerant species requireing up to 3.0 ppm or more. Some fish species will use gas bubbles at the ice-water interface (i.e., central mudminnow, fathead minnow, brook stickelback) which will allow for tolerance of low dissolved oxygen (<0.30mg/L).
	Brook stickleback *Culaea inconstans*	They spawn in shallow water from late April to July. Nests are constructed out of stems of reeds or grass and green algae.	Similar habitat to adults.	Inhabit clear, cold, densely vegetated water of small streams, swampy margins of ponds or larger lakes.	
	Central mudminnow *Umbra limi*	Spawns in early spring, either in upstream shallow waters, flooded benches of main channels, or hillside brooks in weedy areas.	The young move away from spawning sites at 30 mm in length.	Preferred habitat is vegetated, cool, quiet waters of lakes and streams.	
	Common shiner *Luxilus cornutus*	Typically a stream spawning species over gravel beds or other nests but may spawn on gravelly shoals in lakes (May-June).	Juveniles remain in stream habitat and shorelines of clear-water lakes.	Inhabit stream pool and run habitat and shorelines of clear-water lakes.	
	Fathead minnow *Pimephales promelas*	Prolonged spawning begins in spring and continues until as late as August. Spawning occurs in shallow water on the surface of rocks or vegetation.	No info, likely similar to adults.	In North-Central Ontario, habitat is frequently in clear but stained, acid waters of beaver ponds and small lakes.	
	Finescale dace *Chrosomus neogaeus*	Spawns in spring in depressions under some form of cover.	In lakes juveniles school with adults and in streams they remain close to vegetated areas.	Preferred habitat is cool water, heavily vegetated, slow-moving water, shallow water of lakes and streams with bottoms of silt and detritus.	
	Golden shiner *Notemigonus crysoleucas*	Spawning can occur from May to August. Eggs are deposited over filamentous algae where aquatic vegetation is present.	No info, likely similar to adults.	Clear, weedy, quiet waters with extensive shallow areas of lakes. Moves in schools off the bottom over wide areas.	
	Iowa Darter *Etheostoma exile*	Spawning occurs from spring to as late as May or June in shallow waters of lakes, or pond-like expansions in rivers, on bottom organic debris or on fibrous root beds.	No info, likely similar to adults.	Clear, standing or slowly moving waters of lakes or rivers which have rooted aquatic vegetation as well as a bottom of organic debris, sand, peat, or some combination of the three.	
	Johnny darter *Etheostoma nigrum*	Spawning occurs in the spring, the exact time depending on local conditions but, generally in May but can be as late as June, eggs are deposited on the underside of rocks.	No info, likely similar to adults.	Most common in waters of moderate or no current, over a bottom of sand, sand and gravel, or sand and silt, but do inhabit weedy areas or gravel riffles of streams.	
	Longnose dace *Rhinichthys cataractae*	Spawning begins in May, June or early July. Probably occurs in riffles over a gravel bottom, but on occasion occurs over or near the nest of the river chub resulting in hybrids.	Similar to that of adults, but with less overhead turbulence.	Clean, swiftly flowing, streams bedded by gravel or boulders. Can inhabit very turbulent waters. Also occur in inshore waters of lakes over boulder or gravel bottoms. In warm lakes they may move offshore into deep water during increased summer temperatures.	

Table A.1: Summary of habitat requirements for various life stages of fish found in the vicinity of the Côté Gold Mine Project.

Size	Species	Spawning/Incubation	Juvenile/Rearing	Adult/Foraging	Overwintering
Small-bodied Fish Species	Northern redbelly dace *Chrosomus eos*	Commences spawning in spring or early summer. Eggs are deposited in masses of filamentous algae.	Similar to that of adults.	Prefers the quiet waters of beaver ponds, bog ponds, small lakes or quiet pool-like expansions of streams, often over a bottom of finely divided brown detritus or silt.	Adequate water depth. Oxygen thresholds of many freshwater fish as reported from field studies lie between 1.0 and 2.0 ppm with some less tolerant species requireing up to 3.0 ppm or more. Some fish species will use gas bubbles at the ice-water interface (i.e., central mudminnow, fathead minnow, brook stickelback) which will allow for tolerance of low dissolved oxygen (<0.30mg/L).
	Pearl dace *Margariscus nachtriebi*	Spawns in the spring in clear water 45 – 61 centimetres deep on sand or gravel, in a weak to moderate current.	No info, likely similar to adults.	Typically reside in cool, clear headwater streams in the south and in bog drainage streams, ponds, and small lakes in the north. Also found in stained, peaty waters of beaver ponds.	
	Sculpin sp. *Cottus bairdii* *Cottus cognatus*	Spawns in spring under rocks or ledges when water temperatures reach 4 - 5°C.	No info, likely similar to adults.	Cool streams and lakes over a sand bottom.	
	Spottail shiner *Notropis hudsonius*	Spawns in June or July, over sandy shoals.	Summer habitat is shallow water above sandy bottom or weed beds.	Known to often inhabit relatively large lakes, and large rivers.	
	Trout-perch *Percopsis omiscomaycus*	Spawns in spring to summer when water temperatures reach 10°C in shallow, rocky streams or the nearshore waters of lakes.	No info, likely similar to adults	Prefers cool waters of lakes, but may occasionally be found in streams. Move inshore in the evenings to feed and offshore in the morning to seek shelter.	

References:

Blanchfield, P.J., Tate, L.S., Plumg, J.M., Acolas, M. and K.G. Beaty 2009. Seasonal habitat selection by lake trout (*Salvelinus namaycush*) in a small Canadian sheild lake: contraints imposed by winter conditions. Aquat. Ecol. **43**: 777-787

Brown, T.G., Runciman, B., Pollard, S., Grant, A.D.A and Bradford, M.J. 2009. Biological synopsis of smallmouth bass (*Micropterus dolomieu*). Can. Manuscr. Rep. Fish. Aquat. Sci. 2887

Holmes E., Mandrak, N.E., and Burridge, M.E. 2010. The ROM Field Guide to Freshwater Fishes of Ontario. Royal Ontario Museum, Toronto, Ontario.

Inskip, P. D. 1982. Habitat suitability index models: northern pike. US Department of the Interior, Fish and Wildlife Service. FWS/OBS-82/10.17. July 1982.

Klinger, S.A., Magnuson, J.J., and Gallepp, G.W. 1982. Survival mechanisms of the cetral mudminnow (*Umbra limi*), fathead minnow (*Pimephales promelas*) and brook stickleback (*Culaea inconstans*) for low oxygen in winter. Env. Biol. Fish. Vol 7, No. 2, pp. 113-120.

Krieger, D.A., Terrell, J.W. and Nelson, P.C. 1983. Habitat Suitability Information: Yellow Perch. United States Department of the Interior – Fish and Wildlife Service. FWS/OBS-82/10.55. December 1983.

McMahon, Thomas E., James W. Terrell, and Patrick C. Nelson. 1984. Habitat suitability information: walleye. US Department of the Interior, Fish and Wildlife Service. FWS/OBS-82/10.56 April 1984.

McPhail, J.D. 2007. The Freshwater Fishes of British Columbia. The University of Alberta Press, Edmonton, Alberta.

Scott, W.B. and Crossman, E.J. 1998. Freshwater Fishes of Canada. Galt House Publications, Oakville, Ontario.

Twomey, K.A., K.L. Williamson and P.C. Nelson. 1984. Habitat Suitability Index Models and Instream Flow Suitability Curves: White Sucker. United States Department of the Interior – Fish and Wildlife Service. FWS/OBS-82/10.64. September 1984.

A.1 ATTACH LAKE

Attach Lake is located within the Mollie River watershed approximately 4 km west of the proposed Côté Gold open pit (Figure A.1.1). The lake has a surface area of approximately 5.2 ha, with a maximum depth of 8.3 m (at water quality station) and has one small island (Figures A.1.1 and A.1.2). The primary inflow to Attach Lake is from the Mollie River headwater lakes: Chain Lake and Moore Lake (Figures A.1 and A.1.1). Discharge from Attach Lake to the Mollie River occurs at the southeastern end of the lake which flows south into Chester Lake (Figure A.1.1).

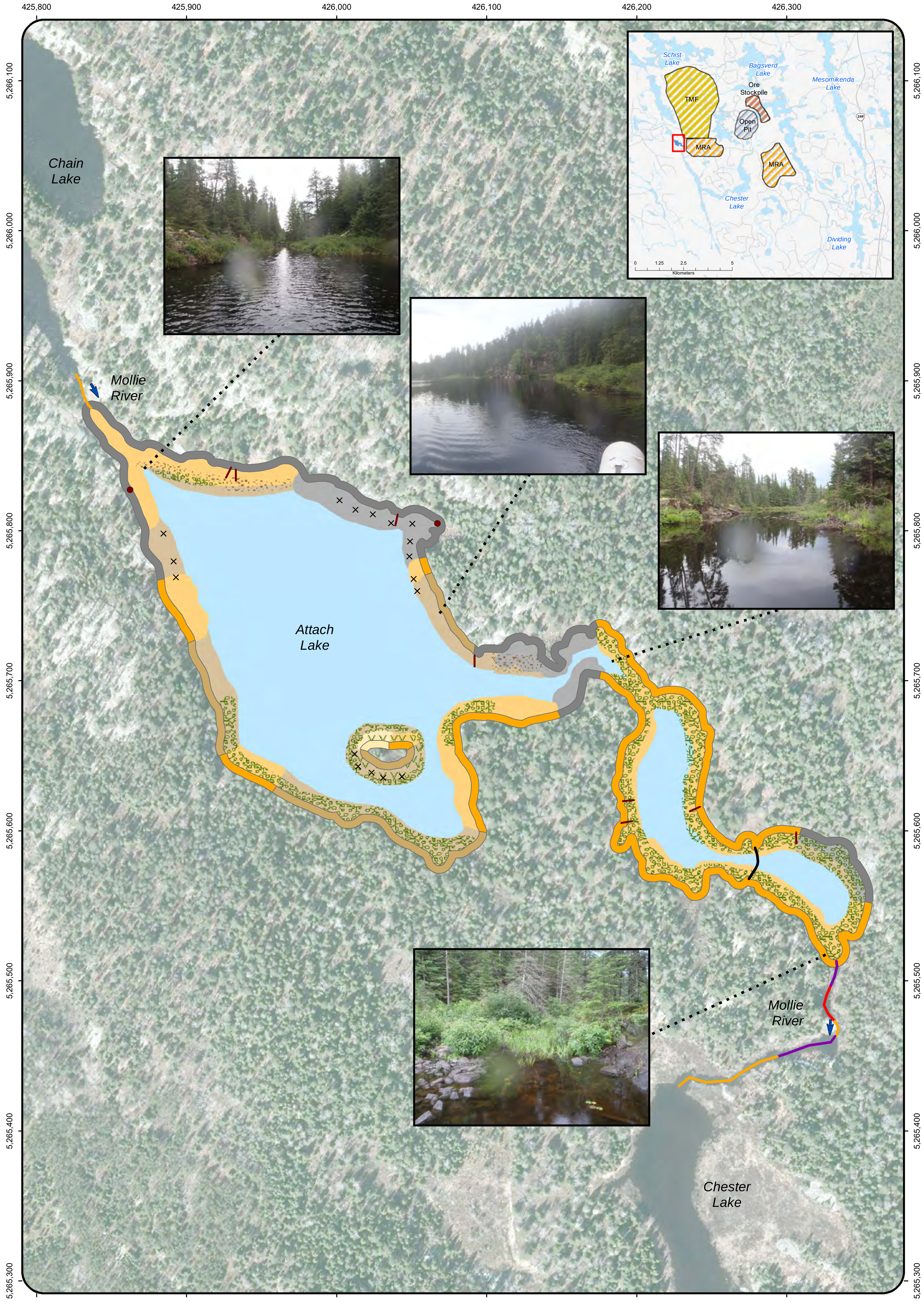
Attach Lake will potentially be influenced by the drainage from the proposed Tailings Management Facility (TMA) and a Mine Rock Area (MRA; Figure A.1). The habitat description provided below is based on a field survey conducted in the summer of 2016.

A.1.1 Habitat Description

Attach Lake is a small lake with simple basin morphology. Thermal stratification was apparent during the 2016 field survey (Table C.1). The hypolimnion was present between 2 and 3 m (Table C.1 and Figure C.1). The water was generally well oxygenated to 5 m but dissolved oxygen fell to below Provincial Water Quality Objectives at depths greater than 5 m (Table C.1). Surface specific conductivity and water pH were 105 µS/cm and 7.39, respectively; measurements changed little with depth (Table C.1). Attach Lake water was stained yellow-brown with a Secchi depth of 2 m indicating that the euphotic zone is approximately 4 m (Table C.1).

Substrate in the shallow littoral areas was generally comprised of cobble/gravel, organics and bedrock transitioning to silt at depths of approximately 1 m and deeper (Figure A.1.1). Similarly, the shoreline consisted of cobble, organics, and bedrock sections (Figures A.1.1). Macrophytes were generally found in the southern arm and were confined along the southern shore (Figure A.1.1). The macrophyte community generally consisted of yellow and white pond lilies (*Nuphar variegatum* and *odorata*), Richarson's pondweed (*Potamogeton richardsonii*), along with milfoil (*Myriophyllum* sp.), bulrush (*Scirpus* sp.), and burreed (*Sparganium* sp.).

The shoreline consists primarily of cobble and/or boulder embedded in silty-sand bedrock areas (Figure A.1.1). The treed shoreline was dominated by black spruce (*Picea mariana*) and jack pine (*Pinus banksiana*), with fewer eastern larch (*Larix laricina*) and white birch (*Betula papyrifera*). Leatherleaf (*Chamaedaphne calyculata*) commonly overhangs the shoreline in addition to other common understory species such as sedges (*Carex* sp.), sweet gale (*Myrica gale*), bog laurel (*Kalmia polifolia*), and speckled alder (*Alnus incana*). No wetlands were found adjacent to Attach Lake (Figure A.1.1).



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MAP INFORMATION
Map Projection: UTM Zone 17 NAD 1983
Data Source: Reproduced under licence from Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada. All rights reserved.
Creation Date: January 2017
Project No.: 167202.0065

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Littoral Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Rock
- Beaver Dam
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation

Figure A.1.1: Attach Lake Habitat Features

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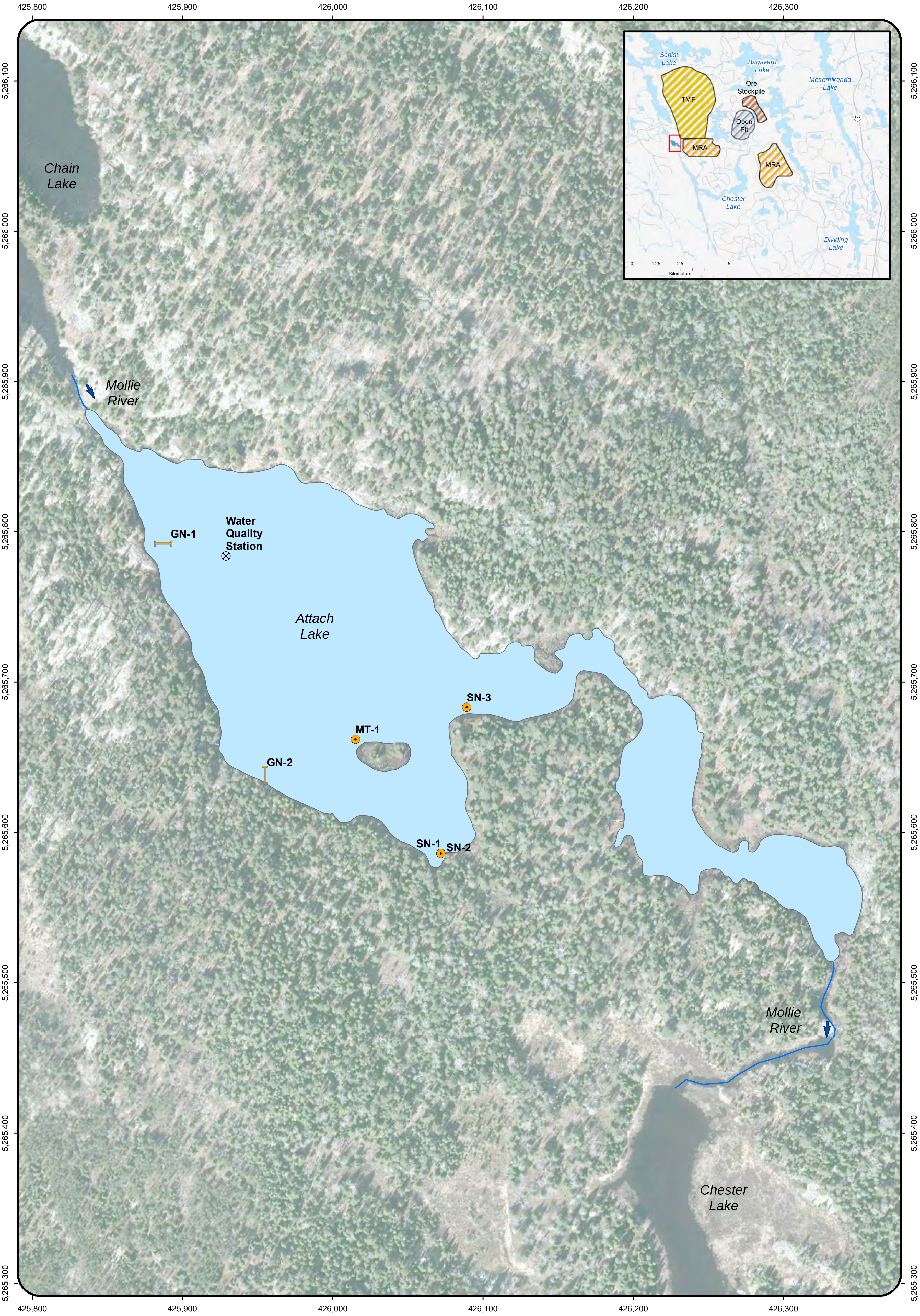

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MAP INFORMATION
Map Projection: UTM Zone 17 NAD 1983
Data Source: Reproduced under licence from Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada. All rights reserved.
Creation Date: January 2017
Project No.: 167202.0065

Sampling Locations:
- 2016 Seine Net, Minnow Trap
- 2016 Gill Net
- Water Quality Station

Other Features:
- Water Flow Direction

Figure A.1.2: Attach Lake Sampling Locations

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A.1.2 Fish Community Composition

Five species were captured in Attach Lake during the July 2016 field survey (Table A.1.1, Figure A.1.2 and Table D.1 to D.3). The large-bodied fish community included moderate numbers of yellow perch (*Perca flavescens*), northern pike (*Esox lucius*), and lake whitefish (*Coregonus clupeaformis*; Table A.1.1). The small-bodied fish community was dominated by golden shiner (*Notemigonus crysoleucas*) with Iowa darter (*Etheostoma exile*) present (Table A.1.1). No endangered, threatened, or special concern fish species (COSEWIC 2016) were observed in Attach Lake during the July 2016 field survey.

A.1.3 Fish Habitat Evaluation

Good spawning and rearing habitat for northern pike was found in Attach Lake through the overhanging shoreline vegetation and presence of sedges (Table A.1 and Figure A.1.1). The overhanging vegetation along the shoreline of Attach Lake combined with the open areas provides good spawning, rearing, and foraging habitat for yellow perch (Table A.1 and Figure A.1.1). Lake whitefish spawning within Attach is limited to the lake margins (Table A.1 and Figure A.1.1).

Relatively good habitat (spawning, rearing, and foraging) was present for golden shiner though the macrophyte beds (Figure A.1.1 and Table A.1). Cover could be provided by overhanging vegetation (Figure A.1.1). Good spawning habitat is also provided for Iowa darter by overhanging vegetation, woody debris, or aquatic vegetation (Table A.1). Rearing and foraging habitat is found in the shallow bay areas with sandy-silt bottom, organic debris, and rooted vegetation (Table A.1 and Figure A.1.1).

A.1.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2016. Canadian Wildlife Species at Risk. http://www.registrelep-sararegistry.gc.ca/sar/index/default_e.cfm Accessed November 24, 2016.

Table A.1.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Attach Lake, 2016.

a) Minnow Trapping[a]

Species	Total Caught	CPUE (# of fish/trap*d)
no fish captured	0	0
Total	**0**	**0**

b) Seining

Species	Total Caught	CPUE (# of fish/m^2)
golden shiner	28	0.05
Iowa darter	1	0.002
northern pike	1	0.002
yellow perch	1	0.002
Total	**31**	**0.056**

c) Gill Netting

Species	Total Caught	CPUE (total # of fish/100 m*hr)
golden shiner	1	0.07
lake whitefish	6	0.42
northern pike	6	0.42
yellow perch	8	0.56
Total	**21**	**1.47**

[a] Minnow trapping was conducted in Attach Lake, but no fish were caught after 7.7 trap hours.

A.2 CHAIN LAKE

Chain Lake is located within the Mollie River watershed approximately 4 km west of the proposed Côté Gold open pit (Figure A.2.1). The lake has a surface area of approximately 8.2 ha, with a maximum depth of 3.5 m (water quality station; Figure A.2.2) and contains no notable structural features other than a small shoal (0.5 to 1.5 m in depth) located in the centre of the main basin (Figure A.2.1). The primary inflow to Chain Lake is from the Mollie River headwater lake; Moore Lake (Figure A.1). Discharge from Chain Lake to the Mollie River occurs at the southeastern end of the lake, which flows a short distance into Attach Lake and ultimately south into Chester Lake (Figures A.1, A.2.1).

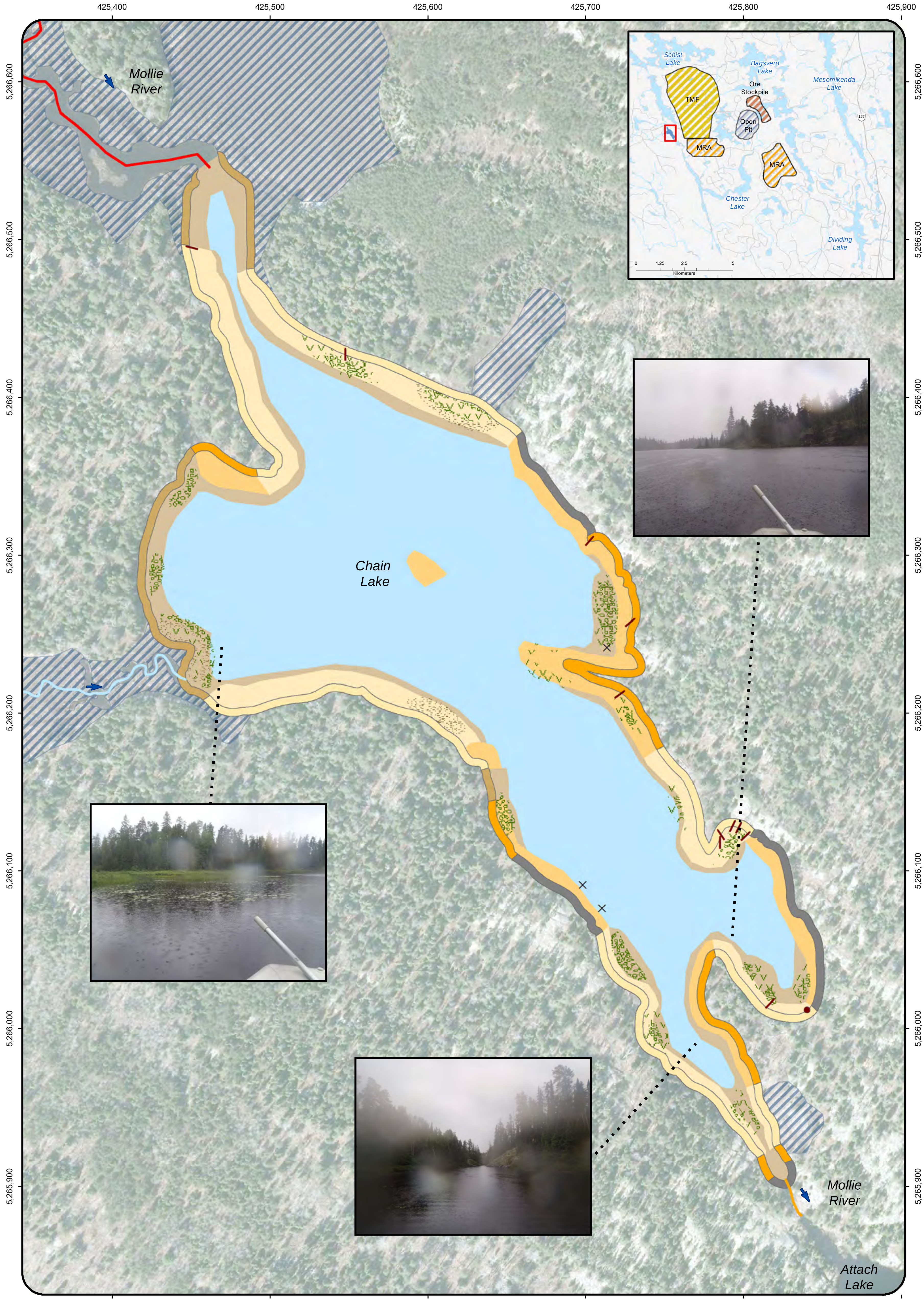
Chain Lake will potentially be influenced by drainage/seepage from the proposed Tailings Management Facility (TMA; Figure A.1). The habitat description provided below is based on a field survey conducted in the summer of 2016.

A.2.1 Habitat Description

Chain Lake is a relatively small lake with simple basin morphology. Thermal stratification was very close to the bottom (2-3 m; Table C.2 and Figure C.1b). The water of Chain Lake was well oxygenated to 2 m where it met Provincial Water Quality Objectives, had neutral pH (6.62 to 7.00 at depth; Table C.2), and yellow-brown in colour with moderate clarity, allowing light to penetrate to the bottom of the lake (Secchi depth = 2.4 m; Table C.2).

Substrate in the littoral areas generally consists of sandy silt with high organic content. Near the shoreline, cobble and boulder may extend approximately 1 m off shore before transitioning to silt substrate (Figures A.2.1 and A.2.2). Bedrock was observed along the shoreline and limited to two sections on the south side, one section on the north east shore, and the outlet (Figure A.2.1). Macrophytes were sparse and generally confined to the shoreline (Figure A.1.1). Few yellow pond lilies (*Nuphar variegatum*) were observed along with burreed (*Sparganium* sp.), pondweed (*Potamogeton sp.*), and bulrush (*Scirpus* sp.).

The shoreline consists primarily of cobble/boulder or silt/sand organic areas (Figure A.2.1). The treed shoreline was mainly comprised of black spruce (*Picea mariana*) and jack pine (*Pinus banksiana*), with few eastern larch (*Larix* laricina) and white birch (*Betula papyrifera*; Figure A.2.1). Leatherleaf (*Chamaedaphne calyculata*) commonly overhangs the shoreline, in addition to other common understory species such as sedges (*Carex* sp.), sweet gale (*Myrica gale*), bog laurel (*Kalmia polifolia*), and speckled alder (*Alnus incana*). Very little wetland area was present, generally confined to in the inlets and outlet of Chain Lake.



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Map Projection: UTM Zone 17 NAD 1983
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Creation Date: January 2017
Project No.: 167202.0065

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

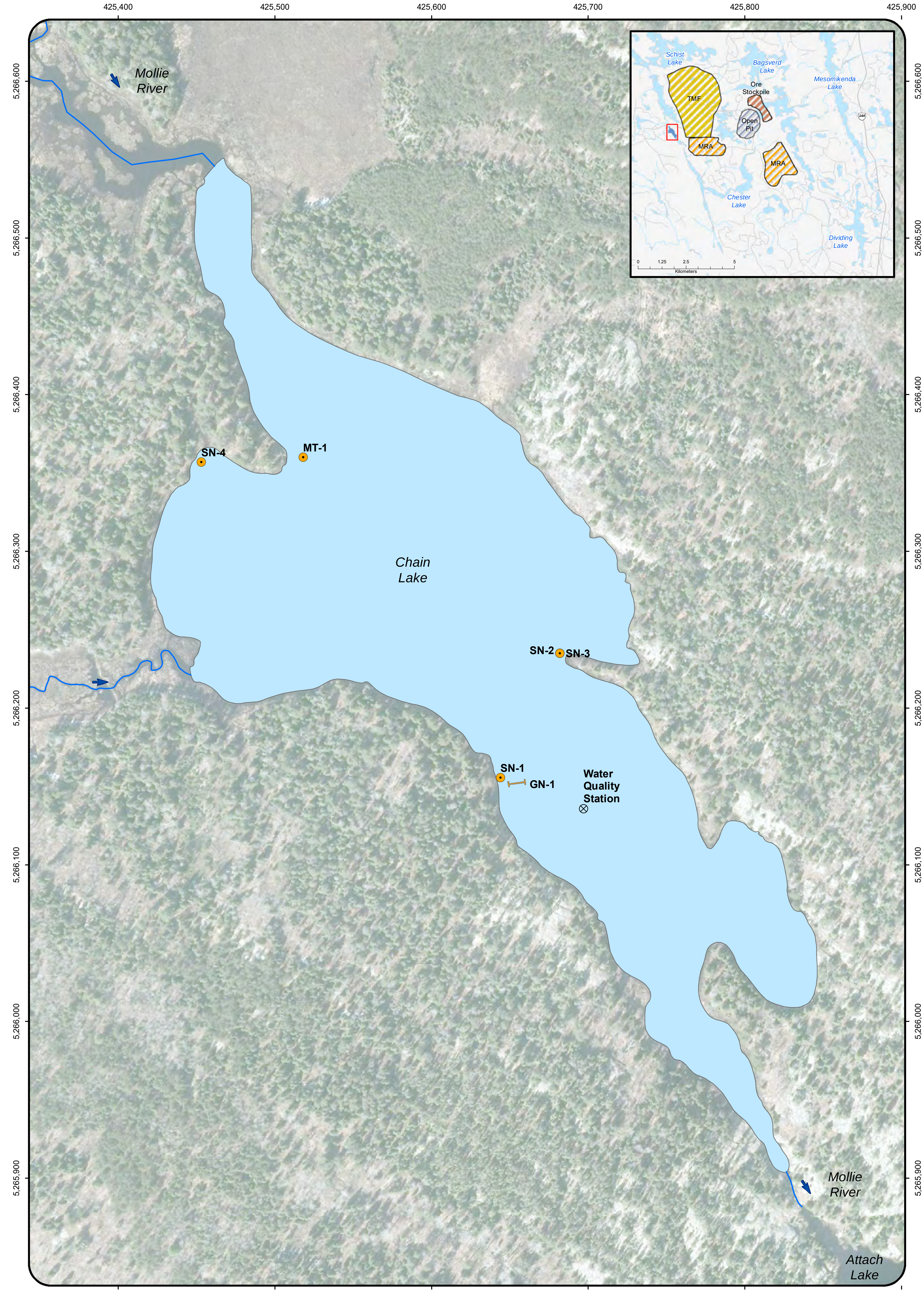
Littoral Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

River Habitat:
- Deep Pool
- High-Gradient
- Moderate Gradient
- Low-Gradient
- Habitat Not Completed

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Rock
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Wetland

Figure A.2.1: Chain Lake Habitat Features

minnow environmental inc.



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Creation Date: January 2017
Project No.: 167202.0065

Sample Location:
- 2016 Seine Net, Minnow Trap
- 2016 Gill Net
- Water Quality Station

Other Features:
- Water Flow Direction

Figure A.2.2: Chain Lake Sampling Locations

A.2.2 Fish Community Composition

Four species were captured in Chain Lake during the July 2016 field survey (Table A.2.1, Figure A.2.2 and Table D.1 to D.3). The large-bodied fish community included moderate numbers of yellow perch (*Perca flavescens*), northern pike (*Esox lucius*), and white sucker (*Catostomus commersonii*; Table A.2.1). The small-bodied fish community was represented by Iowa darter (*Etheostoma exile*; Table A.2.1). No endangered, threatened, or special concern fish species (COSEWIC 2016) were observed in Chain Lake during the July 2016 field survey.

A.2.3 Fish Habitat Evaluation

Good spawning and rearing habitat for northern pike was found in Chain Lake through the overhanging shoreline vegetation and presence of sedges (Table A.1 and Figure A.2.1). The overhanging vegetation along the shoreline of Chain Lake, combined with the open areas provides good spawning, rearing, and foraging habitat for yellow perch (Table A.1 and Figure A.2.1). Good to excellent rearing and foraging for juvenile and adult white sucker can be found through the large areas of shallow silty bottom within Chain Lake (Table A.1 and Figure A.2.1). Limited spawning habitat is available for white sucker within the lake, represented by hard sand-bottom and rocky shorelines (Table A.1). As a result, it is likely that the white sucker from Chain Lake spawn somewhere upstream within the Mollie River. Only Iowa darters were captured in Chain Lake, which is likely reflective of the fishing gear employed, time of sampling, and/or sampling locations used (Table A.2.1 and Figure A.2.2). Spawning habitat is provided for this species by overhanging vegetation, woody debris, or floating vegetation (Table A.1 and Figure A.2.1). Rearing and foraging habitat is found in shallow areas with mud to sand bottom, organic debris, and rooted vegetation (Table A.1 and Figure A.2.2).

A.2.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2016. Canadian Wildlife Species at Risk. http://www.registrelep-sararegistry.gc.ca/sar/index/default_e.cfm Accessed November 24, 2016.

Table A.2.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Chain Lake, 2016.

a) Minnow Trapping[a]

Species	Total Caught	CPUE (# of fish/trap*d)
no fish captured	0	0
Total	**0**	**0**

b) Seining

Species	Total Caught	CPUE (# of fish/m^2)
Iowa darter	1	0.01
northern pike	5	0.04
Total	**6**	**0.05**

c) Gill Netting

Species	Total Caught	CPUE (total # of fish/100 m*hr)
northern pike	10	0.93
white sucker	10	0.93
yellow perch	15	1.40
Total	**35**	**3.26**

[a] Minnow trapping was conducted in Chain Lake, but no fish were caught after 9 trap hours.

A.3 CHESTER LAKE (UPPER SECTION)

Chester Lake is located within the Mollie River watershed approximately 1 km south of the proposed Côté Gold open pit (Figures A.1 and A.3.1). Chester Lake is characterized by two long basins: one long narrow crescent moon shape, with three small first order streams discharging to it and one very small island (eastern arm), and another long narrow basin running north-south with three more first order streams (Figures A.1 and A.3.1). The primary inflow to Chester Lake is via the Mollie River at the north end of the north-south basin (Chester Lake Upper Section; Figure A.3.1). Chester Lake discharges north into the Mollie River (Figure A.1). The total surface area is approximately 148 ha with a maximum depth of approximately 4 m in the crescent shaped basin and 16 m in the north-south basin (Minnow 2014).

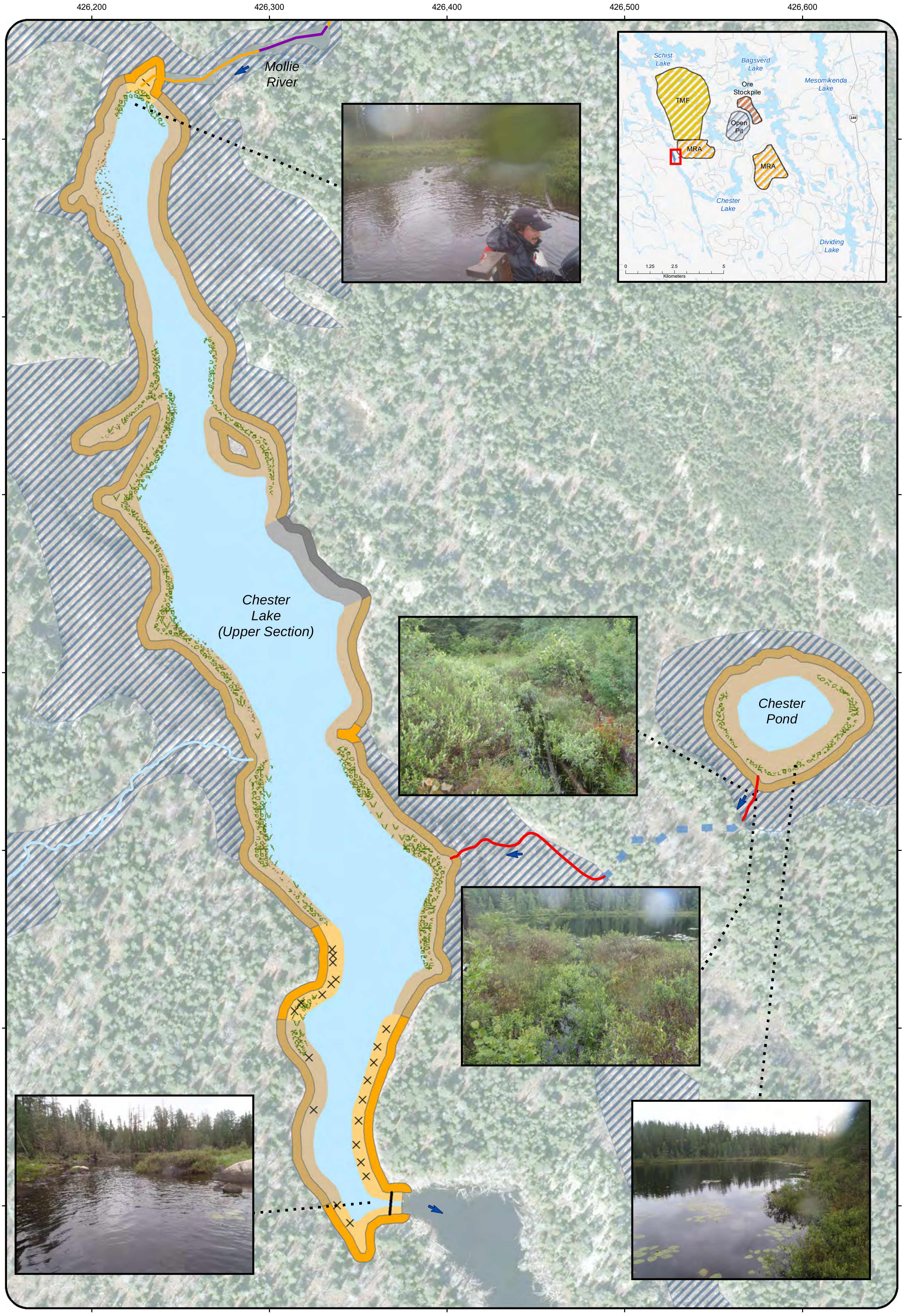
The main body of Chester Lake was described in detail in the Côté Gold Aquatic Baseline (Minnow 2014). Updates to the description of physical habitat of the upper sections of Chester, unnamed inlet to Chester Lake and Chester Pond is based on a field survey completed during the summer of 2016. With the construction of the Tailings Management Facility (TMA) and the Mine Rock Area (MRA; Figure A.1), these waterbodies may be influenced by the drainage/seepage from the constructed TMA and MRA.

A.3.1 Chester Lake (Upper Section)

A.3.1.1 Habitat Description

The upper section of Chester Lake is a small portion of the north-south running basin. Only surface *in situ* water quality measurements were taken during the 2016 baseline work. Similar to the rest of Chester Lake, the water was stained brown. Surface waters were oxygenated (5.5 mg/L) with a specific conductivity of 98 µS/cm and pH was neutral (6.68; Appendix Table C.3).

Similar to the rest of Chester Lake, the upper section is characterized by littoral substrate that generally consists of sandy silt with high organic content. Near the shoreline, cobble and boulder may extend approximately 1 m off shore before transitioning to silt substrate (Figures A.3.1 and A.3.2). The substrate in the southern section is predominately boulders and cobble embedded in sandy silt. Very little bedrock was observed along the shoreline and limited to one small section on the north east shore (Figure A.3.1). Macrophytes are found throughout the waterbody and are highly concentrated near the shoreline (Figure A.3.1). Yellow and white pond lilies (*Nuphar variegatum* and *Nymphaea odorata*) were observed along with burreed (*Sparganium* sp.), pondweed (*Potamogeton sp.*), and bulrush (*Scirpus* sp.).



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Map Projection: UTM Zone 17 NAD 1983
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Creation Date: January 2017
Project No.: 167202.0065

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

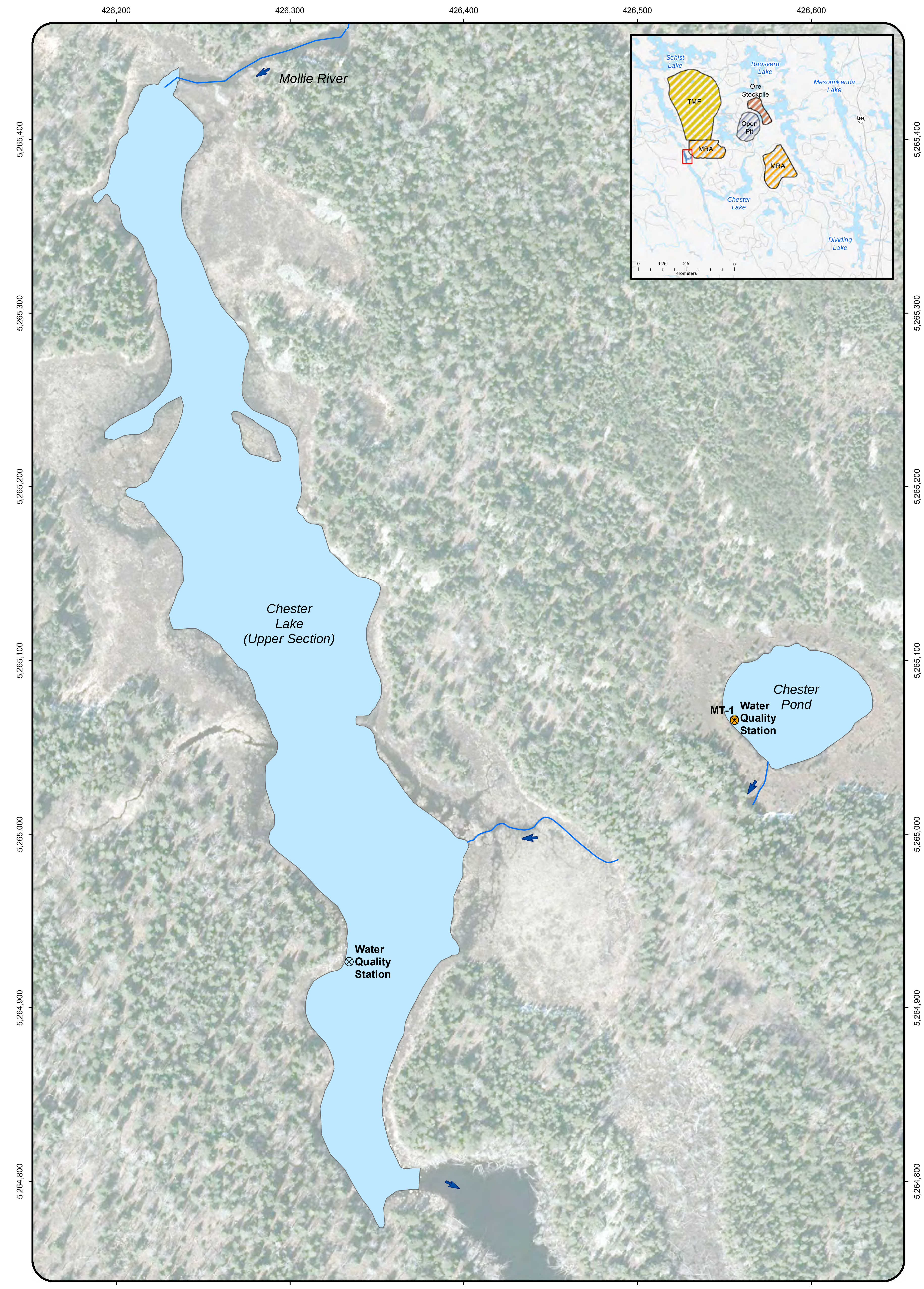
Littoral Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

River Habitat:
- Pool
- High-Gradient
- Moderate-Gradient
- Low-Gradient
- Intermittent Low-Gradient Channel
- Habitat Not Completed
- Channel Not Present

Habitat Features:
- Beaver Lodge
- Rock
- Beaver Dam
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Wetland

Figure A.3.1: Chester Lake (Upper Section) and Chester Pond Habitat Features

minnow environmental inc.



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Creation Date: January 2017
Project No.: 167202.0065

Sampling Location:

- 2016 Minnow Trap
- Water Quality Station

Other Features:

- Water Flow Direction

Figure A.3.2: Chester Lake (Upper Section) and Chester Pond Sampling Locations

The forest along the shoreline was comprised primarily of black spruce (*Picea mariana*) and jack pine (*Pinus banksiana*), with few eastern larch (*Larix laricina*), and eastern white cedar (*Thuja occidentalis*; Figure A.3.1). Leatherleaf (*Chamaedaphne calyculata*) commonly overhangs the shoreline, in addition to other common understory species such as sedges (*Carex* sp.), sweet gale (*Myrica gale*), bog laurel (*Kalmia polifolia*), and speckled alder (*Alnus incana*). The upper section of Chester Lake contains extensive wetland areas. A small area is primarily confined to the north end of the lake around the inlet from the Mollie River. Another larger section is found along the western shoreline and a smaller area is located on the eastern shoreline.

A.3.1.2 Fish Habitat Evaluation

Previous work identified nine fish species inhabiting Chester Lake. The large-bodied fish community included moderate to high numbers of lake whitefish (*Coregonus clupeaformis*), northern pike (*Esox lucius*), white sucker (*Catostomus commersonii*), and yellow perch (*Perca flavescens*), and the small-bodied fish community was represented by relatively low abundances of spottail shiner (*Notropis hudsonius*), blacknose shiner (*Notropis heterolepis*), golden shiner (*Notemigonus crysoleucas*), trout-perch (*Percopsis omiscomaycus*), and Iowa darter (*Etheostoma exile*; Minnow 2014). No COSEWIC (2016) listed endangered, threatened, or special concern fish species were observed in Chester Lake during the June 2013 field survey.

Moderate to good foraging habitat for lake whitefish was found in the upper section of Chester Lake through the sandy-silt substrate (Table A.1). Optimal spawning habitat for lake whitefish occurs over hard or stoney bottom but can occur over sand. Thus, spawning could potentially occur off some of the cobble shoreline in the upper section of Chester Lake (Table A.1 and Figure A.3.1). Good to excellent spawning and rearing habitat for northern pike was found in the upper section of Chester Lake, especially around the wetland areas where more macrophytes were found (Table A.1 and Figure A.3.1). The vegetation and woody debris found along the shoreline of upper Chester Lake, combined with the open areas, provide excellent spawning, rearing, and foraging habitat for yellow perch (Table A.1 and Figure A.3.1). White sucker spawning within this section of Chester is limited to the lake margins; however, spawning habitat exists further upstream in the Mollie River (Table A.1 and Figure A.3.1). Good to excellent rearing and foraging for juvenile and adult white sucker can be found through the aquatic vegetation, shoreline woody debris, and the areas of shallow sand-silt bottom (Table A.1 and Figure A.3.1).

The mixture of habitat provides excellent spawning and rearing/foraging habitat for spottail and blacknose shiner. Good habitat was also provided for golden shiner spawning and rearing/foraging in areas where macrophytes were more abundant (Figure A.3.1). The overhanging vegetation, woody debris, and vegetation would provide excellent habitat for Iowa darter spawning, as well as excellent rearing and foraging habitat through the shallow littoral areas with sand-silt bottom (Table A.1). Moderate trout-perch spawning habitat was found along the rocky shoreline around the lake, with moderate foraging and rearing habitat also present (Table A.1 and Figure A.3.1).

A.3.2 Chester Pond

A.3.2.1 Habitat Description

Chester Pond is a small isolated pond to the east of upper Chester Lake with a surface area of 0.4 ha. It was estimated to have minimal depth greater than 2 m. No obvious inlets were observed, with one small outlet on the south shoreline. Surface waters were oxygenated (5.42 mg/L) with a specific conductivity of 82 µS/cm and pH was neutral (6.82; Table C.3 and Figure A.3.2).

Substrate in the shallow littoral areas was homogenous and comprised entirely of organic material, which extended throughout the basin (Figure A.3.1). Similarly, the shoreline, consisted entirely of organics (Figures A.3.1). Macrophytes lined the shoreline and generally consisted of yellow and white pond lilies, along with milfoil (*Myriophyllum* sp.), and burreed (Figure A.3.1). Leatherleaf and sedges commonly overhang the shoreline, in addition to other common understory species such as sweet gale, bog laurel, trumpet pitchers (*Sarracenia* sp.), and speckled alder. The treed area comprised of jack pine, black spruce, and fewer eastern white cedar, scattered white birch (*Betula papyrifera*) and trembling aspen (*Populus tremuloides*).

A.3.2.2 Fish Community Composition

Two minnow traps were set for a limited amount of time and no fish were captured (Table A.3.1), nor were any signs of fish observed during the reconnaissance survey. It is probable that no fish are present within this small waterbody due to the lack of connectivity to Chester Lake (see Section A.3.3) and limited overwintering habitat.

A.3.2.3 Fish Habitat Evaluation

If small-bodied forage species were present, moderate spawning, rearing and foraging habitat exists for fish that would require macrophytes, overhanging vegetation and woody debris with fine sediment substrates. Limited overwintering habitat is present.

Table A.3.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Chester Pond, 2016.

a) Minnow Trapping[a]

Species	Total Caught	CPUE (# of fish/trap*d)
no fish captured	0	0
Total	**0**	**0**

[a] Minnow trapping was conducted in Chester Pond, but no fish were caught after 2 trap hours.

A.3.3 Unnamed Inlet to Chester Lake

A.3.3.1 Habitat Description

The habitat of this stream was surveyed in its entirety (approximately 220 m) in the summer of 2016. The unnamed inlet from Chester Pond flows west to Chester Lake (Figure A.3.1). At the outlet of Chester Pond, the channel flows for approximately 15 m before moving subsurface (Figure A.3.1). The stream wetted width was less than 1 m and water depth less than 0.5 m. Bottom substrate was completely composed of fines and organics. Subsurface/seepage flow moved west through a forest dominated by black spruce and alder mix into the open wetland area adjacent to upper Chester Lake. The remaining 50 m of stream prior to flowing into Chester Lake (upper section) had a defined channel with wetted widths of 0.5 to 2 m and water depths of 0.3 to 0.5 m. Bottom substrates were completely composed of fines and organics. Stream banks were lined with overhanging leather leaf, in addition to other common understory species such as sedges, sweet gale, and bog laurel.

A.3.3.2 Fish Habitat Evaluation

No fishing was conducted within unnamed inlet to Chester Lake. It was assumed that similar species would inhabit the first 50 m of the channel as were found within Chester Lake. Limited large-bodied fish habitat exists due to the lack of water depth. Marginal habitat does exist for small-bodied species or juvenile northern pike or yellow perch.

A.3.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2016. Canadian Wildlife Species at Risk. http://www.registrelep-sararegistry.gc.ca/sar/index/default_e.cfm Accessed November 24, 2016.

Minnow 2014. Côté Gold Aquatic Baseline Report. Report Prepared for IAM GOLD Corporation. Prepared by Minnow Environmental Inc. March 2014.

A.4 DIVIDING LAKE

Dividing Lake is located within the Mollie River watershed approximately 7.5 km south-west of the proposed Côté Gold open pit (Figure A.4.1). The lake has a surface area of approximately 127.7 ha with a maximum depth of 43 m (Figure A.1). The primary inflow to Dividing Lake is the Mollie River from the west and discharge from the lake is to the east via the Mollie River (Figure A.1).

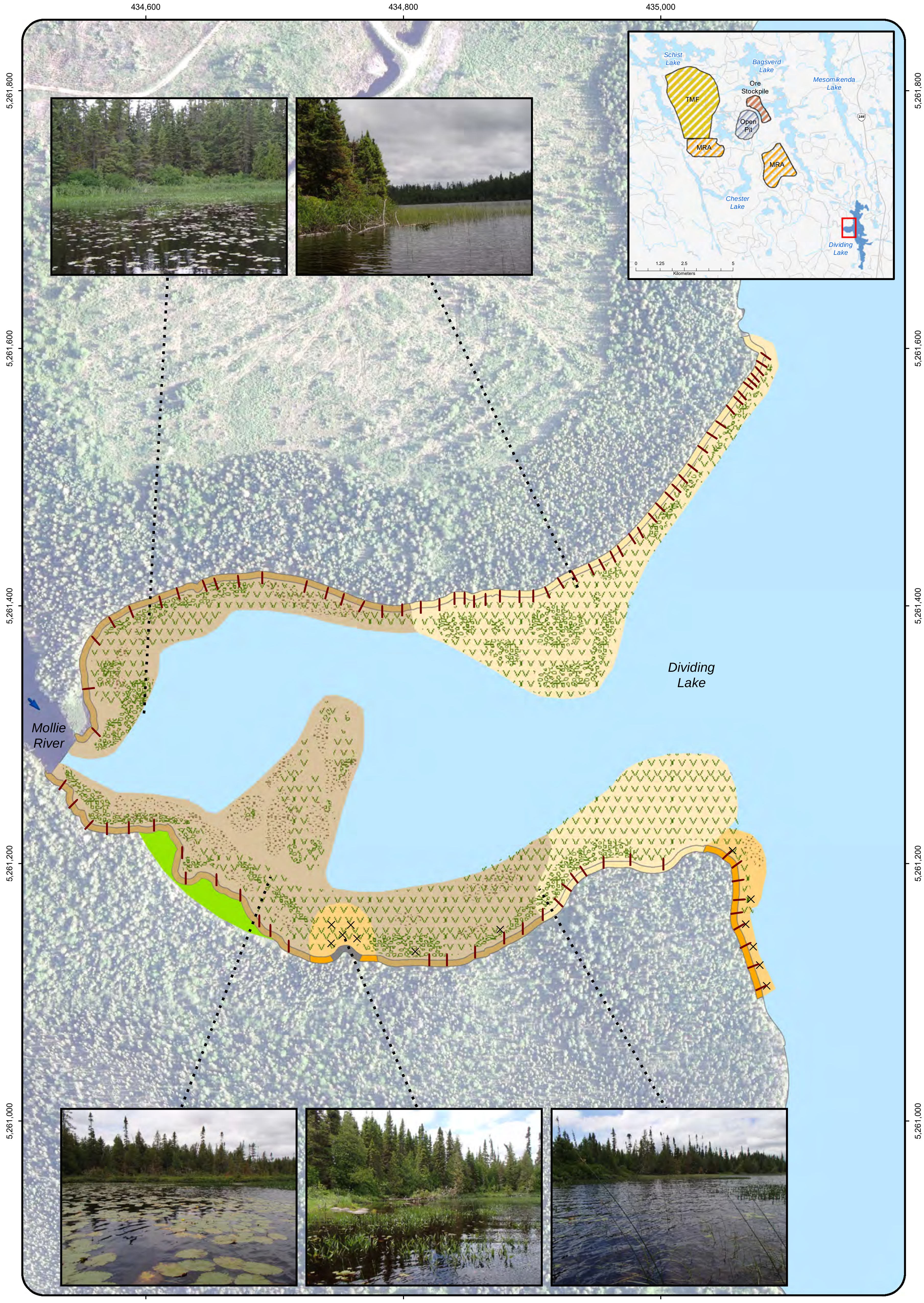
Water quality within Dividing Lake may be influenced by discharge from the Côté Gold operations as a far-field receiver. Therefore, only the inlet area from the Mollie River was assessed (Figure A.4.1). The assessment of habitat and fish community for the inlet area is based on a field survey conducted in July 2016.

A.4.1 Habitat Description

The inlet area of Dividing Lake has a maximum depth of approximately 2.1 m (Figures A.1 and A.4.2). Thermal stratification was apparent in the adjacent basin (25 m depth) with the hypolimnion present between 3 and 4 m (Figure A.4.2 and Table C.4). Water was well oxygenated within the inlet area, and met Provincial Water Quality Objectives up to depths of 20 m within the adjacent basin immediately downstream of the inlet (Table C.4 and Figure C.1c). Water pH was relatively neutral (6.9-7.3; Table C.4) and specific conductance ranged from 40 to 102 µS/cm (Table C.4). Water was stained and clarity was moderate with a Secchi depth of 1.86 m (Table C.4).

Within the area surveyed, the near shoreline substrate consists of predominantly organics near the inlet (Figure A.4.1). With distance from the Mollie River, substrates changed to sand with some cobble (Figure A.4.1). Aquatic vegetation included very dense floating and submergent macrophyte growth of white pond lily (*Nymphaea odorata*), water shield (*Brasenia schreberi*), yellow pond lily (*Nuphar variegatum*), mermaid's hair (*Scirpus subterminalis*), burreed (*Sparganium* sp.), and large-leaved pondweed (*Potamogeton amplifolius*; Figure A.3.1) along the north and south shorelines of the inlet (Figure A.4.1). In addition, a relatively large bed extended out into the inlet from the south shore (Figure A.4.1).

The shoreline followed the same pattern as the near shoreline substrates, with organics transitioning to sand and cobble with distance from the Mollie River (Figure A.4.1). Shoreline areas are generally forested, with predominantly eastern white cedar (*Thuja occidentalis*) and black spruce (*Picea mariana*) and few tamarack (*Larix laricina)* and jack pine (*Pinus banksiana*); Figure A.4.1). Leatherleaf (*Chamaedaphne calyculata*) commonly overhangs the shoreline, in addition to other common understory species such as sedges (*Carex* sp.), sweet gale (*Myrica*



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Creation Date: January 2017
Project No.: 167202.0065

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Littoral Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Logs
- Rock
- Water Flow Direction
- Floating Fen
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation

Figure A.4.1: Dividing Lake Habitat Features

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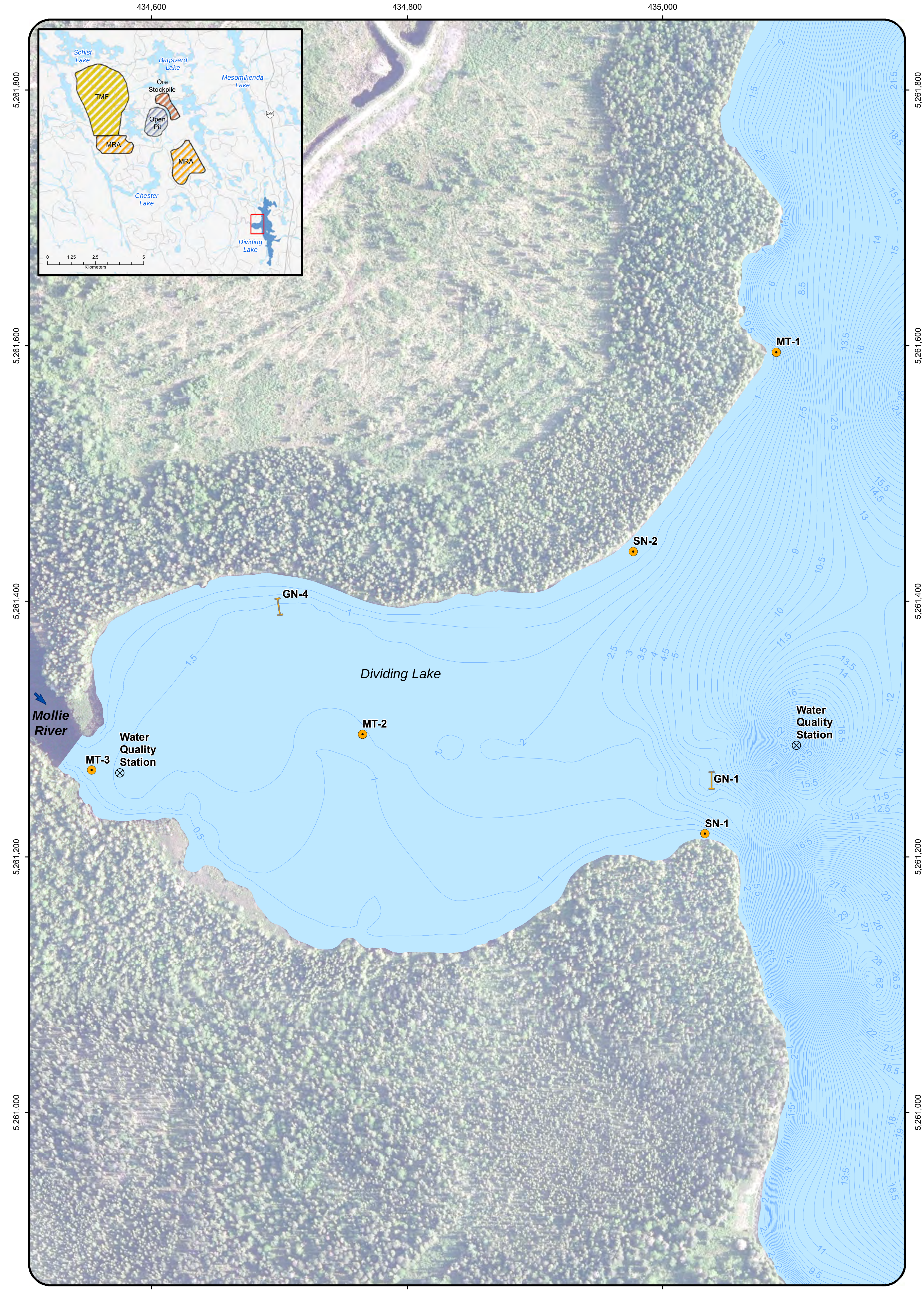

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Creation Date: January 2017
Project No.: 167202.0065

Sampling Location:
- 2016 Seine Net, Minnow Trap
- 2016 Gill Net
- Water Quality Station

Other Features:
- Bathymetry (.5 m interval)
- Water Flow Direction

Figure A.4.2: Dividing Lake Bathymetry and Sampling Locations

minnow environmental Inc.

gale), bog laurel (*Kalmia polifolia*), and speckled alder (*Alnus incana*). A small floating fen is located along the southern shoreline (Figure A.4.1). No other wetland area is present within inlet area of Dividing Lake.

A.4.2 Fish Community Composition

The Dividing Lake inlet area fish community consisted of five large-bodied fish species captured during the summer survey (Table A.4.1, Figure A.4.2 and Table D.1 to D.3). The large-bodied fish community included moderate numbers of walleye (*Sander vitreus*), white sucker (*Catostomus commersonii*), northern pike (*Esox lucius*), and yellow perch (*Perca flavescens*), and lower abundance of lake whitefish (*Coregonus clupeaformis*; Table A.4.1). No small bodied fish species were caught in the inlet area during the survey, however it is likely that they are present. No endangered, threatened, or special concern fish species (COSEWIC 2016) were observed in Dividing Lake during the July 2016 field survey.

A.4.3 Fish Habitat Evaluation

Excellent spawning and rearing habitat for northern pike was found in the inlet area of Dividing Lake as a result of the abundance of moderately to very dense aquatic macrophyte beds (Table A.1 and Figure A.4.1). The extensive floating macrophyte bed and moderately dense submergent vegetation, combined with deeper water near the middle of the arm, also provide good foraging/cover habitat for adult northern pike. The dense to moderately dense aquatic vegetation and woody debris found throughout the inlet area, combined with open areas, provide excellent spawning, rearing and foraging habitat for yellow perch (Table A.1 and Figure A.4.1). Although no gravel habitat suitable for white sucker and walleye spawning was observed within in the inlet area, suitable spawning habitat is available upstream in the Mollie River (see Section A.5). The combination of relatively dense mixed aquatic vegetation, shoreline woody debris, large areas of shallow mud bottom along the north and south shoreline of the inlet arm, provides good to excellent rearing and/or foraging/cover habitat for white sucker and walleye. No suitable spawning habitat for lake whitefish was observed in the inlet area, but the the deeper sand-bottom areas provide marginal to good foraging habitat for juvenile and adult lake whitefish when waters are colder (Table A.1).

A.4.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2016. Canadian Wildlife Species at Risk. http://www.registrelep-sararegistry.gc.ca/sar/index/default_e.cfm Accessed November 24, 2016.

Table A.4.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Dividing Lake, 2016.

a) Minnow Trapping[a]

Species	Total Caught	CPUE (# of fish/trap*d)
no fish captured	0	0
Total	**0**	**0**

b) Seining

Species	Total Caught	CPUE (# of fish/m^2)
northern pike	1	0.001
northern pike (YOY)[b]	1	0.001
white sucker	143	0.14
yellow perch	31	0.03
Total	**176**	**0.17**

c) Gill Netting

Species	Total Caught	CPUE (total # of fish/100 m*hr)
lake whitefish	2	0.09
northern pike	8	0.37
walleye	14	0.65
white sucker	11	0.51
yellow perch	8	0.37
Total	**43**	**1.99**

[a] Minnow trapping was conducted in Dividing Lake, but no fish were caught after 67.7 trap hours.

[b] Fish were classified as adults unless otherwise specified in the field to be young-of-the-year (YOY).

A.5 MOLLIE RIVER

Several sections of the Mollie River were assessed from the outlet of Moore Lake downstream to the confluence with Dividing Lake (Figure A.1). The upper sections of the Mollie River connect Moore Lake to Chester Lake by means of three different reaches (Figures A.5.1 and A.5.2). This upper section of the Mollie River is approximately 5 km west of the proposed Côté Gold open pit (Figure A.1). Another downstream section of the Mollie River was evaluated downstream of Lower Three Duck Lake (Figures A.5.3 to A.5.5). This 4 km long reach of the Mollie River flows south to Dividing Lake (Figure A.5.3) and is approximately 4.6 km southeast of the proposed open pit (Figure A.1). In addition, Lower Three Duck Pond was also assessed within this section as it is defined as part of the Mollie River (Figure A.5.4).

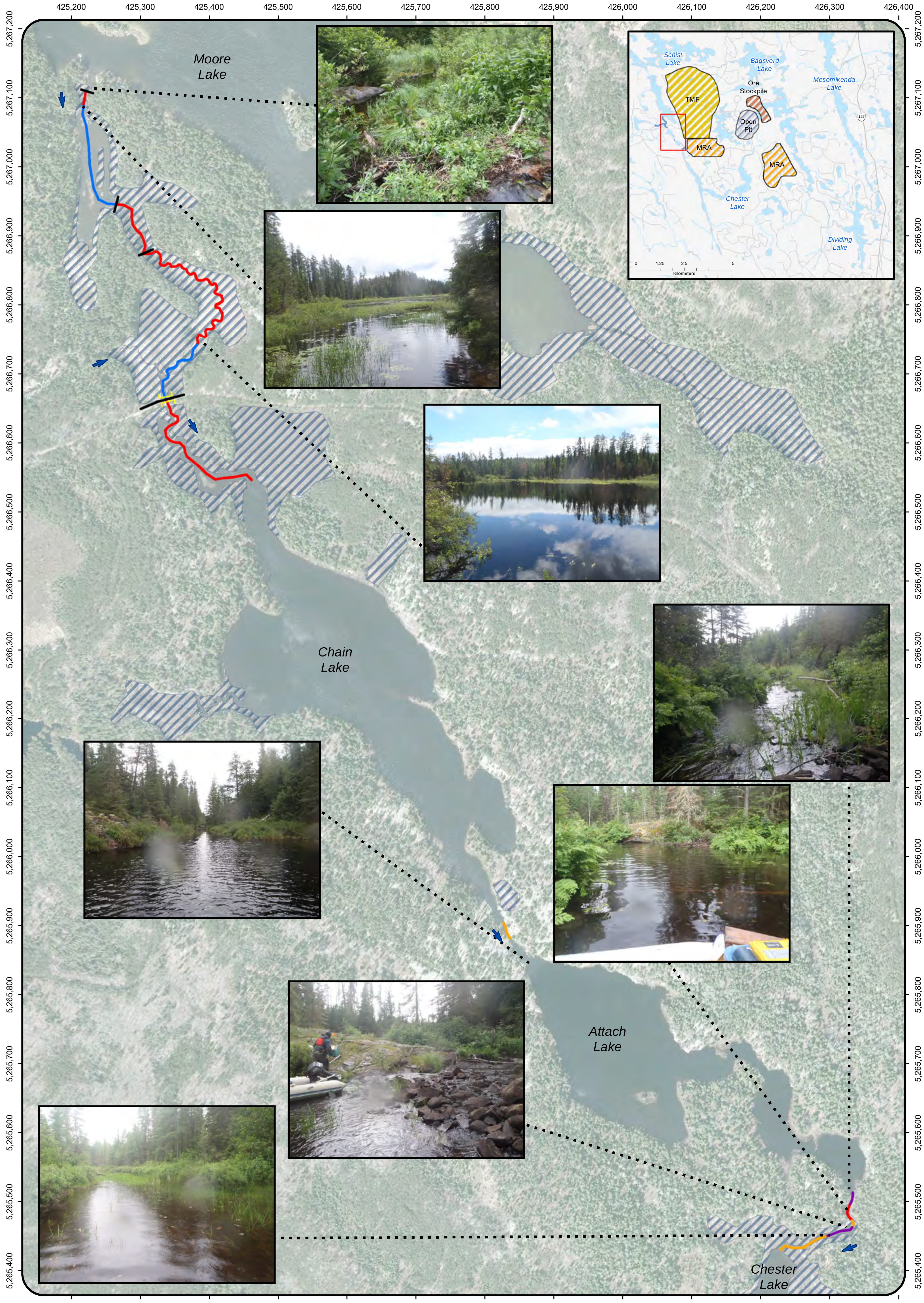
The upper section of Mollie River may be influenced by drainage/seepage from the Tailings Management Facility (TMF) and Mine Rock Area (MRA; Figure A.1). Depending on the effluent discharge location during operations, the downstream sections of Lower Three Duck Pond and the Mollie River may be far-field receivers. The assessment of habitat and fish community for these sections of the Mollie River were conducted during the 2016 field survey.

A.5.1 Habitat Description

Upper Mollie River

Three sections of the upper Mollie River were evaluated; the first 800 m reach connects Moore Lake to Chain Lake, the second 75 m stretch connects Chain Lake and Attach Lake, and the final 250 m reach connects Attach Lake to Upper Chester Lake (Figure A.5.1). The habitat downstream of Moore Lake is primarily represented by low-gradient habitat with deeper pool sections associated with beaver activity (Figure A.5.1). No water quality measurements were taken in this section of the Mollie River during the 2016 field survey.

Substrate was homogenous and was mostly organic silt with large amounts of embedded woody debris found in the shallow areas (Figure A.5.1). Similarly, the shoreline consisted almost entirely of organics, with a small 50 m rocky section connecting Moore Lake with the first beaver pond (Figure A.5.1). The main channel and beaver ponds in this section typically ranged in depth between 1 and 2 m deep, with extensive flooded areas adjacent to the channel (Figure A.5.1). Macrophytes were found in high densities along the entire shoreline and throughout the beaver ponds (Figure A.5.1). The macrophyte community generally consists of yellow and white pond lilies (*Nuphar variegatum* and *Nymphaea odorata*) and Richarson's pondweed (*Potamogeton richardsonii*), along with milfoil (*Myriophyllum* sp.) and burreed (*Sparganium* sp.). Instream vegetation often covered approximately 50% of the channel and throughout the ponded areas.



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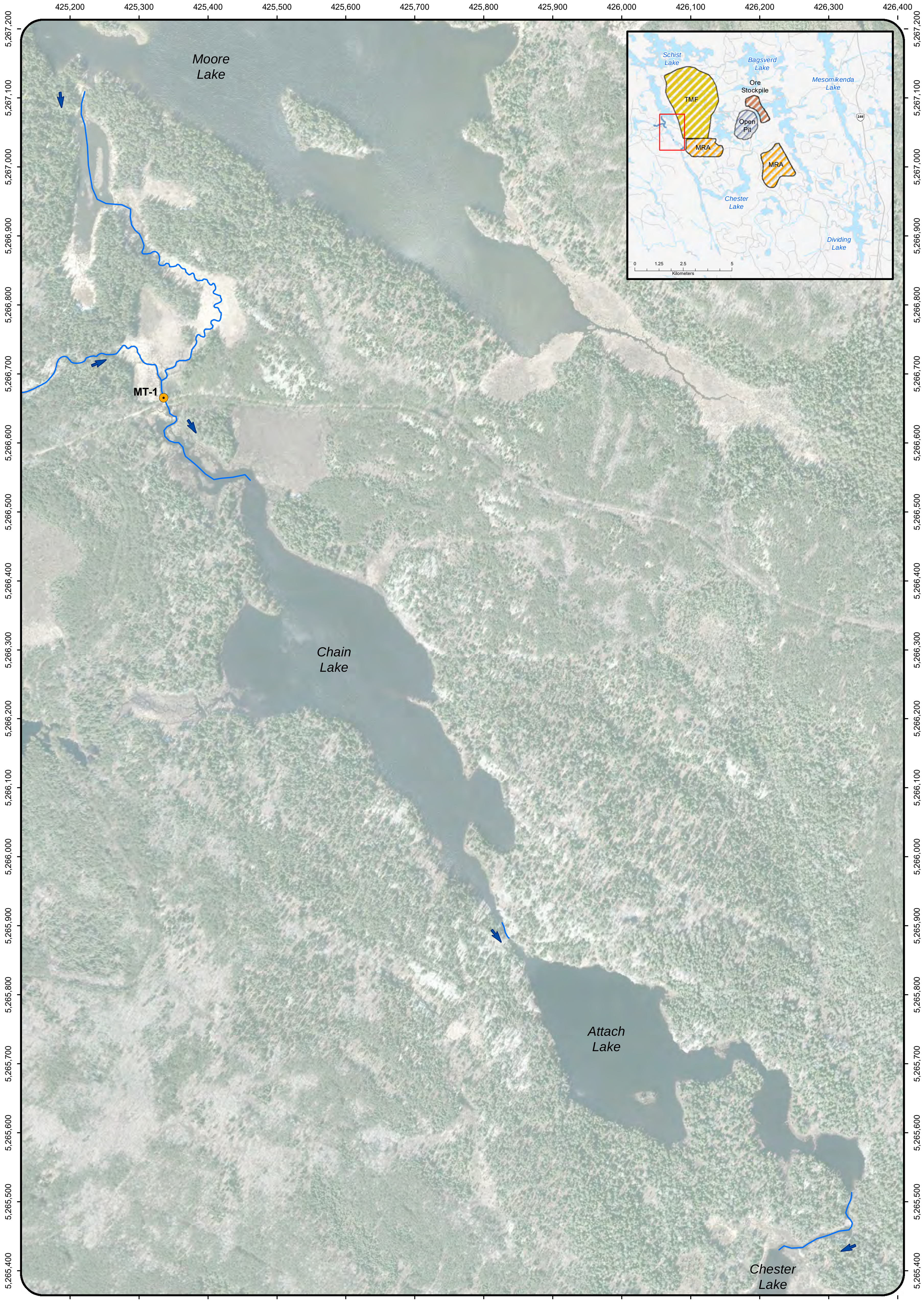
MAP INFORMATION
Map Projection: UTM Zone 17 NAD 1983
Data Source: Reproduced under licence from Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada. All rights reserved.
Creation Date: January 2017
Project No.: 167202.0065

River Habitat:
- Pool
- High-Gradient
- Moderate-Gradient
- Low-Gradient
- Intermittent Low-Gradient Channel
- Habitat Not Present

Habitat Features:
- Beaver Dam
- Culvert
- Water Flow Direction
- Wetland

Figure A.5.1: Mollie River Habitat Features

minnow environmental Inc.



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Map Projection: UTM Zone 17 NAD 1983
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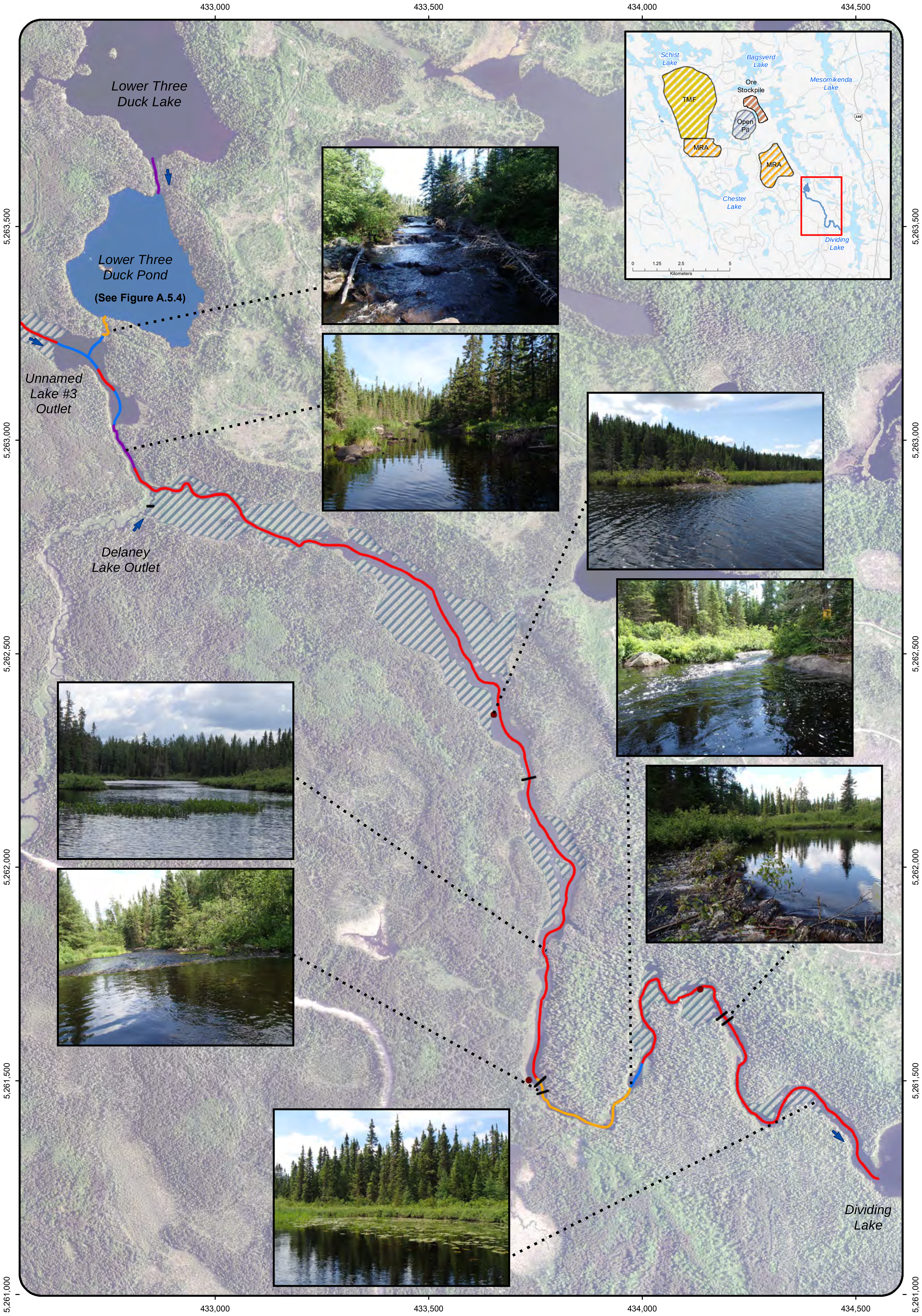
Creation Date: January 2017
Project No.: 167202.0065

Sampling Location:
2016 Minnow Trap

Other Features:
Water Flow Direction

Figure A.5.2: Mollie River Sampling Locations

minnow environmental Inc.



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MAP INFORMATION
Map Projection: UTM Zone 17 NAD 1983
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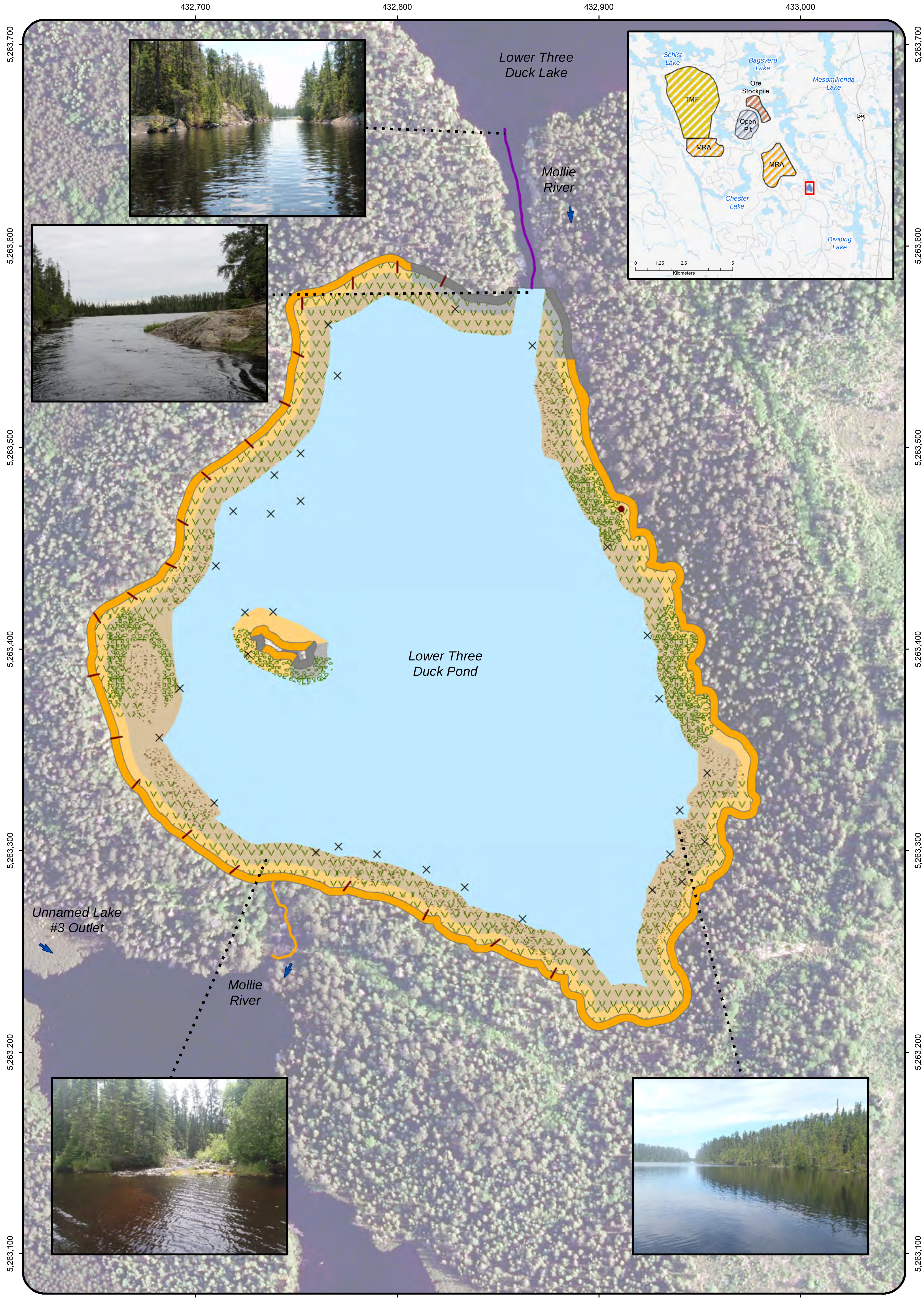
Creation Date: January 2017
Project No.: 167202.0065

River Habitat:
- Pool
- High-Gradient
- Moderate-Gradient
- Low-Gradient

Habitat Features:
- Beaver Lodge
- Beaver Dam
- Water Flow Direction
- Wetland

Figure A.5.3: Mollie River Habitat Features

minnow environmental inc.



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MAP INFORMATION
Map Projection: UTM Zone 17 NAD 1983
Data Source: Reproduced under licence from Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada. All rights reserved.
Creation Date: January 2017
Project No.: 167202.0065

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Littoral Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

River Habitat:
- Pool
- High-Gradient
- Moderate-Gradient
- Low-Gradient

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Rock
- Beaver Dam
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation

Figure A.5.4: Lower Three Duck Pond (Mollie River) Habitat Features

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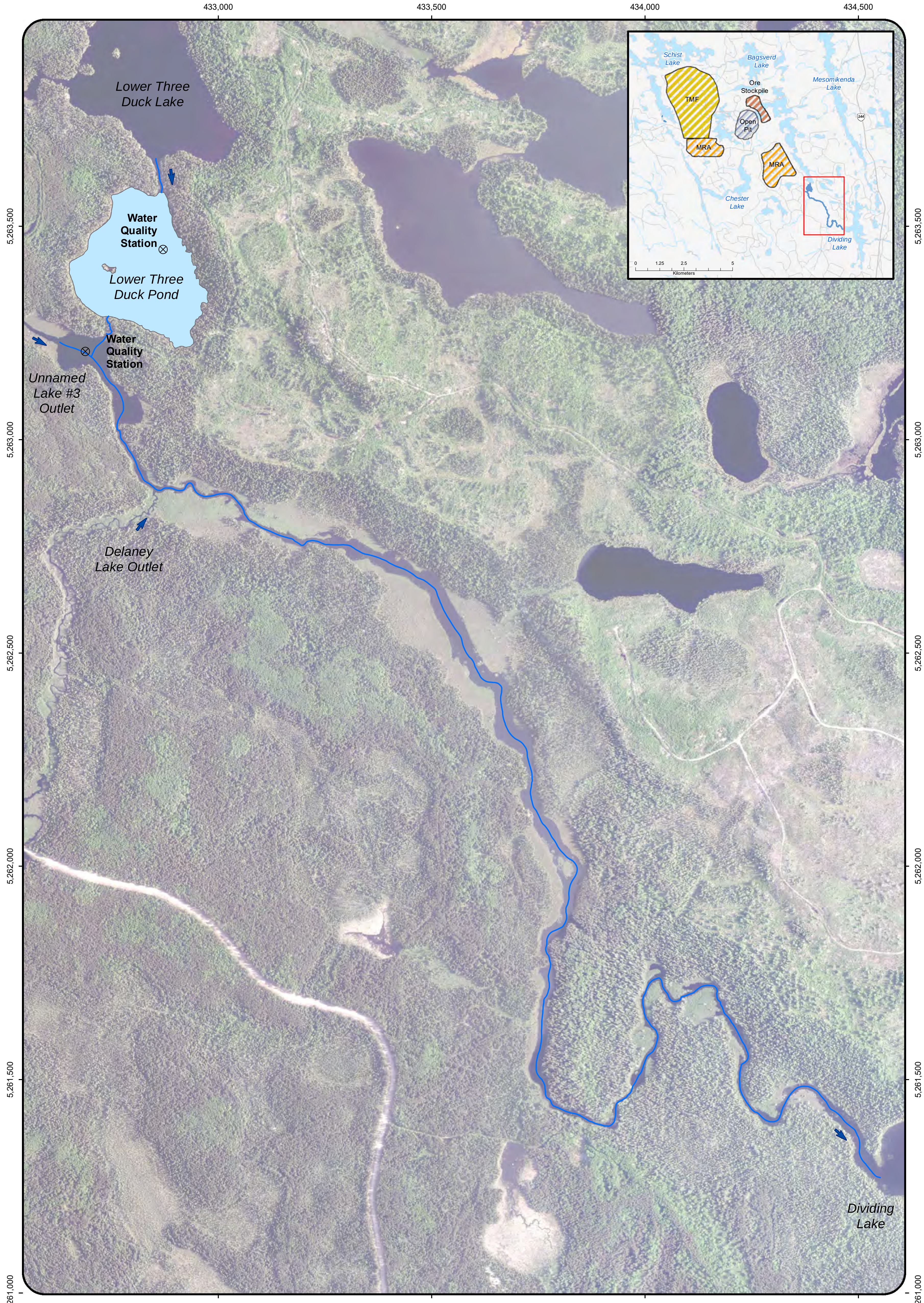

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Creation Date: January 2017
Project No.: 167202.0065

Sample Locations:

⊗ Water Quality Station

Other Features:

Water Flow Direction

Figure A.5.5: Mollie River Sample Locations

Emergent vegetation was found throughout the flooded areas adjacent the stream banks. The low-gradient habitat of the upper section of the Mollie River is generally bordered by extensive wetlands that averaged approximately 30 m wide (ranging from 10 to 50 m), with extensive flooding to the forest line at the time of the survey (Figure A.5.1). The wetland community adjacent to the creek is predominantly sedges (*Carex* sp.), with leatherleaf (*Chamaedaphne calyulata*), sweet gale (*Myrica gale*), and bog laurel (*Kalmia polifolia*) overhanging the channel and speckled alder (*Alnus incana*) comprising the sub-dominant species. Forest next to the low-gradient area wetlands is generally dominated by coniferous species including black spruce (*Picea mariana*) and jack pine (*Pinus banksiana*), with fewer eastern white cedar (*Thuja occidentalis*), white birch (*Betula papyrifera*), eastern larch (*Larix laricinia*), and trembling aspen (*Populus tremuloides*).

The Mollie River flows under the Moore Lake Access Road via several small culverts. The river also flows over a beaver dam built along the north side of the road and flows perpendicularly over the road surface towards Chain Lake.

The 75 m section of Mollie River connecting Chain and Attach Lakes is a bedrock/boulder rapids approximately 3 m wide with an average depth of less than 0.5 m. The larger (250 m) stretch of Mollie River connecting Attach Lake with Chester Lake is characterized by moderate and high-gradient cobble riffles with one small ponded area approximately 40 m long and 10 m wide. The river channel ranges in width from 2 to 10 m with an average depth of less than one meter (Figure A.5.1).

There was a low density of macrophytes found within the higher gradient sections downstream of Chain and Attach lakes. Burreed comprised the majority of vegetation, with pond lilies dominating the slow moving ponded areas. The river banks were treed with a similar assemblage seen around Chain, Attach and Chester lakes, dominated by jack pine, black spruce, cedar, white birch and speckled alder, with a thin riparian strip of leatherleaf and sedges overhanging the shoreline.

Lower Mollie River

The lower reach of Mollie River flows between Lower Three Duck Lake and Dividing Lake (Figure A.5.3). This lower reach is approximately 4 km in length and includes a large (7.3 ha) ponded area (Lower Three Duck Pond; see section below for habitat description), a riverine section that is mainly low-gradient as it meanders through wetland area, and two smaller sections of moderate-gradient and high-gradient habitat. The water flows southeast towards Dividing Lake and passes through five beaver dams and three pooled areas.

Water temperature during the July 2016 field survey was warm throughout the water column (21.4 to 16.7 °C; Table C.5). Water was stained and dissolved oxygen was between 5.7 and 7.8 mg/L. Water pH was slightly acidic to neutral (6.4-7.0; Table C.5) and specific conductance ranged from 36 to 41 µS/cm (Table C.5).

The lower Mollie River begins at the outlet of Lower Three Duck Lake where the river becomes channelized between bedrock on both the east and west shoreline (Figure A.5.3). The moderate-gradient (1.5%) channel is approximately 8 m wide and 1.5 m deep over a distance of 80 m. The river then widens into a ponded area, Lower Three Duck Pond (Figure A.5.4). Near the southwest corner of the pond, the Mollie River returns a defined channel over a high-gradient (>5%) section, 57 m in length. The average wetted width and depth over this section was 4 m and 0.5 m, respectively, as the water cascades over boulder substrate. At the bottom of the cascade, emergent burreed and aquatic sedges were abundant. Downstream of the high-gradient riffle was a pooled area approximately 270 m in length with a maximum depth of 2.6 m and wetted widths ranging from 20 to 113 m. Further downstream, the river became channelized through a moderate-gradient section 112 m long. The wetted width and average depth of the area was 4 m and 1.5 m, respectively. The substrate in this area included large boulders with sand and gravel within the interstitial space.

The remaining 3.7 km of Lower Mollie River was a low-gradient meandering channel with widths between 5 and 10 m and depths ranging from 1 to 3 m (Figure A.5.3). Substrate in this slow flowing section is a silty organic muck with large amounts of embedded woody debris. The dominant macrophytes are pond lilies, pickerelweed (*Pontederia cordata*), burreed, milfoil, and pond weed, which are found sporadically throughout the whole reach. The banks are lined with overhanging leatherleaf, sedges, alder, sweet gale, and other understory plants (Figure A.5.3). The wetland community adjacent to the river is predominantly sedges, with leatherleaf, sweet gale, meadowsweet *(Spiraea alba*), and bog laurel overhanging the channel and speckled alder comprising the sub-dominant species. There is one section of high-gradient stream (3%) within the low-gradient meandering channel that is 333 m in length (Figure A.5.3). The substrate transitions to a cobble-boulder mix and river depths were between 0.3 m and 0.8 m, with wetted widths ranging from 2 to 7 m. The high-gradient reach ends with the stream flow restricted through a bedrock chute emptying in a 63 m long pool that was 1.3 m deep and 25 m wide. The river then returns to low-gradient meandering habitat for the remaining distance to Dividing Lake. The surrounding forest throughout the entire length of the river was consistent, dominated by coniferous species including black spruce and jack pine, with fewer eastern white cedar, white birch, eastern larch and trembling aspen (Figure A.5.3).

Lower Three Duck Pond

The Lower Three Duck Pond has a surface area of approximately 7.3 ha with a maximum depth of 5.1 m and contains one island near the western shore. Surface water was warm and temperature dropped incrementally to the bottom with no discernable stratification (Table C.5 and Figure C.1d). Dissolved oxygen was poor and hypoxic conditions were present below 3 m water depth (Table C.5 and Figure C.1d). Surface specific conductivity and water pH were 84 µS/cm and 7.13, respectively; and measurements changed little with depth (Appendix Table C.5). Lower Three Duck Pond water was stained yellow-brown and had a Secchi depth of 1.4 m, indicating that the euphotic zone is approximately 2.8 m (Appendix Table C.5).

Substrate in the littoral areas was homogenous and comprised of dense cobble and boulder embedded into sandy silt that extends up to approximately 3 m from the shoreline where it transitioned into sandy silt (Figure A.5.4). Similarly the shoreline, consisted almost entirely of cobble sections, with a small section of bedrock at the inlet (Figure A.5.4). Macrophytes were found in low densities around the shoreline with a few larger macrophyte beds located on the east and western shorelines (Figure A.5.4). The macrophyte community generally consisted of yellow and white pond lilies, Richarson's pondweed, milfoil, and burreed. The forest around the pond is bordered with jack pine and black spruce, and fewer eastern white cedar, white birch, eastern larch, and trembling aspen. Leatherleaf, sweet gale, and bog laurel commonly overhang the shoreline along with sedges, and fewer speckled alder in a narrow perimeter band. There were no wetland areas observed around the perimeter of Lower Three Duck Pond (Figure A.5.4).

A.5.2 Fish Community Composition

Upper Mollie River

The fish community of the upper reaches of the Mollie River would reflect the four different lakes that the river connects; Moore Lake, Chain Lake, Attach Lake and Chester Lake. During the 2016 field survey large densities of forage fish were observed within the ponded areas, as well as several northern pike (*Esox lucius*). One juvenile northern pike was caught near the Moore Lake Access Road (Table A.5.1 and Figure A.5.5). Forage fish in this reach would likely comprised of golden shiner (*Notemigonus crysoleucas*), finescale dace (*Chrosomus neogaeus*), and Iowa Darter (*Etheostoma exile*), whereas the large bodied fish community would be made up of northern pike, yellow perch (*Perca flavescens*), and white sucker (*Catostomus commersonii*) as these fish are found in the lakes within the vicinity of the upper reaches of Mollie River.

Table A.5.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Mollie River, 2016.

a) Minnow Trapping

Area	Species	Total Caught	CPUE (# of fish/trap*d)
Mollie River (Upstream of Chain Lake)	northern pike	1	1.41
	Total	**1**	**1.41**

b) Seining

Area	Species	Total Caught	CPUE (# of fish/m^2)
Mollie River (Downstream of Lower Three Duck Pond)	northern pike	3	0.03
	yellow perch	3	0.03
	Total	**6**	**0.06**

Lower Mollie River

During the 2016 field survey a total of two species were caught within the Lower Mollie River; northern pike and yellow perch (Table A.5.1). Despite the low diversity of catch, the fish community of the Lower Mollie River is likely similar to other areas on the Mollie River and Dividing and Lower Three Duck lakes, which include walleye (*Sander vitreus*) and white sucker (*Catostomus commersonii*) for large-bodied fish, and blacknose shiner (*Notropis heterolepis*), golden shiner, Iowa darter, and slimy sculpin (*Cottus cognatus)* as the resident forage fish (Minnow 2014).

Lower Three Duck Pond

The fish community of Lower Three Duck Pond was not assessed in 2016, however Lower Three Duck Pond is fully connected to Lower Three Duck Lake and it is assumed to have a similar fish community. The large-bodied fish community in Lower Three Duck Lake include northern pike, white sucker, walleye, lake whitefish, and yellow perch (Minnow 2014). The small-bodied fish community was dominated by blacknose shiner, with few Iowa darter, and slimy sculpin observed (Minnow 2014).

No COSEWIC (2016) listed endangered, threatened, or special concern fish species were observed in areas that were fished during the June 2016 field survey.

A.5.3 Fish Habitat Evaluation

Upper Mollie River

Wetlands located along the margins of the Mollie River provide excellent spawning habitat for northern pike, whereas dense macrophyte coverage and abundant overhanging vegetation along the main channel provides excellent rearing habitat (Table A.1). Although the main channel of the Mollie River also contains features suitable for foraging by small adults, the overall quality of this habitat ranges from marginal to good for large adult northern pike as a result of water temperatures likely exceeding thermal preferences during the summer months. Abundant submerged aquatic vegetation and overhanging vegetation throughout this reach of the Mollie River likely provide excellent spawning, juvenile rearing and adult foraging habitat for yellow perch (Table A.1). High gradient areas near the Chain Lake outlet and the section connecting Attach Lake to Chester Lake likely provide marginal to good habitat for white sucker and walleye spawning. Although low-gradient areas that predominate much of the Mollie River in this area provide good rearing and foraging habitat for white sucker, the lack of rocky structure and the shallow nature results in marginal habitat for juvenile and adult walleye (Table A.1).

The Mollie River provides good spawning and rearing/foraging habitat for golden shiner (Table A.1) as a result of a diverse and abundant aquatic plant community. For blacknose shiner, sand substrate suitable for spawning may be found near high gradient areas of the stream, with abundant aquatic vegetation within this reach also providing good rearing and foraging/cover habitat (Table A.1). Extensive wetland areas, overhanging vegetation and dense coverage of rooted macrophytes provide good spawning, rearing and foraging habitat for Iowa darter throughout the Mollie River (Table A.1).

Lower Mollie River

Large sections of wetlands along the margins of the Lower Mollie River provide excellent spawning habitat for northern pike, whereas abundant overhanging vegetation and sporadic but dense macrophyte stands provides excellent rearing habitat (Table A.1). Similar to the Upper Mollie River, the main channel contains features suitable for foraging by small adults, however due to limited depth, water temperatures may exceed the thermal preference of large adults during the warmer summer months. Dense macrophytes and overhanging riparian vegetation throughout the Lower Mollie River likely provide excellent spawning, juvenile rearing and adult foraging habitat for yellow perch (Table A.1). High gradient areas likely provide good to excellent habitat for white sucker and walleye spawning. In addition, the low-gradient areas that predominate much of the Mollie River would provide good rearing and foraging habitat for white sucker; however, the lack of rocky structure and the shallow nature of these areas results in marginal habitat for juvenile and adult walleye (Table A.1).

The Mollie River provides good spawning and rearing/foraging habitat for resident forage fish due to the diversity of substrate, the extensive wetland areas, overhanging vegetation, and dense coverage of rooted macrophytes throughout the Mollie River (Table A.1).

Lower Three Duck Pond

Moderate spawning and rearing habitat for northern pike was found in Lower Three Duck Pond, associated with overhanging shoreline vegetation and several large macrophyte beds (Table A.1 and Figure A.5.4). The overhanging vegetation along the shoreline combined with the open areas provide good spawning, rearing, and foraging habitat for yellow perch (Table A.1 and Figure A.5.4). Walleye and white sucker spawning within Lower Three Duck Pond is limited to the rocky points around the waterbody and the rocky inlet which receives moderate flow from Lower Three Duck Lake (Table A.1 and Figure A.5.4). Good rearing and foraging/cover for these species is found through the combination of rocky habitat, submergent vegetation, and open-water areas with silt substrate. Moderate to good spawning and rearing habitat for lake whitefish is available in association with rocky shoals and shoreline substrate. Deeper, cooler areas within Lower

Three Duck Pond is likely limited during the summer months for adult whitefish (Table A.1 and Figure A.5.4).

Excellent spawning habitat is provided for blacknose shiner in the areas with sandy to rocky substrate and good to excellent rearing and foraging habitat is offered by the weedy areas (Table A.1 and Figure A.5.4). Good spawning habitat is provided for Iowa darter by overhanging vegetation, large amounts of woody debris, or floating vegetation (Table A.1 and Figure A.5.4). Rearing and foraging habitat is very limited and only found in the shallow areas with boulder and cobble embedded in sand-silt bottom, organic debris, and rooted vegetation (Table A.1 and Figure A.5.4). Excellent slimy sculpin spawning habitat is provided by the rocky shoreline (Table A.1). Moderate rearing and foraging habitat is provided for this species through the cobble and sand-silt substrate observed around the lake (Table A.1 and Figure A.5.4).

A.5.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed November 2016.

Minnow 2014. Côté Gold Aquatic Baseline Report. Report Prepared for IAM GOLD Corporation. Prepared by Minnow Environmental Inc. March 2014.

A.6 MOORE LAKE

Moore Lake is a headwater lake within the Mollie River watershed and approximately 5 km northwest of the proposed Côté Gold open pit (Figures A.1 and A.6.1). The lake has a surface area of approximately 93 ha with two main basins that reach a maximum depths of approximately 7 (southern basin) and 15 m (northern basin, water quality station), respectively (Figure A.2.2). Moore Lake has a two small first order inlets located along the north-west and south-east shores, and discharges to the Mollie River along the south-west shore (Figure A.6.1). Water flows south from this location to Chain Lake (Figure A.6.1).

Moore Lake and the south-east inlet will potentially be influenced by the drainage/seepage from the proposed Tailings Management Facility (TMA; Figure A.1). The habitat description provided below is based on a field survey conducted in the summer of 2016.

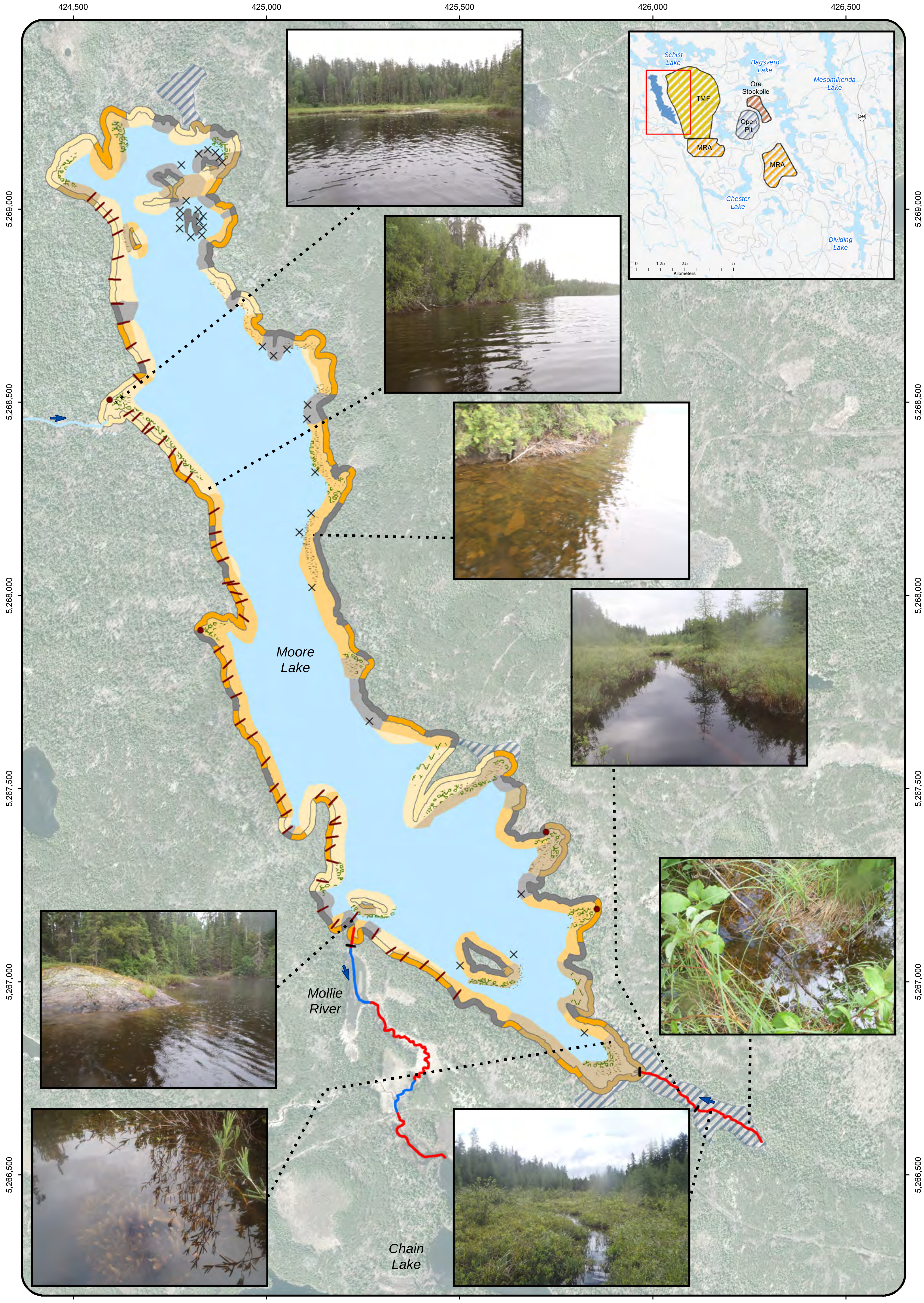
A.6.1 Moore Lake

A.6.1.1 Habitat Description

Moore Lake is a relatively large lake with two general basins; one to the north where the water quality sample was taken and one in the south. Thermal stratification was apparent during the 2016 field survey, with the thermocline present between 3 and 4 m (Table C.6 and Figure C.1f). The water was generally well oxygenated to 6 m, but dissolved oxygen fell below Provincial Water Quality Objectives at depths greater than 6 m, although it never fell to hypoxic levels (Table C.6, Figure C.1f). Surface specific conductivity and water pH were 106 µS/cm and 7.26, respectively (Table C.6). Water colour was stained, however clarity was good with a Secchi depth of 3.7 m (Table C.6).

Substrate in the littoral areas generally consists of sand and cobble sections with several smaller bedrock and organic sections. Shallow littoral substrate generally transitioned to a sandy-silt with depth (approximately 2 to 3 m offshore; Figure A.6.1). Most of the bedrock sections were observed along the eastern side of the lake (Figure A.6.1). The macrophyte community, found in patches along the shoreline, generally consisted yellow and white pond lilies (*Nuphar variegatum* and *Nymphaea odorata*), Richarson's pondweed (*Potamogeton richardsonii*), along with milfoil (*Myriophyllum* sp.), bulrush (*Scirpus* sp.), and burreed (*Sparganium* sp.).

The shoreline consists primarily of cobble/boulder, sand, or bedrock sections, with small organic sections found in the southern parts of the lake near the south-east inlet (Figure A.6.1). Shoreline areas are generally forested with jack pine (*Pinus banksiana*) and black spruce (*Picea mariana*), fewer eastern white cedar (*Thuja occidentalis*), and scattered white birch (*Betula papyrifera*) and



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MAP INFORMATION
Map Projection: UTM Zone 17 NAD 1983
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Creation Date: January 2017
Project No.: 167202.0065

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Littoral Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

River Habitat:
- Pool
- High-Gradient
- Moderate-Gradient
- Low-Gradient
- Intermittent Low-Gradient Channel
- Habitat Not Completed

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Rock
- Beaver Dam
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Wetland

Figure A.6.1: Moore Lake Habitat Features

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trembling aspen (*Populus tremuloides*). Leatherleaf (*Chamaedaphne calyulata*) commonly overhangs the shoreline along with sedges (*Carex* sp.) in addition to other common understory species such as sweet gale (*Myrica gale*), bog laurel (*Kalmia polifolia*), and speckled alder (*Alnus incana*). These species are the dominant species observed in the wetland area that border the south-east inlet (Figure A.6.1).

A.6.1.2 Fish Community Composition

Five species were captured in Moore Lake during the July 2016 field survey (Table A.6.1, Figure A.6.2 and Tables D.1 to D.3). The large-bodied fish community included moderate numbers of yellow perch (*Perca flavescens*) and fewer northern pike (*Esox lucius*; Table A.6.1). Although walleye (*Sander vitreus*) were not captured during the survey, it has been noted that they are present within Moore Lake (R. Hobbs, IAMGOLD, pers. comm. 2016). The small-bodied fish community was represented by golden shiner (*Notemigonus crysoleucas*), finescale dace (*Chrosomus neogaeus*), and Iowa darter (*Etheostoma exile*; Table A.6.1). No endangered, threatened, or special concern fish species (COSEWIC 2016) were observed in Moore Lake during the July 2016 field survey.

A.6.1.3 Fish Habitat Evaluation

Good spawning and rearing habitat for northern pike was found in Moore Lake through the overhanging shoreline vegetation and presence of sedges (Table A.1 and Figure A.6.1). The overhanging vegetation and submergent vegetation along the shoreline combined with the open areas provide good spawning, rearing and foraging habitat for yellow perch (Table A.1 and Figure A.6.1). Walleye spawning habitat within Moore is limited to the shoreline; however riffle habitat exists in the Mollie River downstream of Moore Lake, which would provide spawning habitat for this species (Table A.1 and Section A.5). Good rearing and foraging/cover for these species is found through the combination of rocky habitat, submergent vegetation in small bays, and open water areas (Figure A.1 and Figure A.6.1).

Good to moderate spawning, rearing, and foraging habitat for golden shiner, Iowa darter, and finescale dace is present where weedy habitat is located (Table A.1 and Figure A.6.1). The loose organic substrate coupled with presence of rooted aquatic vegetation in the shallow littoral area in the south-east end of the lake provides good rearing/foraging habitat for these three species (Figure A.6.1 and Table A.1).

Table A.6.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Moore Lake, 2016.

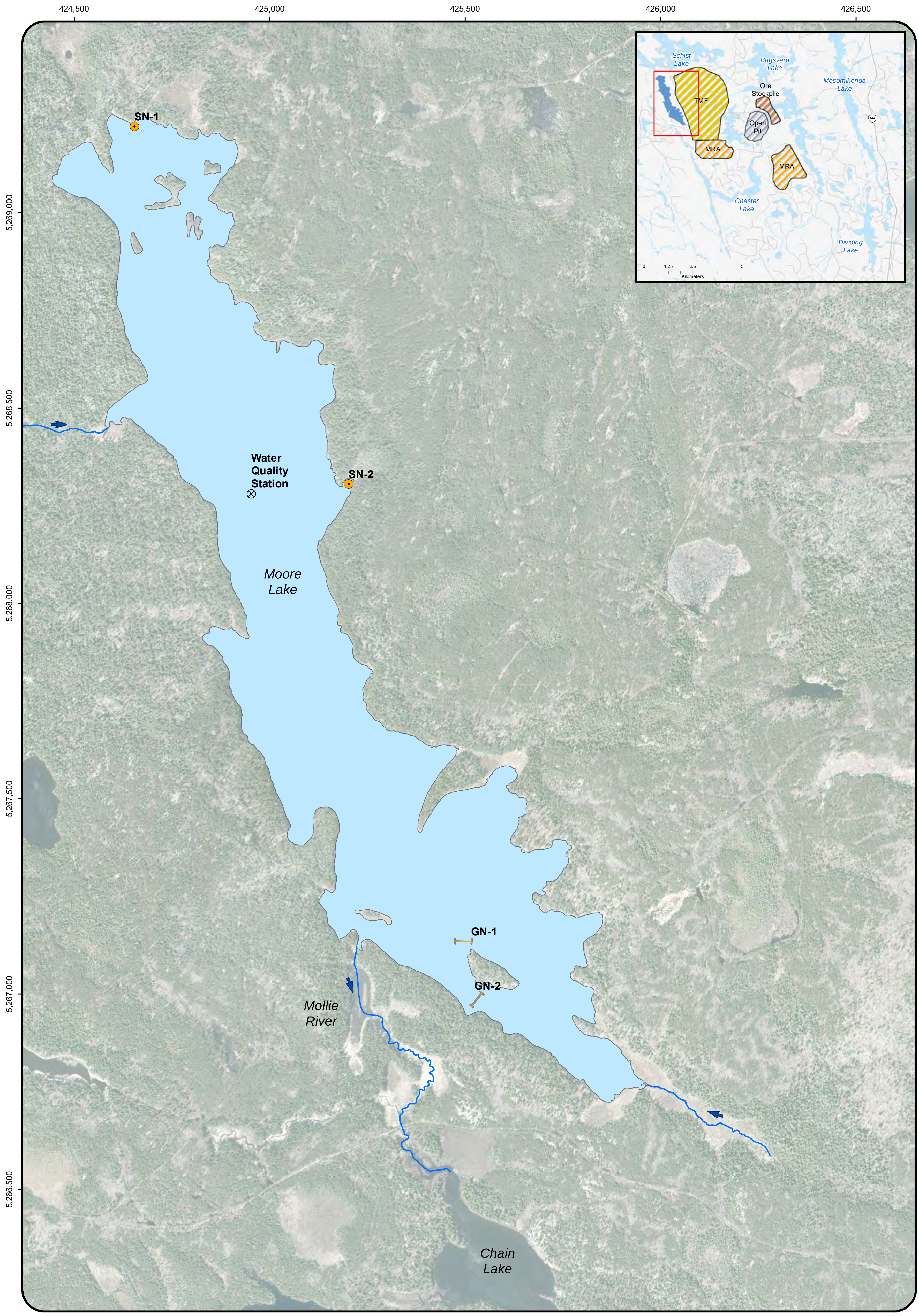
a) Seining

Species	Total Caught	CPUE (# of fish/m^2)
finescale dace	3	0.01
Iowa darter	2	0.01
northern pike (YOY)[a]	2	0.01
yellow perch	48	0.17
yellow perch (YOY)[a]	178	0.65
Total	**233**	**0.85**

b) Gill Netting

Species	Total Caught	CPUE (total # of fish/100 m*hr)
golden shiner	1	0.17
northern pike	5	0.83
yellow perch	16	2.66
Total	**22**	**3.66**

[a] Fish were classified as adults unless otherwise specified in the field to be young-of-the-year (YOY).



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Creation Date: January 2017
Project No.: 167202.0065

Sampling Locations:

- 2016 Seine Net
- 2016 Gill Net
- Water Quality Station

Other Features:

- Water Flow Direction

Figure A.6.2: Moore Lake Sampling Locations

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A.6.2 Unnamed Inlet to Moore Lake

A.6.2.1 Habitat Description

An unnamed inlet discharges into the south-east portion of Moore Lake (Figure A.6.1). The stream originates in a bog wetland area located approximately 300 m upstream from Moore Lake (Figure A.6.1). The start of the defined channel occurs in a speckled alder wetland, with black spruce and eastern white cedar. The unnamed stream has visible flow for approximately 300 m until it reaches Moore Lake (July 2016). This reach is characterized by low-gradient, shallow habitat where wetted channel widths range from 0.3 to 2 m (Figure A.6.1). The upstream portion (50 m) of the channel is characterized by shallow depths (0.3 m) with bottom substrate dominated by fines and organics and stream banks lined with sedges. The remaining 250 m of channel widens to 2 m and deepens to 1 m before entering Moore Lake. The substrate is completely fines, with high densities of milfoil, burred, and white and yellow pond lilies. The stream banks along this section were lined with sedges and overhanging Labrador tea (*Rhododendron groenlandicum*), bog rosemary (*Andromeda polifolia*), leatherleaf, and scattered speckled alder.

A.6.2.2 Habitat Evaluation

Although no fishing was conducted within the unnamed inlet, it was assumed that similar species would inhabit the channel as were found within Moore Lake (Table A.6.1). A few small-bodied fish were observed during the habitat survey within the lower section approximately 50 m upstream of Moore Lake.

Limited large-bodied fish habitat exists within the stream due to the lack of water depth. Excellent habitat was observed for small bodied species in the lower section of the inlet due to the high densities of macrophytes (Table A.1). No overwintering habitat was observed, therefore any fish residing within the channel would need to migrate downstream to Moore Lake for overwintering (Figure A.6.1).

A.6.3 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2016. Canadian Wildlife Species at Risk. http://www.registrelep-sararegistry.gc.ca/sar/index/default_e.cfm Accessed November 24, 2016.

Hobbs, Robert. 2016. Personal Communication. Environmental Manager, IAMGOLD Corporation. Côté Gold Project. Robert.Hobbs@iamgold.com

A.7 SAWPETER LAKE WATERSHED

Sawpeter Lake is located within the Mollie River watershed approximately 3.5 km southwest of the proposed Côté Gold open pit (Figures A.1 and A.7.1). Sawpeter Lake watershed flows south into Chester Lake. Water originates in a water body to the north (Sawpeter Lake North Complex; Figures A.7.2 and A.7.3), which flows south to Sawpeter Lake (Figures A.7.4 and A.7.5) and then through mature forest and wetland (South Outlet; Figures A.7.6 and A.7.7) before reaching Chester Lake. No tributaries drain into the North Complex, while Sawpeter Lake receives drainage from the North Complex, which subsequently drains into the South Outlet. The total surface areas of the North Complex, Sawpeter Lake, and the pooled area of the South Outlet are approximately 5.1 ha, 4 ha, and 1.7 ha, respectively.

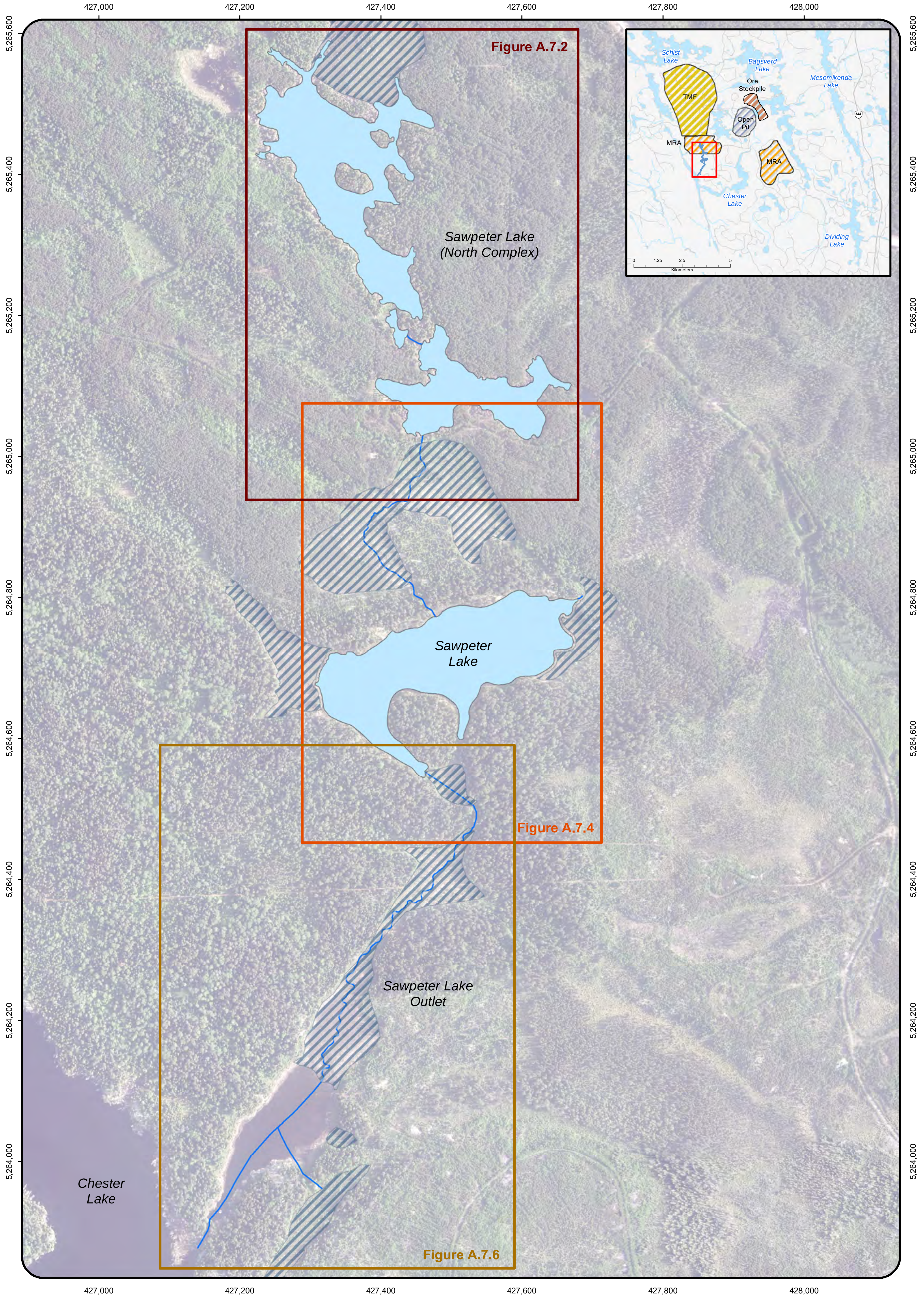
With the construction of the Tailings Management Facility (TMF) and the Mine Rock Area (MRA; Figure A.1), these water bodies may be influenced by drainage/seepage from the TMF/MRA. In addition, the MRA footprint is directly overlying the North Complex, which would result in the loss of this area. The assessment of habitat and fish community for Sawpeter Lake watershed is based on a field survey completed during the summer of 2016.

A.7.1 North Complex

A.7.1.1 Habitat Description

The North Complex contains three basins that are largely influenced by beaver activity with surface areas of 3.4 ha for the furthest north basin, 0.07 ha for the central basin and 1.7 ha for the south basin (Figure A.7.2). Water flows from north to south with no defined inlet channels flowing into any of the basins, with the exception of the channel connecting the central basin and south basin (Figure A.7.2). All three basins are relatively shallow (less than 2 m) based on the abundance of standing deadwood and fallen trees that are exposed at the surface throughout the entire complex (Figure A.7.2). The northern basin has two islands and a 2.5 m high beaver dam at the south end. Water flows through the dam into the central basin, over another smaller beaver dam, then through a short, higher gradient (approximately 3%), shallow channel (0.2 m) with boulder cobble substrate to the south basin (Figure A.7.2). A beaver dam is present at the furthest east extent of the complex; however, it no longer appears to be active (Figure A.7.2).

Two surface *in situ* water quality measurements were taken in the North Complex; one in the north basin and the other in the south basin (Figure A.7.3 and Table C.6). In both areas, surface waters were stained yellow-brown, warm (21 and 23°C), oxygenated (6.5 and 5.4 mg/L) with a specific conductivity of 23 and 48 µS/cm, and near neutral pH (6.45 and 6.84; Table C.6).



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- Water Body Assessed For Fish Habitat
- Wetland
- Watercourse Assessed For Fish Habitat

Figure A.7.1: Overview of Sawpeter Lake Watershed

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Creation Date: January 2017
Project No.: 167202.0065

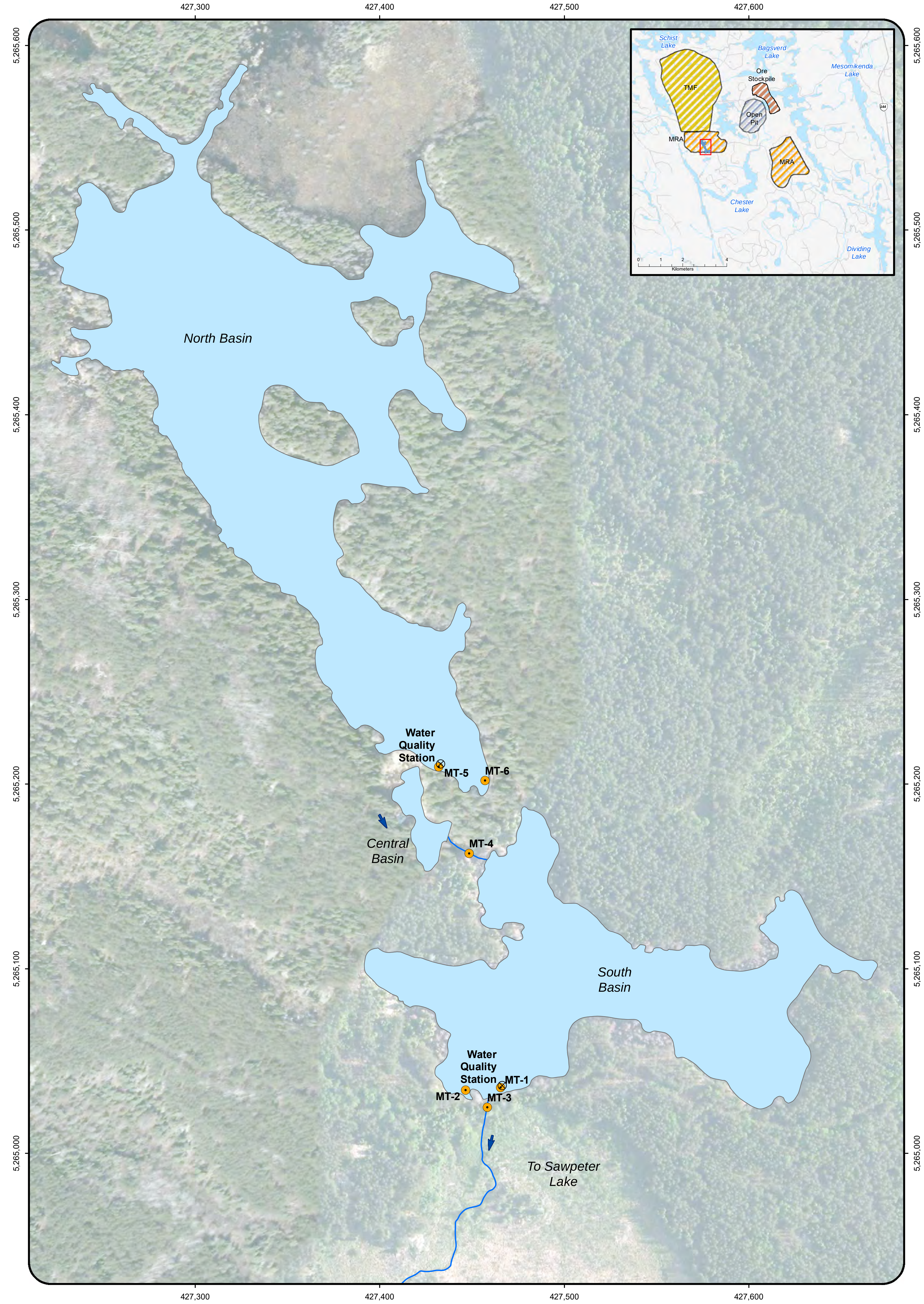
Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Littoral Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

River Habitat:
- Pool
- High-Gradient
- Moderate-Gradient
- Low-Gradient
- Intermittent Low-Gradient Channel

Habitat Features:
- Beaver Lodge
- Standing Deadwood
- Logs and Fallen Trees
- Rock
- Beaver Dam
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Wetland

Figure A.7.2: Sawpeter Lake North Complex Habitat Features



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Project No.: 167202.0065

Sampling Location:
- 2016 Minnow Trap
- Water Quality Station

Other Features:
- Water Flow Direction

Figure A.7.3: Sawpeter Lake North Complex Sampling Locations

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Project No.: 167202.0065

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Littoral Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

River Habitat
- Pool
- High-Gradient
- Moderate-Gradient
- Low-Gradient
- Intermittent Low-Gradient Channel

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Rock
- Beaver Dam
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Wetland

Figure A.7.4: Sawpeter Lake Habitat Features

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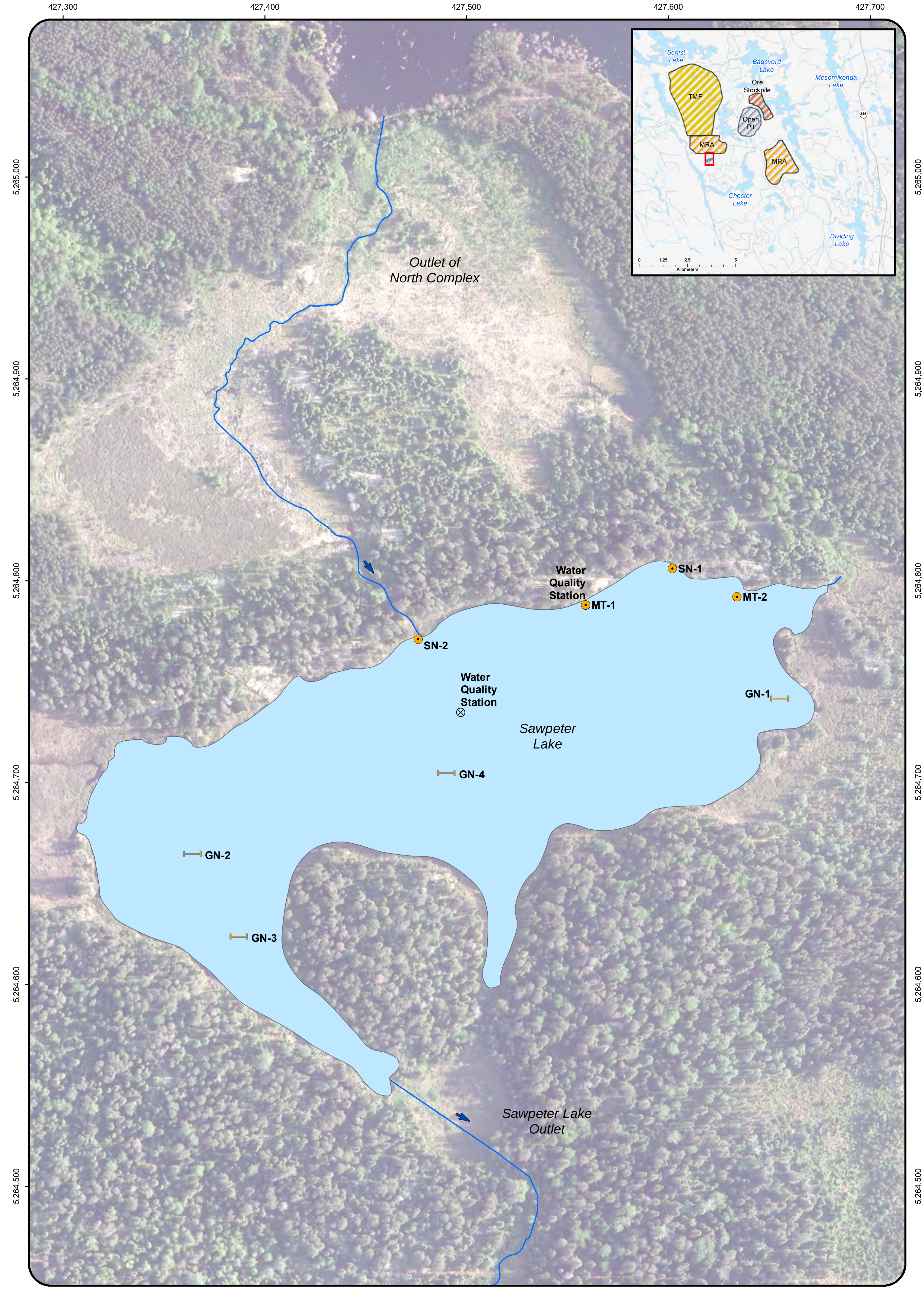

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Project No.: 167202.0065

Sample Location:

- 2016 Seine Net, Minnow Trap
- 2016 Gill Net
- Water Quality Station

Other Features:

- Water Flow Direction

Figure A.7.5: Sawpeter Lake Sampling Locations

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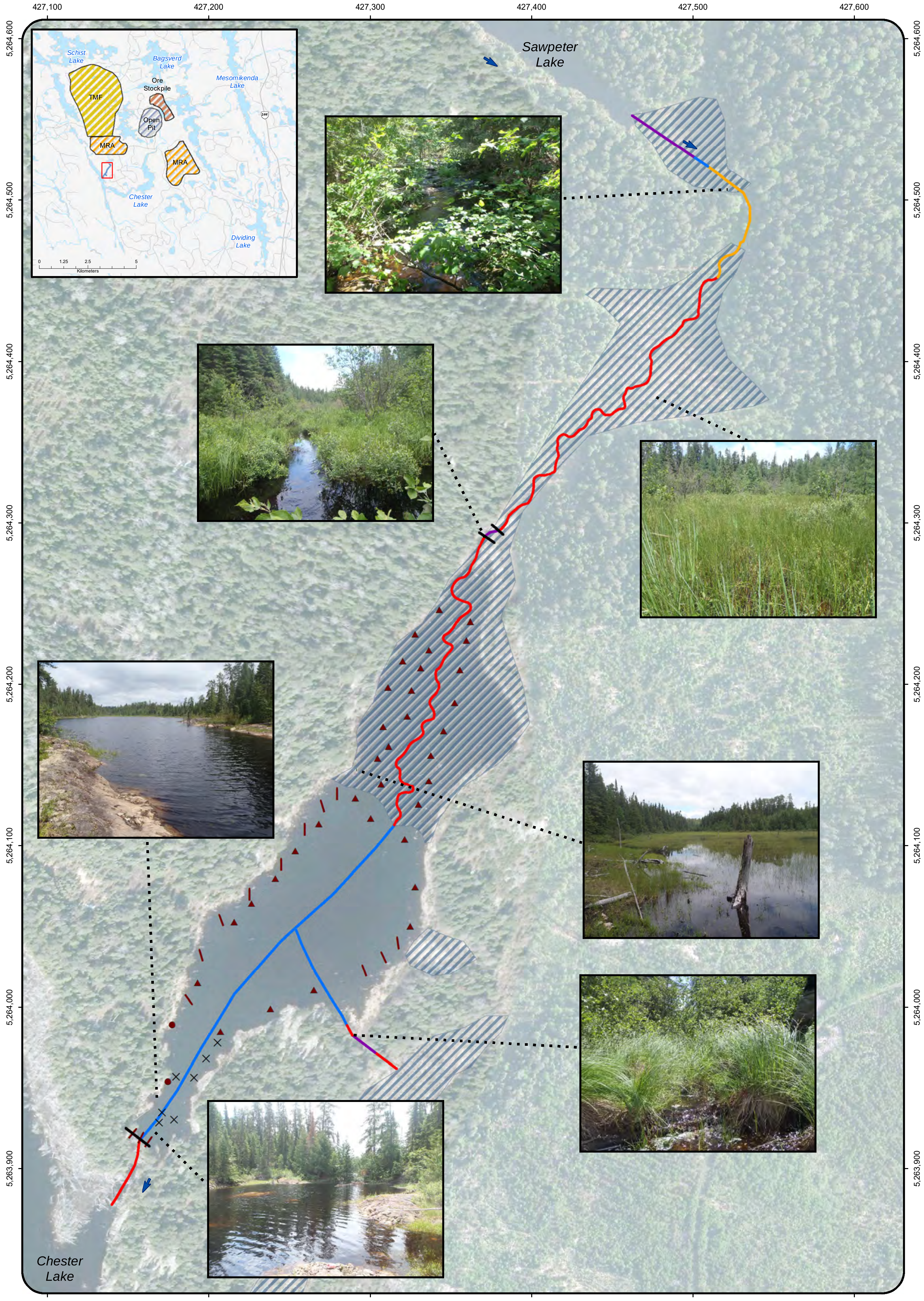

Figure A.7.6: Sawpeter Lake Outlet Habitat Features

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River Habitat:
- Pool
- High-Gradient
- Moderate-Gradient
- Low-Gradient
- Intermittent Low-Gradient Channel

Habitat Features:
- Beaver Lodge
- Standing Deadwood
- Logs and Fallen Trees
- Rock
- Beaver Dam
- Water Flow Direction
- Wetland

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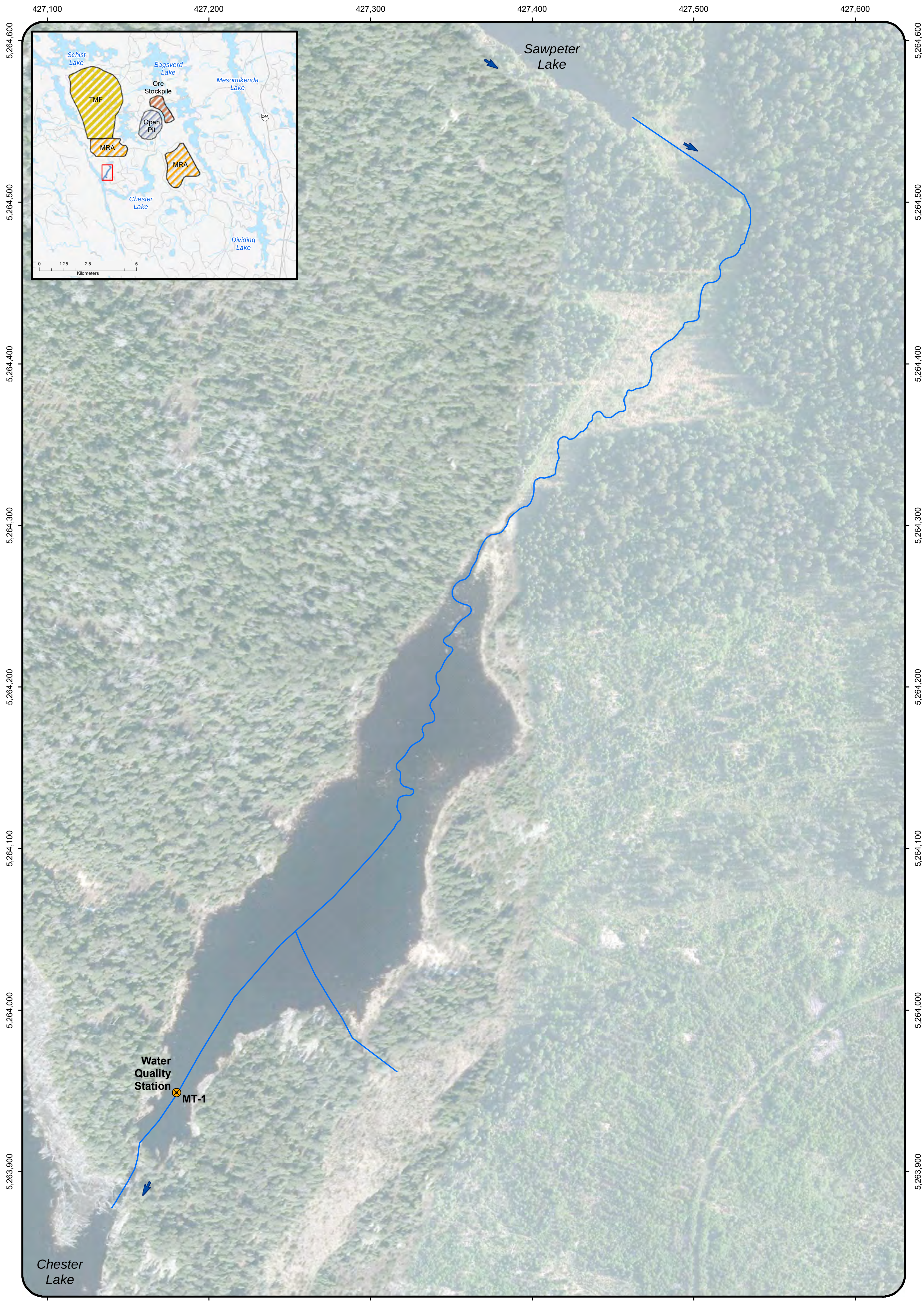

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Creation Date: January 2017
Project No.: 167202.0065

Sampling Location:
- 2016 Minnow Trap
- Water Quality Station

Other Features:
- Water Flow Direction

Figure A.7.7: Sawpeter Lake Outlet Sampling Locations

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Substrate in the shallow littoral areas was mainly comprised of bedrock transitioning to silt at depths of approximately 1 m and deeper (Figure A.7.2). Granitic bedrock is common along the island and lake perimeters, with silt/organic shorelines generally found in areas with limited fetch (Figure A.7.2). In the south basin, there were some cobble areas prior to transitioning to silt and organic sediments. Macrophytes are found around the entire shoreline in the north basin (Figure A.7.2); whereas, in the central and south basins, the entire area is densely vegetated. The macrophyte community generally consists of emergent beds of burreed (*Sparganium* sp.) with some submergent vegetation, such as milfoil (*Myriophyllum* sp.), bladderwort (*Utricularia* sp.), and *Potamogeton* species (Figure A.7.2). The north basin also contains emergent cattail (*Typha* sp.).

The North Complex is generally treed to the shoreline, with dominant species of black spruce (Picea *mariana*) and jack pine (*Pinus banksiana*), but white birch (*Betula papyrifera*), eastern white cedar (*Thuja occidentalis*) and red pine (*Pinus resinosa*) are also present. The furthest north end of the complex contains a large wetland area (Figure A.7.2). The substantial marsh/bog wetland area bordering the shoreline contains cattail, sedges (*Carex* sp.), and shrubs, such as leatherleaf (*Chamaedaphne calyculata*), sweet gale (*Myrica gale*), alder (*Alnus incana*), and bog laurel (*Kalmia polifolia*).

A.7.1.2 Fish Community Composition

One white sucker (*Catostomus commersonii*) was captured in the North Complex, representing the only large-bodied fish species (Table A.7.1, Figure A.7.3 and Table D.1). The small-bodied fish community included finescale dace (*Chrosomus neogaeus*) and northern redbelly dace (*Chrosomus eos*). No COSEWIC (2016) listed endangered, threatened, or special concern fish species were observed in the North Complex during the July 2016 survey.

A.7.1.2 Fish Habitat Evaluation

Limited large-bodied fish habitat exists within the North Complex of Sawpeter Lake due to the shallow water depth. The moderate numbers of finescale and northern redbelly dace suggests good to excellent habitat, including loose organic substrate coupled with abundant rooted aquatic vegetation in the shallow littoral areas, providing good rearing, foraging, and cover habitat for these species (Table A.1 and Figure A.7.2).

A.7.2 Sawpeter Lake

A.7.2.1 Habitat Description

Sawpeter Lake is a simple, rectangular-shaped basin that is approximately 380 m long and 120 m wide with a maximum depth of 3.5 m (at water profile station; Figures A.7.4 and A.7.5).

Table A.7.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Sawpeter Lake watershed, 2016.

a) Minnow Trapping[a]

Area	Species	Total Caught	CPUE (# of fish/trap*d)
Sawpeter Lake (North Complex)	finescale dace	128	61
	northern redbelly dace	99	47
	white sucker	1	0.48
	Total	**228**	**109**
Sawpeter Lake	no fish captured	0	0
	Total	**0**	**0**
Sawpeter Lake Outlet	no fish captured	0	0
	Total	**0**	**0**

b) Seining

Area	Species	Total Caught	CPUE (# of fish/m^2)
Sawpeter Lake	golden shiner	155	0.89
	Iowa darter	1	0.01
	johnny darter	1	0.01
	northern pike	3	0.02
	northern pike (YOY)[b]	2	0.01
	Total	**162**	**0.94**

c) Gill Netting

Area	Species	Total Caught	CPUE (total # of fish/100 m*hr)
Sawpeter Lake	golden shiner	1	0.05
	northern pike	14	0.65
	yellow perch	2	0.09
	Total	**17**	**0.79**

[a] Minnow trapping was conducted in Sawpeter Lake and South Outlet, but no fish were caught after 17.5 trap hours.
[b] Fish were classified as adults unless otherwise specified in the field to be young-of-the-year (YOY).

Surface water temperature during the July 2016 field survey was very warm (23.5˚C) and a thermal gradient within the water column was apparent in the main basin at 2 m (Table C.6 and Figure C.1g). Water in the epilimnion met Provincial Water Quality Objectives (5 mg/L; Table C.6). Water pH was slightly acidic to neutral (6.1-7.1; Table C.4) and specific conductance ranged from 28 to 45 µS/cm (Table C.6). Water was stained and clarity was moderate with a Secchi depth of 1.76 m (Table C.6).

Similar to the North Complex, the shallow littoral areas are mainly bedrock transitioning to silt at depths of approximately one metre and deeper (Figure A.7.3). Some cobble is found at the inlet area prior to transitioning to silt and organic sediments. The shoreline followed the same pattern as the littoral areas which are dominated by bedrock with few areas that are comprised of organic material (Figure A.7.3). Macrophytes are found around the entire shoreline (Figure A.7.4) and consisted primarily of floating burreed, white pond lily (*Nymphaea odorata*) and yellow pond lily (*Nuphar variegatum*). Emergent sedges, spikerushes (*Eleocharis* sp.), burreed and horsetails (*Equisetum* sp.) are also present. Submergent vegetation, such as *Potamogeton* species are present near the outlet of Sawpeter Lake.

Sawpeter Lake is generally treed to the shoreline with the overstory including eastern white cedar, black spruce, speckled alder, white birch, trembling aspen (*Populus tremuloides*), and in some areas, eastern larch. Both the west and east ends of the lake contain large wetland areas (Figure A.7.4) that contain cattail, sedges, and shrubs such as leatherleaf, sweet gale, alder and bog laurel.

A.7.2.2 Fish Community Composition

The Sawpeter Lake fish community included a total of five species (Table A.7.1 and Tables D.1 to D.3). The large-bodied fish community was dominated by northern pike (*Esox lucius*) with a low abundance of yellow perch (*Perca flavescens*; Table A.7.1). The small-bodied fish community predominantly consisted of golden shiner (*Notemigonus crysoleucas*) with low abundances of Iowa darter (*Etheostoma exile*) and johnny darter (*Etheostoma nigrum*; Table A.7.1). No COSEWIC (2016) listed endangered, threatened, or special concern fish species were observed in Sawpeter Lake.

A.7.2.3 Fish Habitat Evaluation

Sawpeter Lake provides excellent spawning, juvenile rearing, and adult habitat for northern pike, with dense emergent and floating aquatic vegetation surrounding the entire lake coupled with two wetland areas (Table A.1 and Figure A.7.4). These same features also provide good spawning, rearing, and foraging habitat for yellow perch (Table A.1). Good spawning habitat is available for golden shiner and Iowa darter through the extensive vegetative areas (Table A.1 and

Figure A.7.4). Silty substrate coupled with dense rooted aquatic vegetation provides good rearing/foraging habitat for small-bodied species (Figure A.7.4).

A.7.3 Stream Habitat

A.7.3.1 Habitat Description

Downstream of the high-gradient outlet from the North Complex is a low-gradient, intermittent stream channel which meanders through a wetland area for approximately 300 m (Figure A.7.4). The average channel width within the wetland area is 1.5 m with a channel depth of approximately 0.3 m. No surficial flow was observed, however, the channel substrate and surrounding wetland were saturated with areas of standing water. Substrate within this low-gradient section is mainly organic muck (i.e., silt with high organic content) of varying thickness over hard-packed clay. Emergent aquatic grasses (*Poaceae* sp.) and burreed dominated the stream banks. The surrounding wetland is comprised principally of sweet gale, meadowsweet (*Spiraea* sp.) and sedges. As the channel approaches Sawpeter Lake, stream morphology changed to a high-gradient (4%) channel for approximately 43 m (Figure A.7.4). Substrate within this section is dominated by small boulder with an average wetted channel width of 2 m and depth of 0.3 m. The gradient decreases to moderate (2%) for approximately 16 m prior to flowing into Sawpeter Lake along the north shoreline (Figure A.7.4). In this area the channel widens to approximately 2.5 m, has an average depth of 0.3 m, and substrate of densely packed clay. Forest extends to the stream bank and included speckled alder, black spruce and eastern larch (*Larix laricina*).

From Sawpeter Lake the Unnamed South Outlet flows south through a wetland with one large pool just upstream from Chester Lake, the result of an active beaver dam (Figure A.7.6). The low-gradient channel is characterized by a meandering channel with slow run habitat, small pools, and ponded areas resulting from beaver activity, creating stands of deadwood and fallen trees (Figure A.7.6). Channel width typically ranges from 1 to 3 m, with open water areas of beaver ponds much wider, water depths ranged from 0.5 to 1 m deep. Substrate is comprised of organic muck. Instream vegetation is sparse with less than 25% coverage. Submergent vegetation predominately included burreed, pondweed, and milfoil, and emergent sedges, leatherleaf, Labrador tea (*Rhododendron groenlandicum*), and speckled alder are present along the channel margins (Figure A.7.6). Wetland areas border the low-gradient habitat and the vegetation is generally dominated by a combination of sedges, sweet gale, leatherleaf, alder and meadowsweet shrubs. Forest adjacent to the wetlands primarily included coniferous species such as black spruce, jack pine, and white cedar, with lesser amounts of white birch and trembling aspen.

Two small sections of moderate- and high-gradient channel exist just downstream from the outlet of Sawpeter Lake and extend for approximately 115 m (Figure A.7.6). These higher gradient sections are characterized by riffle-run morphology with some pool habitat. Wetted channel widths range from 0.5 to 1 m. Maximum water depth of riffles and pools was 0.3 m and 0.75 m, respectively, during the 2016 survey. Substrate consists of cobble and boulder, and instream vegetation primarily included sparse burreed. Mixed forest extends to the stream edge within the moderate-gradient habitat and included black spruce, jack pine, eastern larch, and speckled alder.

Pooled Area of South Outlet

The beaver pond just upstream from Chester Lake had a width of approximately 100 m and length of 250 m, with of depth of approximately 1.5 m. The water was stained yellow-brown. Substrate in the shallow littoral areas of the pooled area is consistent with the North Complex and Sawpeter Lake, and generally consists of bedrock transitioning to silt (Figure A.7.6). Surface *in situ* water quality measurements in the pooled area showed warm (19.3 °C), oxygenated (5.4 mg/L) waters with a specific conductivity of 92 µS/cm and a slightly acidic pH (6.4; Appendix Table C.6). The shoreline of the beaver pond is dominated by bedrock. Submergent aquatic vegetation included pond lilies, burreed, and milfoil, with leatherlead and sedges dominating the overhanging shoreline vegetation. The area is treed to the shoreline, with black spruce and jack pine being the dominant species, but white birch, eastern white cedar and red pine were also present.

A.7.3.2 Fish Community Composition

Two minnow traps were deployed for 1.5 hr and no fish were captured (Table A.7, Figure A.7.7 and Table D.1). With no defined barriers within the watershed, it is probable that the fish community present within this area is similar to the communities observed in Chester and Sawpeter lakes. Based on the habitat present, the large-bodied fish community likely includes, northern pike, yellow perch and white sucker and the small-bodied fish community would consist of dace (e.g., northern redbelly and finescale), shiners (e.g., blacknose and golden) and darters (e.g., Iowa and johnny).

A.7.3.3 Fish Habitat Evaluation

The stream habitat of the Sawpeter Lake watershed provides excellent spawning, juvenile rearing, and adult habitat for northern pike and yellow perch, with dense emergent vegetation surrounding the ponded area (Table A.1 and Figure A.7.6), however the shallow depth might cause the water temperatures to exceed the thermal preference of large adult norther pike. The gravel area within the moderate- and high-gradient habitat downstream of Sawpeter Lake would provide moderate white sucker spawning habitat (Table A.1 and Figure A.7.6). Good rearing and foraging habitat exists for white sucker within the pooled areas (Table A.1 and Figure A.7.6). Good spawning habitat is available for shiners and darters with the broad vegetative areas (Table A.1 and Figure A.7.6). Silty substrate coupled with dense rooted aquatic vegetation provides good rearing/foraging habitat for small-bodied species (Table A.1).

A.7.4 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2016. Canadian Wildlife Species at Risk. http://www.registrelep-sararegistry.gc.ca/sar/index/default_e.cfm Accessed November 24, 2016.

A.8 UNNAMED LAKE #3 OUTLET

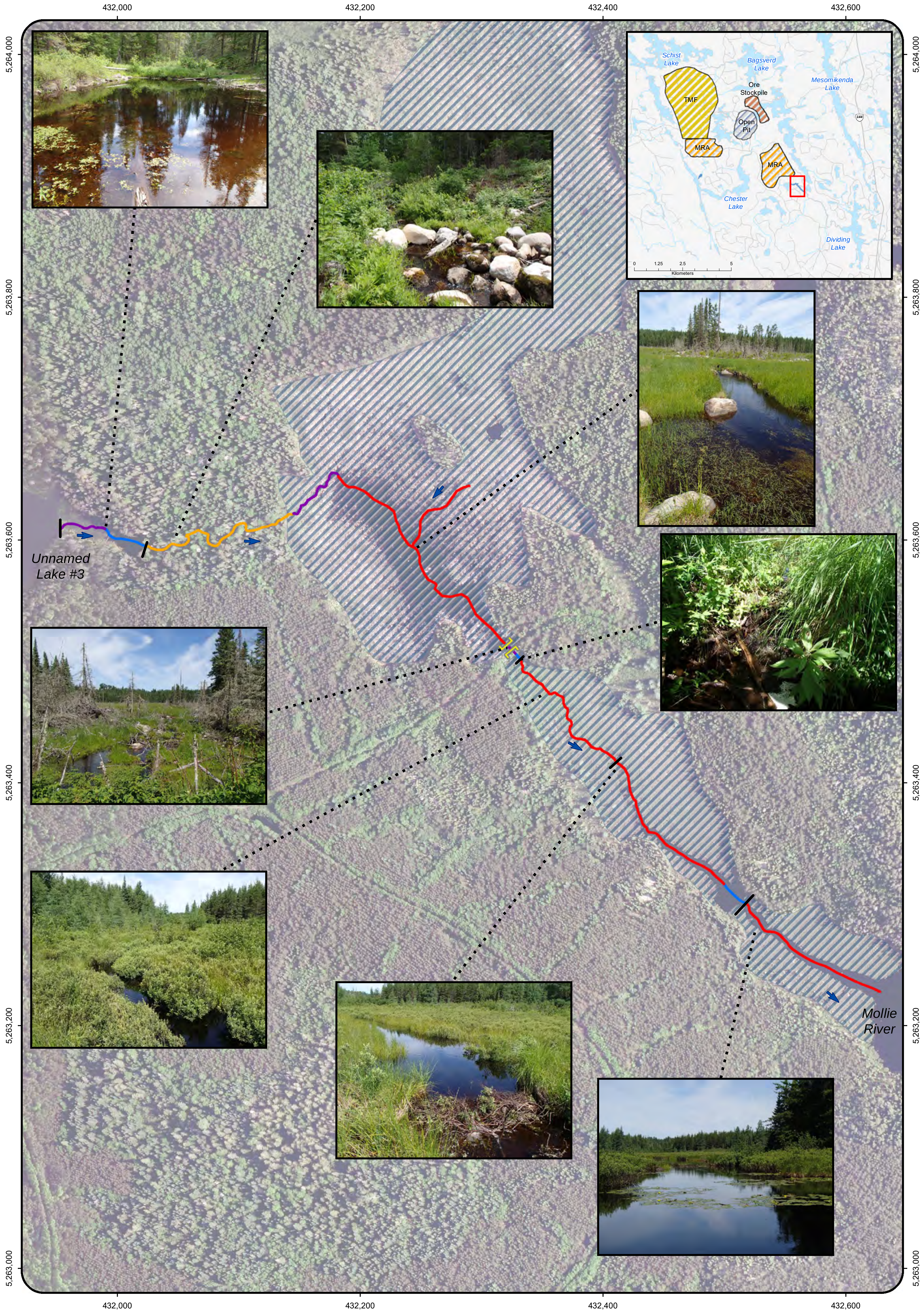
The outlet of Unnamed Lake #3 is located within the Mollie River watershed (Figure A.1). The outlet begins at the eastern extent of Unnamed Lake #3 and travels approximately 940 m before reaching the Mollie River (Figure A.8.1). Habitat in Unnamed Lake #3 was assessed in 2013 (Minnow 2014). The outlet of Unnamed Lake #3 may be influenced by downstream drainage/seepage from the Mine Rock Area (MRA; Figure A.1). The assessment of habitat and fish community for the outlet was conducted during the summer 2016 field survey.

A.8.1 Habitat Description

The outlet of Unnamed Lake #3 is a small meandering stream with a variety of habitats modified by beaver activity (Figure A.8.1). Immediately downstream of Unnamed Lake #3, the channel has a moderate-gradient flowing for approximately 40 m through a narrow, shallow channel (0.2 m wide, 0.2 m deep, respectively). Substrate through this habitat is composed of a thin layer of fine silt over densely packed clay. A beaver dam located 80 m downstream from the outlet creates a small pool (5 m wide and 0.5 m deep) approximately 38 m in length. Instream vegetation included scattered patches of variableleaf pondweed (*Potamogeton gramineus*), with banks lined with sedges (*Carex sp*). Mixed forest extends to the shoreline, with an overstory of back spruce (*Picea mariana*) and jack pine (*Pinus banksiana*).

Downstream of the dam, the stream flows through high-gradient habitat (3.5%; Figure A.8.1), with riffle morphology and substrate dominated by a cobble-boulder mix with exposed root wads. The average wetted width of the stream is 0.5 m, with an average water depth of 0.2 m, and a maximum depth of 0.4 m. Sedges overhang the stream bank and the densely forested area contains speckled alder (*Alnus incana*), black spruce, and eastern larch (*Larix laricina*). As the habitat transitions to wetland, the gradient decreases (moderate-gradient 1.5%) and the stream meanders for approximately 80 m. Mean wetted channel width was 0.7 m and water depth was 0.2 m with visible flow. Substrate changed to a thin layer of silt over hard-packed clay.

The remaining channel flowing to the Mollie River consists of low-gradient habitat characterized by a meandering channel of slow runs and small pools, with a culvert located approximately 350 m downstream of Unnamed Lake #3. One small inlet stream (0.3 m wetted width and 0.1 m depth) flows in from the north-east (Figure A.8.1). The wetted channel width and depth upstream of the culvert is 0.5 m and 0.2 m, respectively, and the substrate consists of entirely of organic silt with large amounts of embedded woody debris. Wetland vegetation upstream of the culvert is dominated by emergent burreed (*Sparganium* sp) and aquatic sedges. Downstream of the culvert, the wetland vegetation is comprised principally of sweet gale (Myrica gale), meadowsweet



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River Habitat:
- Pool
- High-Gradient
- Moderate-Gradient
- Low-Gradient
- Intermittent Low-Gradient Channel

Other Features:
- Beaver Dam
- Culvert
- Water Flow Direction
- Wetland

Figure A.8.1: Unnamed Lake #3 Outlet Habitat Features

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(Spiraea sp.), leatherleaf (*Chamaedaphne calyculata*), sedges and bog laurel (*Kalmia polifolia*), which would often overhang the channel. Average channel widths and depths are greater than upstream (1.5 m and 0.7 m, respectively) and substrates still consists of organics and fine silt. A beaver dam located approximately 150 m upstream from the Mollie River creates a small pool that is 5 m wide and 1.2 m deep. From the beaver dam to the confluence of the Mollie River, the stream continues as a low-gradient stream with average wetted widths of 6 m and depth of 1.1 m. Instream vegetation throughout the low-gradient habitat consists of floating burreed, and with closer proximity of the Mollie River, coontail (*Ceratophyllum demersum*) and yellow water lily (*Nuphar variegatum*) are present (Figure A.8.1). Forested areas beyond the wetland are primarily comprised of black spruce and jack pine, although eastern larch, white birch (*Betula papyrifera*), eastern white cedar (*Thuja occidentalis*), and red pine (*Pinus resinosa*) are also present.

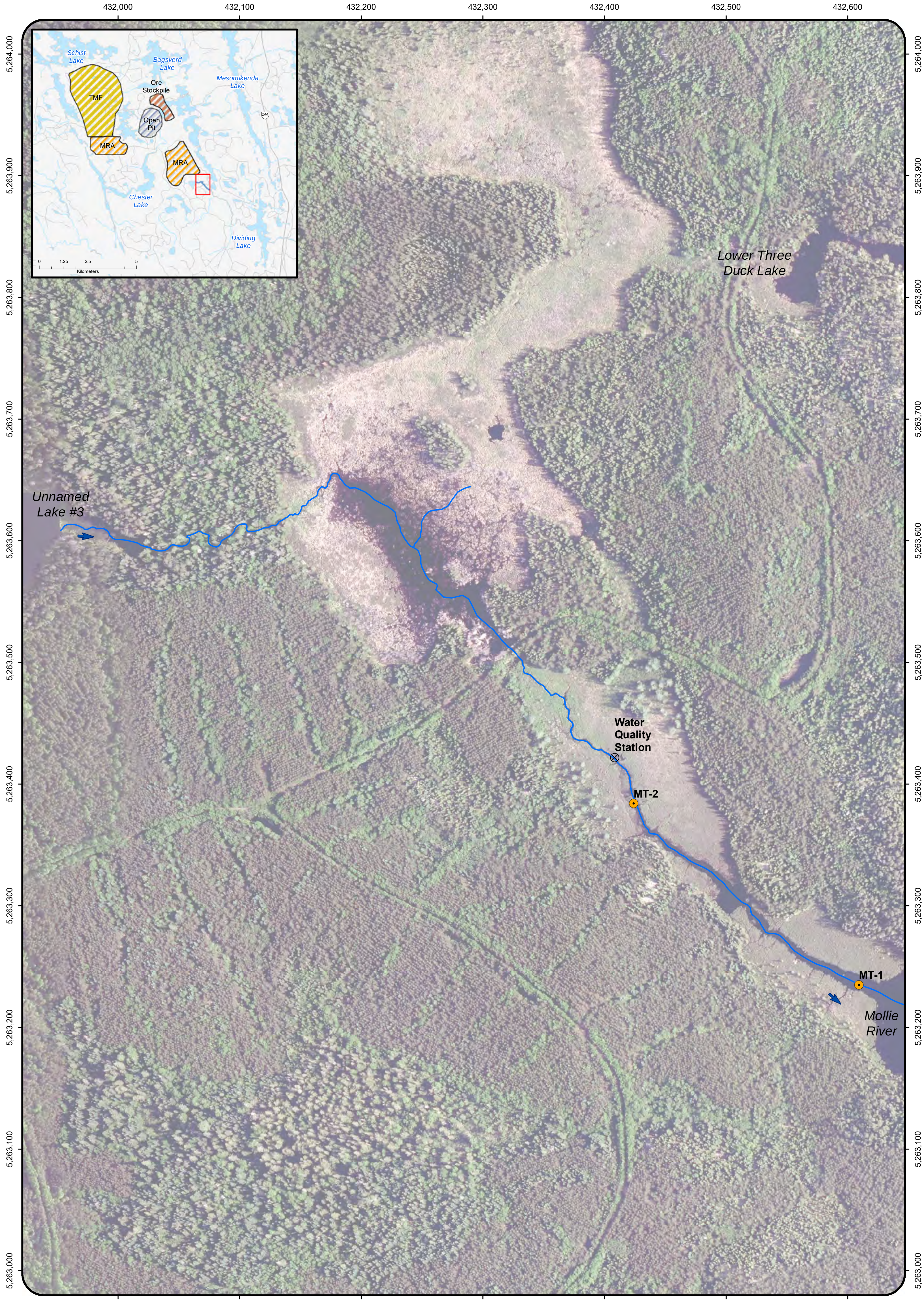
In situ water quality measurements were taken in a pooled area (Figure A.8.2). The water was stained yellow-brown, warm (19°C) and oxygenated (5.6 mg/L) with a specific conductivity of 35 µS/cm and was slightly acidic (6.1; Table C.8).

A.8.2 Fish Community Composition

Limited fishing was conducted in the outlet of Unnamed Lake #3. Two minnow traps were set for 2.2 and 1.4 hours and no fish were captured (Table A.8.1, Figure A.8.2 and Table D.1). No fish were observed; however, with no defined barriers within the stream, it was assumed that the fish community present would be similar to that found the Mollie River and Unnamed Lake #3. Previous studies observed large-bodied fish species such as northern pike (*Esox lucius*), white sucker (Catostomus commersonii), and yellow perch (*Perca flavescens*) in Unnamed Lake #3 and the Mollie River (Minnow 2014). The small-bodied fish community from Unnamed Lake #3 included golden shiner (*Notemigonus crysoleucas*), blacknose shiner (*Notropis heterolepis*), and Iowa darter (*Etheostoma exile*; Minnow 2014).

A.8.3 Fish Habitat Evaluation

Marginal to good juvenile northern pike and yellow perch rearing is provided in the Unnamed Lake #3 Outlet, associated with the abundance of cover and instream vegetation (Table A.1 and Figure A.8.1). Excellent spawning habitat for northern pike and yellow perch exists in the vicinity of the confluence with the Mollie River, including dense emergent and floating aquatic vegetation (Table A.1). Poor adult foraging habitat is provided due to the small nature of the stream and limited overwintering habitat, especially upstream of the culvert (Table A.1 and Figure A.8.1). White sucker rearing and foraging is available, and becomes limited with upstream progression to Unnamed Lake #3 due to the limited depth.



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Sample Location:
- 2016 Minnow Trap
- Water Quality Station

Other Features:
- Water Flow Direction

Figure A.8.2: Unnamed Lake #3 Outlet Sampling Locations

Table A.8.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Unnamed Lake #3 Outlet, 2016.

a) Minnow Trapping[a]

Species	Total Caught	CPUE (# of fish/trap*d)
no fish captured	0	0
Total	**0**	**0**

[a] Minnow trapping was conducted in Unnamed Lake #3 outlet, but no fish were caught after 3.6 trap hours.

The outlet of Unnamed Lake #3 provides moderate spawning, rearing and foraging habitat for golden shiner through the dense emergent and floating vegetation (Table A.1). Limited sand substrate was observed for spawning blacknose shiner, however overhanging vegetation, woody debris in the channel and the beaver ponds would provide adequate habitat for rearing and foraging (Table A.1). Finally, within the wetland areas, overhanging vegetation and dense coverage of rooted macrophytes provide good spawning, rearing and foraging habitat for Iowa darter.

A.8.4 References

Minnow 2014. Côté Gold Aquatic Baseline Report. Report Prepared for IAM GOLD Corporation. Prepared by Minnow Environmental Inc. March 2014.

A.9 UNNAMED LAKE #4

Unnamed Lake #4 is located within the Mollie River watershed approximately 4 km south of the proposed Côté Gold open pit (Figure A.9.1). The lake is a headwater lake with a surface area of approximately 2.0 ha and a maximum depth of approximately 3 m. No tributaries flow into Unnamed Lake #4 and the discharge from the lake occurs via a small channel with intermittent flow that is located on the east side of the lake (Figure A.9.1). This channel drains into the crescent shaped eastern portion of Chester Lake (Figure A.9.1).

Unnamed Lake #4 will potentially be influenced by drainage/seepage from the proposed Tailings Management Facility (TMA) and Mine Rock Area (MRA Figures A.1 and A.9.1). The habitat description provided below is based on a field survey conducted in the summer of 2016.

A.9.1 Unnamed Lake #4

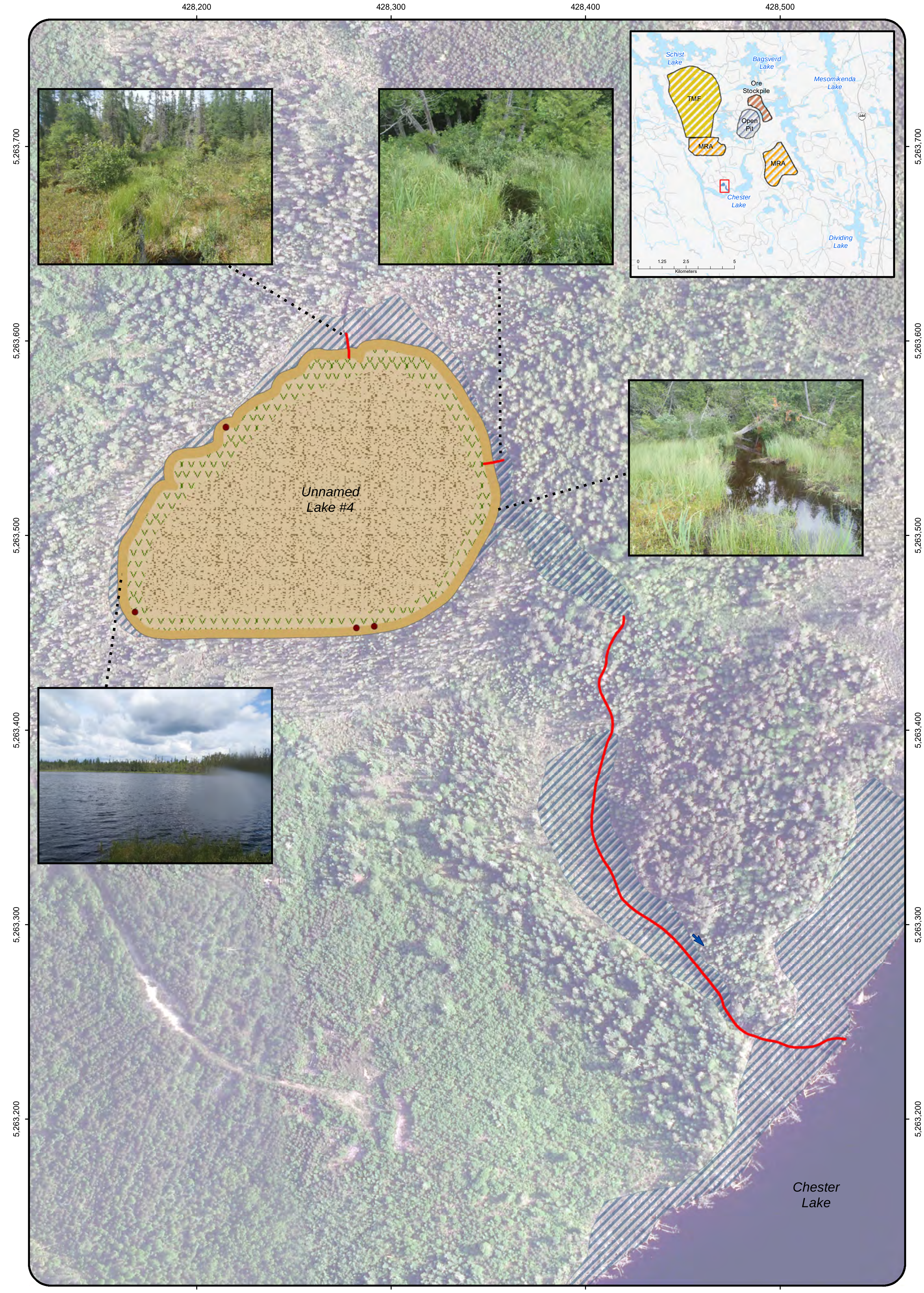
A.9.1.1 Habitat Description

Unnamed Lake #4 has a circular shape with a simple basin. Surface water temperatures were very warm (22.6 °C) and dissolved oxygen concentrations (5.3 mg/L) were above Provincial Water Quality Objectives (Table C.9). Surface specific conductivity and water pH were 82 µS/cm and 6.43, respectively (Appendix Table C.9). Although the water colour was tea-stained, it was transparent enough to see the bottom throughout the lake.

The littoral substrate was homogenous and comprised entirely of organics, which extended through the entire basin (Figure A.9.1). Similarly, the shoreline consisted exclusively of organic material (Figure A.9.1). The dense macrophyte community consisted of yellow and white pond lilies (*Nuphar variegatum* and *Nymphaea odorata*), Richarson's pondweed (*Potamogeton richardsonii*), milfoil (*Myriophyllum* sp.), bulrush (*Scirpus* sp.), and burreed (*Sparganium* sp.). Leatherleaf (*Chamaedaphne calyulata*) commonly overhangs the shoreline along with sedges (*Carex* sp.). Other common understory species included sweet gale (*Myrica gale*), bog laurel (*Kalmia polifolia*), trumpet pitchers (*Sarracenia* sp.), and speckled alder (*Alnus incana*). Beyond the immediate shoreline, the land is forested primarily with jack pine (*Pinus banksiana*) and black spruce (*Picea mariana*), and fewer eastern larch (*Larix laricina*) and eastern white cedar (*Thuja occidentalis*). White birch (*Betula papyrifera*) and trembling aspen (*Populus tremuloides*) are also found.

A.9.1.2 Fish Community Composition

Only a few northern pike (*Esox lucius*) were captured in Unnamed Lake #4 during the July 2016 field survey (Table A.9.1, Figure A.9.2 and Appendix Tables D.1 and D.3). No small-bodied fish



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Map Projection: UTM Zone 17 NAD 1983
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Project No.: 167202.0065

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Littoral Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

River Habitat:
- Pool
- High-Gradient
- Moderate-Gradient
- Low-Gradient
- Intermittent Low-Gradient Channel

Habitat Features:
- Beaver Lodge
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation

Figure A.9.1: Unnamed Lake #4 Habitat Features

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Table A.9.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Unnamed Lake #4, 2016.

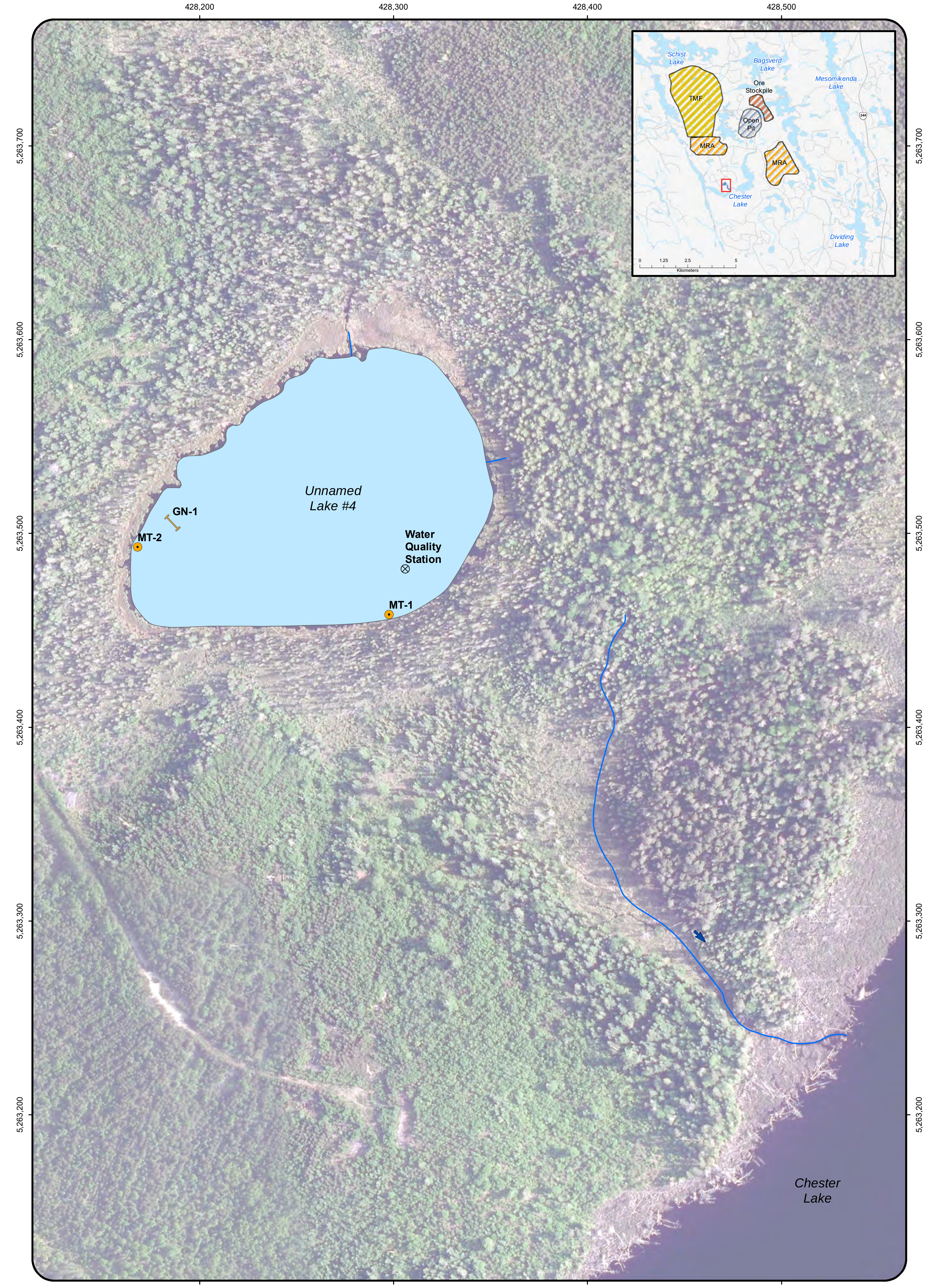
a) Minnow Trapping[a]

Species	Total Caught	CPUE (# of fish/trap*d)
no fish captured	0	0
Total	**0**	**0**

b) Gill Netting

Species	Total Caught	CPUE (total # of fish/100 m*hr)
northern pike	2	0.56
Total	**2**	**0.56**

[a] Minnow trapping was conducted in Unnamed Lake #4, but no fish were caught after 14 trap hours.



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Map Projection: UTM Zone 17 NAD 1983
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Creation Date: January 2017
Project No.: 167202.0065

Sampling Locations:

- 2016 Minnow Trap
- 2016 Gill Net
- Water Quality Station

Other Features:

- Water Flow Direction

Figure A.9.2: Unnamed Lake #4 Sampling Locations

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were captured in the minnow traps, nor were any observed during the 2016 survey (Table D.1). No endangered, threatened, or special concern fish species (COSEWIC 2016) were observed during the July 2016 field survey.

A.9.1.3 Fish Habitat Evaluation

Good spawning and rearing habitat for northern pike was found in Unnamed Lake, including extensive macrophyte beds and wetland areas surrounding the lake. In addition, the floating and submergent vegetation provide adequate foraging/cover habitat for adult northern pike (Table A.1 and Figure A.9.1).

A.9.2 Unnamed Outlet to Chester Lake

A.9.2.1 Habitat Description

The outlet from Unnamed Lake #4 is located on the eastern shore and was observed to have no surface flow at the time of the survey. A small channel (<2 m wetted width, depth of 0.3 m) flows for approximately 15 m downstream to a forested area before the channel becomes undefined. The forested area is comprised of speckled alder and sedge wetland. Approximately 100 m downstream, a single, defined channel reappears where and flows 200 m south into Chester Lake. The average wetted width is approximately 0.5 m with a maximum depth of less than 0.5 m. Bottom substrates consist of soft organics. Banks are lined with sedges and overhanging leatherleaf and sparse amounts of burreed are present within the channel. Forest beyond the wetland area consist of black spruce, speckled alder, and eastern white cedar.

A.9.2.2 Habitat Evaluation

Limited large-bodied fish habitat exists within this unnamed channel due to the lack of water depth. White sucker juveniles may use the stream habitat for rearing as the first 200 m of the stream offers moderate habitat with some cover, instream vegetation, and soft sediments (Table A.1 and Figure A.9.1). Marginal to good juvenile rearing is offered within this section for northern pike through the presence of cover and instream vegetation (Table A.1). With distance from Chester Lake, habitat for large-bodied fish decreases substantially due to the lack of depth, flow, and overwintering habitat (Table A.1 and Figure A.9.1).

Marginal habitat does exist for small-bodied species, especially within the first 200 m upstream from Chester Lake. Species that could use this habitat include brook stickleback (*Culaea inconstans*), Iowa darter and dace species (*Chrosomus* sp.; Table A.1). No overwintering habitat was found within the reach, therefore any fish residing within the inlet stream would have to migrate downstream to overwinter in Chester Lake (Figure A.9.1).

A.9.3 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2016. Canadian Wildlife Species at Risk. http://www.registrelep-sararegistry.gc.ca/sar/index/default_e.cfm Accessed November 24, 2016.

A.10 UNNAMED LAKES #5 AND #6 WATERSHED AND BAGSVERD CREEK

Unnamed Lakes #5 and #6 are located within the Neville Lake watershed, approximately 3.5 km northwest of the Côté Gold open pit (Figures A.1 and A.10.1). These two small lakes have surface areas of approximately 2.8 and 2.3 ha (Unnamed Lakes #5 and #6, respectively; Figures A.10.2 and A.10.3). No discreet inlets flow into Unnamed Lake #5 and water from the lake discharges from the eastern point into Unnamed Lake #6. Unnamed Lake #6 discharges to an unnamed outlet that flows east and then north to Bagsverd Creek (Figure A.10.2 and A.10.4).

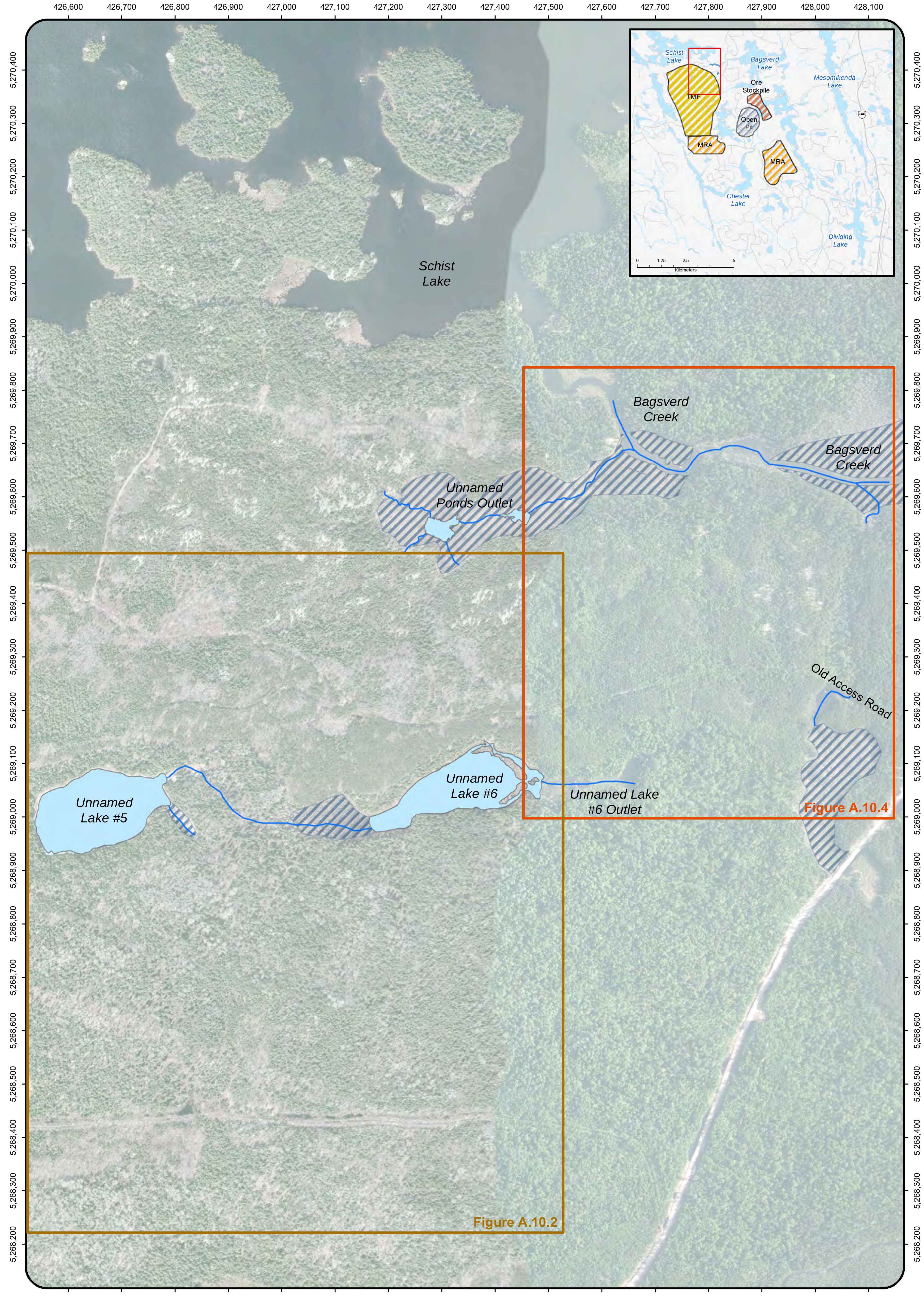
This area will be influenced by the construction of the Tailings Management Facility (TMF; Figure A.1). Unnamed Lake #5 and #6 will be lost along with a portion of the unnamed outlet. The description of physical habitat and fish community of this area was based on field surveys completed during the summer of 2016. This section describes not only the unnamed lakes and the unnamed outlet to Bagsverd Creek but also a small section of Bagsverd Creek upstream of the confluence of the unnamed outlet (Figure A.10.1).

A.10.1 Unnamed Lake #5

A.10.1.1 Habitat Description

Unnamed Lake #5 is located the furthest upstream in this small watershed and is approximately 240 m long by 125 m wide with an estimated depth of less than 2 m (Figure A.10.2). The waters of Unnamed Lake #5 are dark brown in colour. Surface water temperatures were warm (20.9°C) and dissolved oxygen concentrations achieved Provincial Water Quality Objectives (Table C.10).

The littoral substrate of Unnamed Lake #5 consists largely of silt and clay-sized fines containing high organic content, with a large section of cobble boulder mix embedded in sandy silt along the south shore (Figure A.10.2). Sparse macrophytes were observed during the summer survey and consisted of yellow and white pond lily (*Nuphar variegatum* and *Nymphaea odorata*), marsh spike rush (*Eleocharis palustris*), and pond weed (*Potamogeton* sp.). The shoreline of Unnamed Lake #5 mirrored the littoral substrates and also has large amounts of deadfall (Figure A.10.2). Shoreline vegetation generally consists of dense sedges (*Carex* sp.) and lesser amounts of leatherleaf (*Chamaedaphne calyculata*). The treed shoreline consists of upland mixed forest including black spruce (*Picea mariana*), jack pine (*Pinus banksiana*), and eastern white cedar (*Thuja occidentalis*), with lesser amounts of trembling aspen (*Populus tremuloides*).



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Map Projection: UTM Zone 17 NAD 1983
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Project No.: 167202.0065

Waterbody Assessed For Fish Habitat
Wetland
Watercourse Assessed For Fish Habitat

Figure A.10.1: Overview of Bagsverd Creek Watershed

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Project No.: 167202.0065

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Littoral Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

River Habitat:
- Pool
- High-Gradient
- Moderate-Gradient
- Low-Gradient
- Intermittent Low-Gradient Channel

Habitat Features:
- Beaver Lodge
- Logs and Fallen Trees
- Rock
- Standing Deadwood
- Beaver Dam
- Water Flow Direction
- Floating Fen
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Wetland

Figure A.10.2: Unnamed Lakes #5 and #6 Habitat Features

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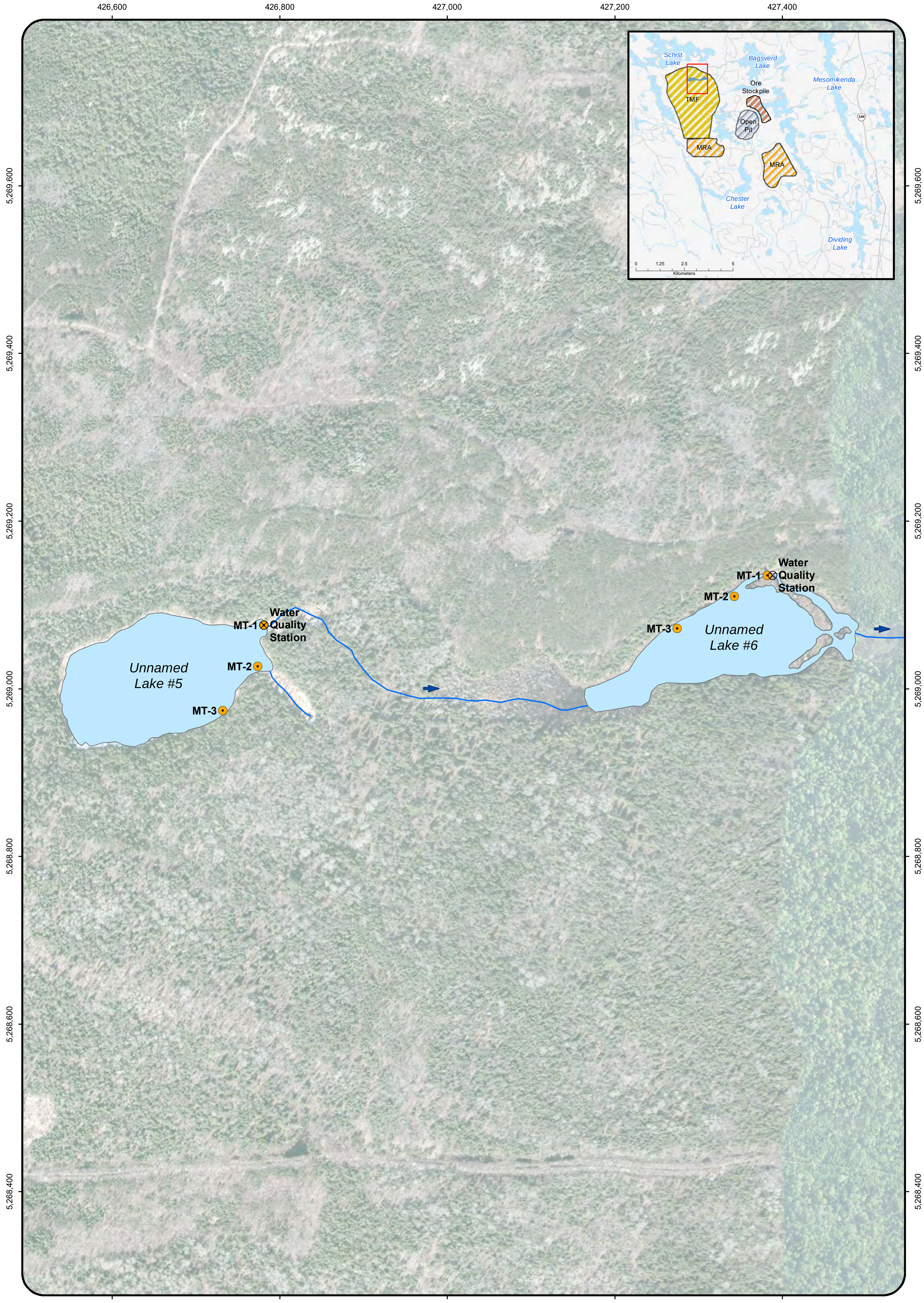

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Map Projection: UTM Zone 17 NAD 1983
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Creation Date: January 2017
Project No.: 167202.0065

Sampling Location:
- 2016 Minnow
- Water Quality

Other Features:
- Water Flow Direction

Figure A.10.3: Unnamed Lakes #5 and #6 Sampling Locations

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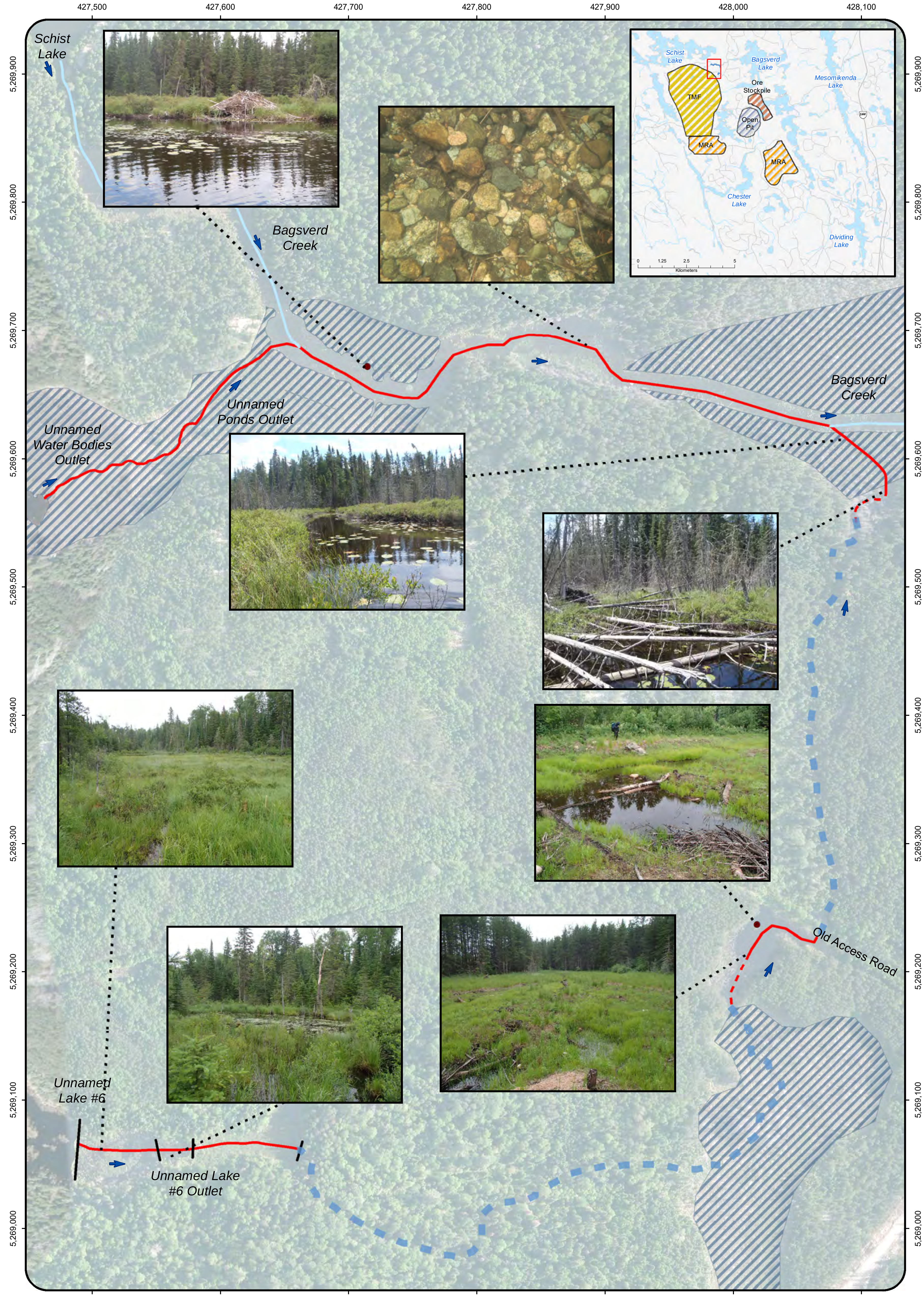

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Map Projection: UTM Zone 17 NAD 1983
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Creation Date: January 2017
Project No.: 167202.0065

River Habitat:
- Pool
- High-Gradient
- Moderate-Gradient
- Low-Gradient
- Intermittent Low-Gradient Channel
- Habitat Not Completed
- Channel Not Present

Habitat Features:
- Beaver Lodge
- Beaver Dam
- Water Flow Direction
- Wetland

Figure A.10.4: Outlet of Unnamed Lake #6 to Bagsverd Creek Habitat Features

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A.10.1.2 Fish Community Composition

A total of five small-bodied fish species were captured in Unnamed Lake #5, including fathead minnow (*Pimephales promelas*), finescale dace (*Chrosomus neogaeus*), northern redbelly dace (*Phoxinus eos*), pearl dace (*Margariscus margarita*), and Iowa darter (*Etheostoma exile*; Table A.10.1, Figure A.10.3 and Table D.1). No endangered, threatened, or special concern fish species (COSEWIC 2016) were observed at Unnamed Lake #5.

A.10.1.3 Fish Habitat Evaluation

The presence of very large numbers of finescale and northern redbelly dace suggests excellent habitat for spawning, rearing, and foraging (Tables A.10.1 and A.1). Moderate spawning and rearing/foraging habitat for fathead minnow and pearl dace is offered by the rocky southern shore and submergent vegetation along the majority of the shoreline (Table A.1 and Figure A.10.2). Wetland vegetation associated with the shoreline provides good spawning habitat for Iowa darter, while the loose organic substrate in the shallow littoral area likely provides good rearing, foraging and cover habitat for these species (Table A.1 and Figure A.10.2).

A.10.2 Unnamed Lake #6

A.10.2.1 Habitat Description

Unnamed Lake #6 is located approximately 400 m downstream of Unnamed Lake #5 and contains several large floating *Sphagnum* mats. It is approximately 160 m long and 90 m wide with no distinguishing features. Similar to Unnamed Lake #5, water colour was stained and temperature was warm (20.5°C; Table C.10), and dissolved oxygen concentrations were below Provincial Water Quality Objectives (<6 mg/L; Table C.10).

The nearshore substrate of Unnamed Lake #6 consists entirely of silt and clay-sized fines with high organic content (Figure A.10.2). High densities of macrophytes were observed throughout the entire lake, consisting of yellow pond lily, marsh spike rush, watershield (*Brasenia* sp.) and pond weed. The shoreline consists primarily of organic material (Figure A.10.2) and vegetation is comprised of *Sphagnum* moss, sedges, herbaceous plants such as pitcher plant (*Sarracenia* sp.), bog aster (*Aster nemoralis*), bell flower (*Campanula* sp.), marsh cinquefoil (*Potentilla palustris*), and various shrubs such as bog laurel (*Kalmia polifolia*), sheep laurel (*Kalmia angustifolia*), Labrador tea (*Rhododendron groenlandicum*), bog rosemary (*Andromeda polifolia*), leatherleaf, and sweet gale (*Myrica gale*). Large floating *Sphagnum* mats populate Unnamed Lake #6, which contain similar vegetation as found on the shoreline. The treed shoreline consists of a similar assemblage as Unnamed Lake #5 including black spruce, jack pine, and eastern white cedar, with lesser amounts of trembling aspen.

Table A.10.1: Summary of fish catches and catch-per-unit-effort (CPUE) in Unnamed lakes #5 and #6, 2016.

a) Minnow Trapping

Area	Species	Total Caught	CPUE (# of fish/trap*d)
Unnamed Lake #5	fathead minnow	14	84
	finescale dace	148	888
	Iowa darter	1	6.0
	northern redbelly dace	188	1,128
	pearl dace	17	102
	Total	**368**	**2,208**
Unnamed Lake #6	fathead minnow	3	5.1
	finescale dace	213	361
	northern redbelly dace	39	66
	pearl dace	2	3.4
	Total	**257**	**435**

A.10.2.2 Fish Community Composition

Unnamed Lake #6 had a similar fish species composition as Unnamed Lake #5, with the exception that no Iowa darter were observed (Table A.10.1, Figure A.10.3 and Table D.1). No endangered, threatened or special concern fish species (COSEWIC 2016) were observed in Unnamed Lake #6.

A.10.2.3 Fish Habitat Evaluation

Similar to Unnamed Lake #5, the presence of very large numbers of finescale and northern redbelly dace suggests excellent habitat for spawning, rearing and foraging (Tables A.10.1 and A.1). Moderate spawning and rearing/foraging habitat for fathead minnow and pearl dace (Table A.1) is offered by the large amounts of macrophytes found throughout the lake (Figure A.10.2). Although Iowa darter were not captured, the vegetation associated with the shoreline provide good spawning habitat, while the loose organic substrate in the shallow littoral area likely provides good rearing, foraging, and cover habitat for this species (Table A.1 and Figure A.10.2).

A.10.3 Unnamed Outlet from Lake #5 and #6

A.10.3.1 Habitat Description

The habitat of the unnamed outlet was surveyed in the summer of 2016 in its entirety, and is approximately 1,750 m in length before joining Bagsverd Creek (Figures A.10.1, A.10.2 and A.10.4). The unnamed stream originates from Unnamed Lake #5 and flows for approximately 440 m east to Unnamed Lake #6 (Figure A.10.2). The channel between the lakes is predominantly low-gradient with an average wetted width and depth of 0.8 m and 0.3 m, respectively. The reach is dominated by loose organic substrate coupled with abundant woody debris and rooted aquatic vegetation (Figure A.10.2). One section of intermittent channel is present for 91 m with comparable stream characteristics. The instream vegetation generally consists of emergent beds of burreed (*Sparganium* sp.) and dense sedges. The stream banks are bordered by overhanging sedges and shrubs, such as leatherleaf, sweet gale, speckled alder (*Alnus incana*), and bog laurel. Black spruce is the dominant tree species found adjacent to the stream.

A small section of moderate-gradient habitat is located near the outlet of Unnamed Lake #5 where wetted widths were 0.5 m and channel depth was 0.2 m (Figure A.10.2). Substrate is a cobble-boulder mix with an abundance of woody debris both in and over the stream channel. The moderate-gradient reach is treed to the bank with understory of fern and speckled alder and overstory including eastern white cedar, black spruce, and speckled alder.

Very minimal surface discharge was observed from Unnamed Lake #6 due to the presence of four beaver dams (Figures A.10.1 and A.10.4). The low-gradient channel flows for approximately 180 m before the channel disappears (Figure A.10.4). Wetted channel widths range from 0.5 to 15 m and depths from 0.2 to 0.4 m, where larger widths and depths are observed in pools upstream of beaver dams. Substrates consist of loose organics and abundant woody debris, similar to upstream. Pooled areas are completely covered with white pond lily and yellow pond lily. Downstream of the beaver dams, no defined channel are observed through a mixed forest, with heavy blowdown dominated by black spruce and eastern white cedar. A small section (114 m) of channel and pooled water is present near an old access road which contains an old beaver lodge, woody debris, organic muck substrate, and sedge vegetation (Figure A.10.4). The intermittent channel resurfaces approximately 95 m upstream from the confluence with Bagsverd Creek (Figure A.10.4). In this low-gradient channel, wetted widths ranged from 1 m to 5 m, with greater widths in closer proximity to Bagsverd Creek. Water depth ranged from 0.5 m to 1 m, and substrates are dominated by organics and fine silt. Stream banks are lined with sedges and surrounded by black spruce forest. An abundance of large-woody debris lay over the channel providing instream cover. Instream vegetation consist of yellow pond lily (Figure A.10.4).

A.10.3.2 Fish Habitat Evaluation

No fish were observed during the summer 2016 survey of the outlet channel. It was assumed that the fish community within the upper reach of the stream would be similar to that of Unnamed Lakes #5 and #6 (Table A.10.2). The stream provides moderate spawning, rearing and foraging habitat for small-bodied species (dace and darter; Table A.1) as a result of woody debris, good cover through overhanging vegetation, and the open water provided by the beaver ponds (Figure A.10.4).

Similarly, it was assumed that the fish community near the confluence of Bagsverd Creek would mirror that of Bagsverd Creek (see Section A.10.4.2). Good spawning and juvenile rearing for northern pike and yellow perch is available. Good spawning and rearing habitat for small-bodied species (i.e., dace, darter and mudminnow) is present based on the presence of abundant, shallow wetland areas adjacent to the shoreline and shallow vegetated areas (Figure A.10.4). Limited adult large-bodied fish foraging habitat exists due to the shallow nature of the stream (Table A.1).

A.10.4 Bagsverd Creek

A.10.4.1 Habitat Description

A small section of Bagsverd Creek (approximately 500 m) downstream of Schist Lake was surveyed during the summer field survey (Figure A.10.4). Bagsverd Creek originates from Schist Lake and terminates in Neville Lake (Neville Lake watershed). The water of Bagsverd Creek was stained dark yellow-brown, which was consistent with the 2012 and 2013 surveys (Minnow 2014). Flow occurs along a meandering low-gradient channel and has an approximate wetted width of 20 m, average depth of 1.5 m, and a maximum depth of 2 m. Surface water was warm (24.2°C) and well oxygenated (7.56 mg/L) with specific conductance 129 µS/cm and pH of 7.04 (Figure A.10.5 and Table C.11).

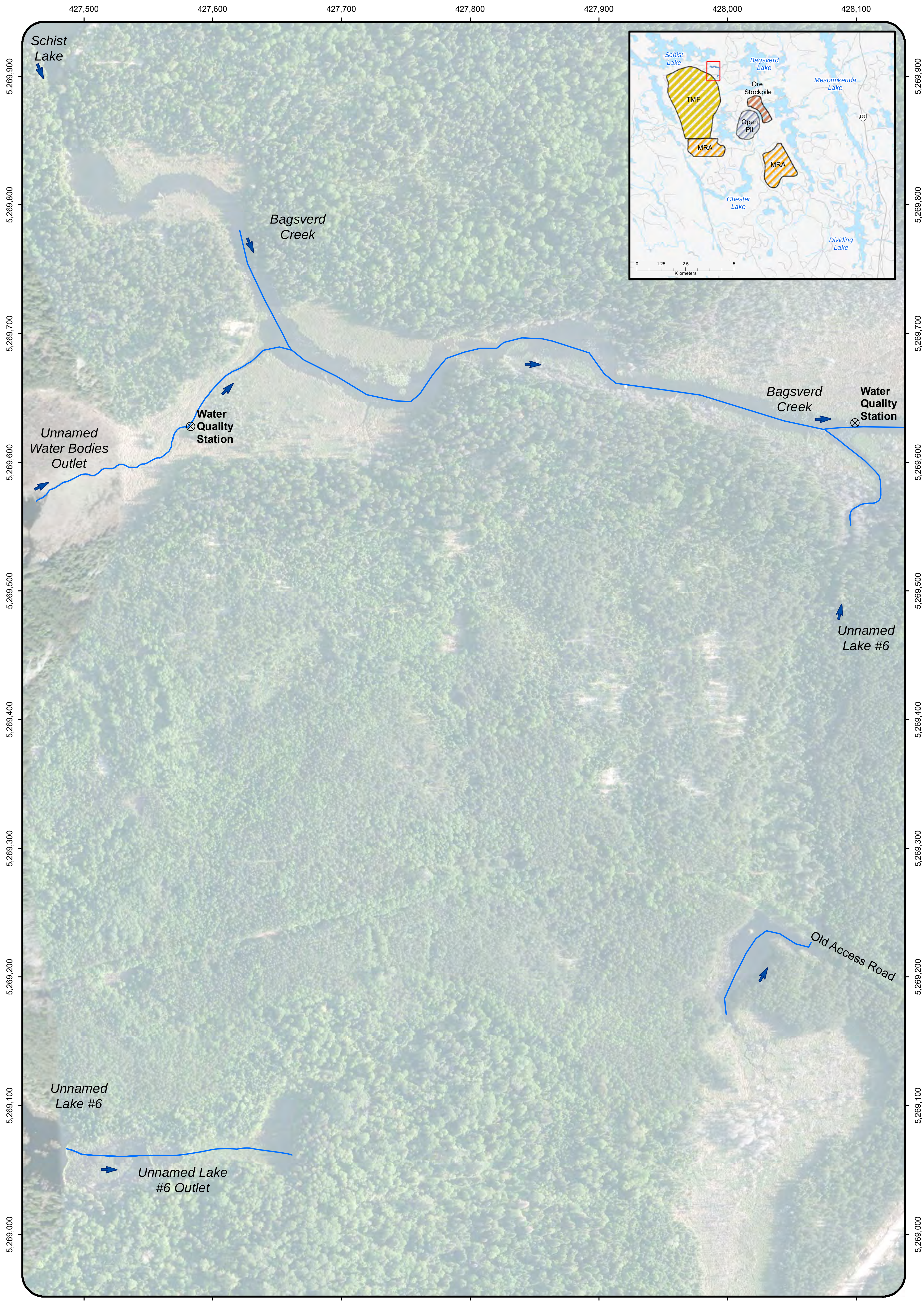
Substrate within this reach is primarily cobble-boulder mix embedded in soft organic muck (i.e., silt with high organic content including coarse woody debris). Aquatic vegetation is abundant and found throughout the reach, especially along the shorelines (Figure A.10.4). The macrophyte community generally consists of yellow and white pond lilies, burred, milfoil (*Myriophyllum* sp.), and bulrush (*Scirpus* sp.). Stream banks consists of sedges and various wetland related herbaceous plants, such as bog aster, and various shrubs, such as bog laurel, sheep laurel, Labrador tea, bog rosemary, leatherleaf, and sweet gale. Black spruce is the dominant tree species found adjacent to the stream.

A.10.4.2 Fish Community Composition

Fishing was not conducted in Bagsverd Creek during the 2016 field work. However, Bagsverd Creek further downstream was assessed in 2012 and 2013 and included a total of eight fish species (Minnow 2014). The large-bodied fish community included moderate to low numbers of northern pike (*Esox lucius*) and yellow perch (*Perca flavescens*), and relatively low numbers of white sucker (*Catostomus commersonii*) and burbot (*Lota lota*; Minnow 2014). The small-bodied fish community included golden shiner (*Notemigonus crysoleucas*), longnose dace (*Rhinichthys cataractae*), finescale dace, central mudminnow (*Umbra limi*), and Iowa darter (Minnow 2014).

A.10.4.3 Fish Habitat Evaluation

Excellent spawning and rearing (juvenile) habitat for northern pike and excellent spawning, rearing and foraging habitat for yellow perch (Table A.1) is present in the small section of Bagsverd Creek assessed based on the presence of abundant shallow wetland areas adjacent to the shoreline and shallow vegetated areas (Figure A.10.4). Northern pike foraging habitat is also found in Bagsverd Creek (Table A.1), but shallow water depths and high summer water temperatures may seasonally reduce the quality of habitat for larger adults (i.e., marginal to good



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Creation Date: January 2017
Project No.: 167202.0065

Sampling Location:
⊗ Water Quality Station

Other Features:
Water Flow Direction

Figure A.10.5: Outlet of Unnamed Lake #6 to Bagsverd Creek Sample Locations

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habitat). Narrow reaches with sand, gravel-cobble and boulder substrate located in Bagsverd Creek provide good habitat for white sucker and walleye (*Sander vitreus*) spawning, assuming adequate flow during spring freshet (Table A.1 and Figure A.10.4). This section of Bagsverd Creek provides good rearing habitat for juveniles and marginal to good foraging habitat for adult white sucker (Table A.1). No spawning habitat and very poor juvenile and adult foraging habitat occurs within this section of Bagsverd Creek for burbot (Table A.1).

Good spawning and rearing/foraging habitat for golden shiner (Table A.1) is provided in Bagsverd Creek as a result of a good diversity and high abundance of aquatic plants. Sand substrate found in moderate-gradient areas of Bagsverd Creek provides good spawning habitat for blacknose shiner, with the combination of dense aquatic vegetation and sandy to muddy substrate providing good rearing and foraging habitat for this species throughout Bagsverd Creek (Table A.1). Coarse sand, gravel, and cobble substrate in Bagsverd Creek provide longnose dace with good spawning, rearing, and foraging habitat for juveniles and adults. Good spawning and rearing/foraging habitat for central mudminnow is provided by the extensive wetland areas and dense coverage of aquatic vegetation (Table A.1). Finally, extensive wetland areas, overhanging vegetation, and dense coverage of rooted macrophytes provide good spawning, rearing, and foraging habitat for Iowa darter within Bagsverd Creek (Table A.1.1 and Figure A.10.4).

A.10.5 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. Canadian Wildlife Species at Risk. http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm. Accessed November 24, 2016.

Minnow 2014. Côté Gold Aquatic Baseline Report. Report Prepared for IAM GOLD Corporation. Prepared by Minnow Environmental Inc. March 2014.

A.11 UNNAMED WATER BODIES OFF OF BAGSVERD CREEK

There are two small unnamed water bodies (0.19 and 0.08 ha, respectively), which are headwater bog-lakes located approximately 3.7 km northwest of the proposed Côté Gold open pit (Figures A.1, A.11.1 and A.11.2). Both water bodies are in the Neville Lake watershed and are surrounded by wetland habitat, which ultimately drains to Bagsverd Creek.

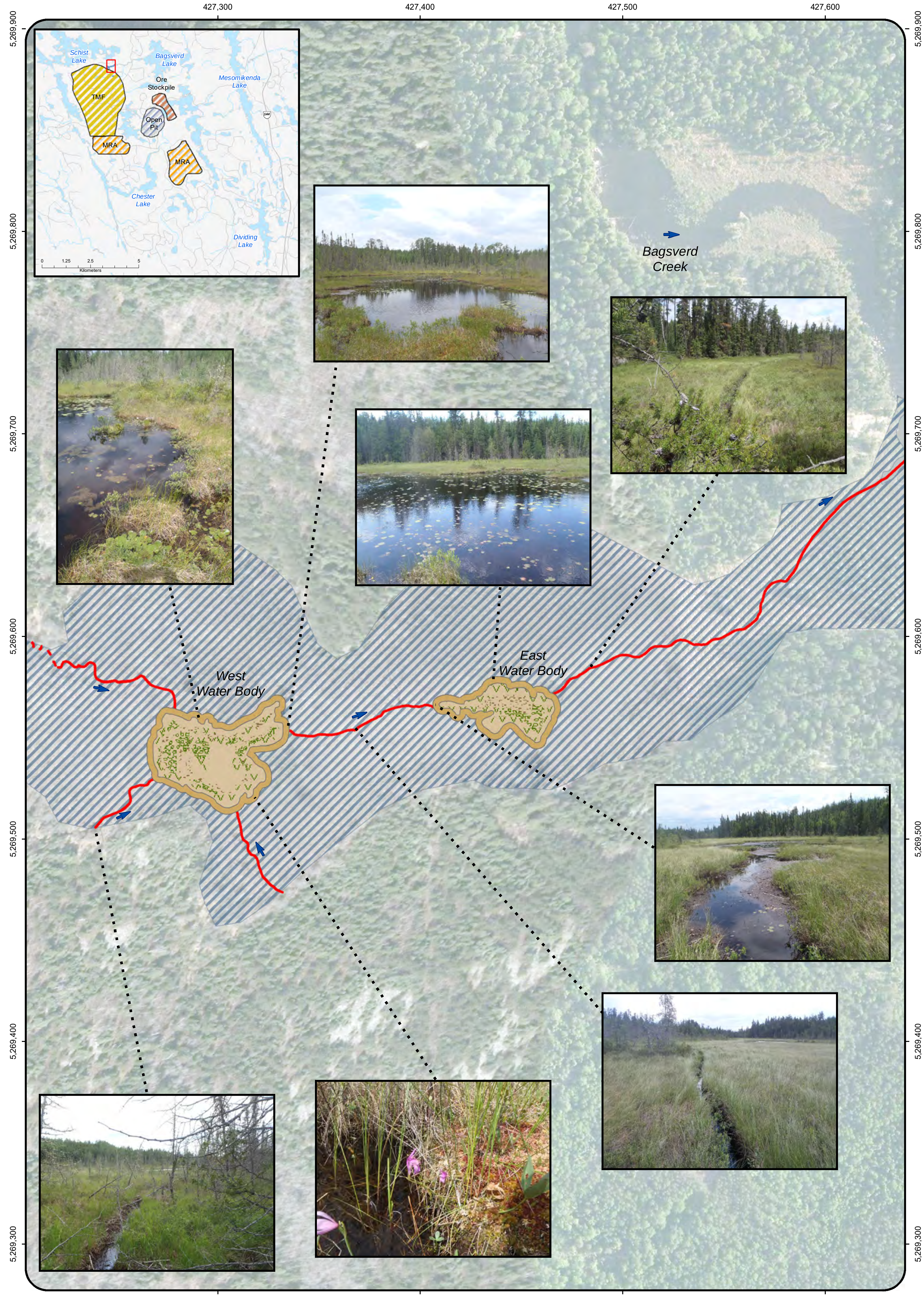
This small watershed will be lost due to the construction of the Tailings Management Facility (TMF; Figure A.1). The assessment of habitat and fish community for this area was based on the field survey conducted in the summer of 2016. This section describes not only the unnamed water bodies but also the outlet stream from these water bodies that flows to Bagsverd Creek (Figure A.11.1).

A.11.1 Unnamed Water Bodies

A.11.1 Habitat Description

The western water body contains a simple, oval-shaped basin approximately 60 m long and 50 m wide, with an estimated maximum depth of 1 m. The eastern, downstream water body is smaller, approximately 40 m long and 25 m wide, with an estimated maximum depth of less than one metre.

The littoral substrate of two ponds are comprised of entirely soft organic muck (i.e., silt with high organic content including coarse woody debris). Aquatic vegetation is abundant and found throughout each of the ponds (Figure A.11.1). The macrophyte community generally consists of yellow and white pond lilies (*Nuphar variegatum* and *Nymphaea odorata*), burreed (*Sparganium* sp.), and milfoil (*Myriophyllum* sp.), with bulrush (*Scirpus* sp.) around the periphery. Both water bodies are encompassed by large *Sphagnum* dominated wetland that contain a high diversity of plants characteristic of bog environments including *Sphagnum* moss, sedges (*Carex* sp.), herbaceous plants such as pitcher plant (*Sarracenia* sp.), bog aster (*Aster nemoralis*), bell flower (*Campanula* sp.), marsh cinquefoil (*Potentilla palustris*), and various shrubs such as bog laurel (*Kalmia polifolia*), sheep laurel (*Kalmia angustifolia*), Labrador tea (*Rhododendron groenlandicum*), bog rosemary (*Andromeda polifolia*), leatherleaf (*Chamaedaphne calyculata*), and sweet gale (*Myrica gale*). Black spruce (*Picea mariana*) is the dominant tree species found adjacent to the wetland surrounding the two ponds.



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Project No.: 167202.0065

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

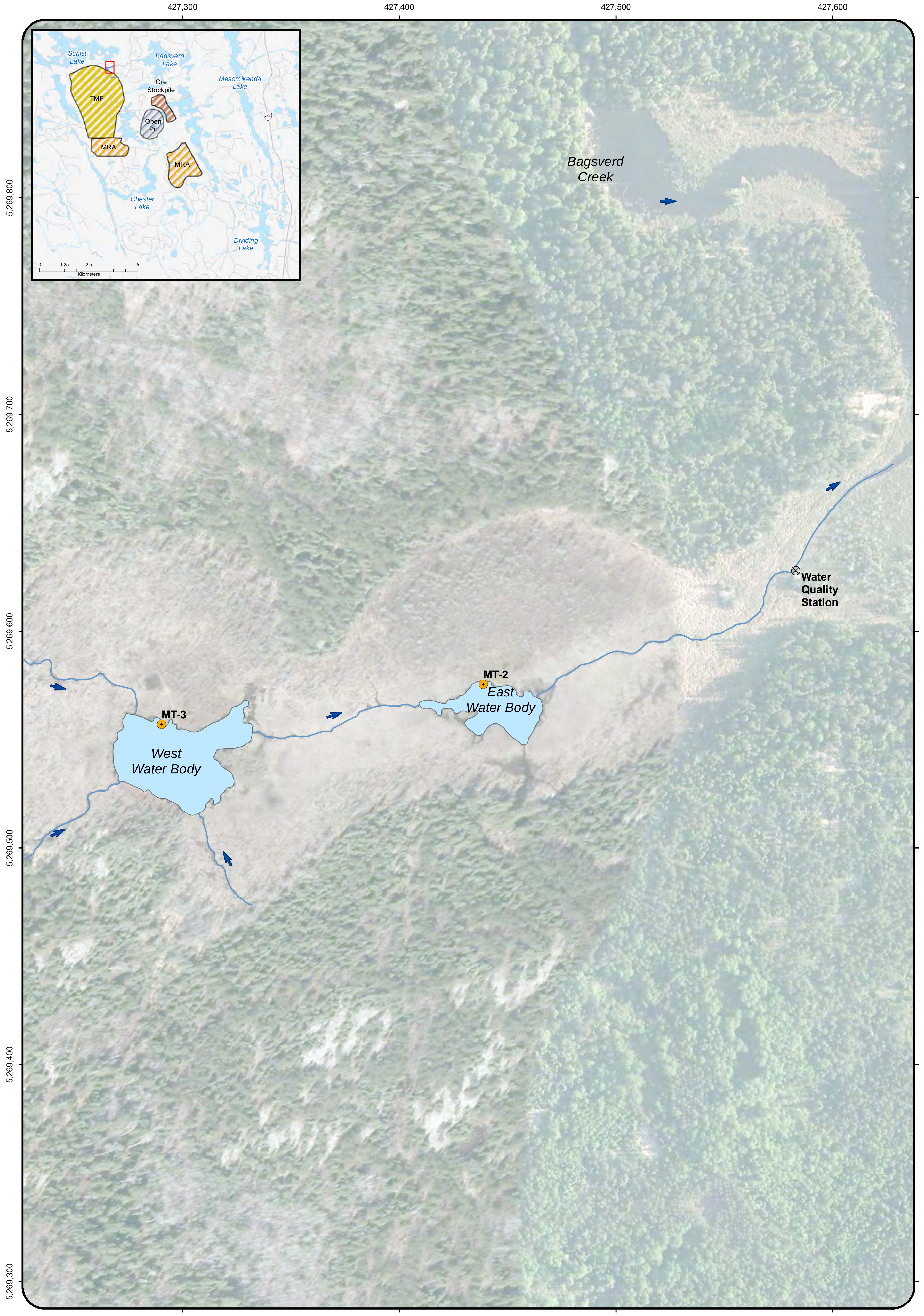
Littoral Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

River Habitat:
- Pool
- High-Gradient
- Moderate-Gradient
- Low-Gradient
- Intermittent Low-Gradient Channel

Habitat Features:
- Water Flow Direction
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Wetland

Figure A.11.1: Unnamed Water Bodies off of Bagsverd Creek Habitat Features

minnow environmental inc.



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Project No.: 167202.0065

Sampling Location:
- 2016 Minnow Trap
- Water Quality Station

Other Features:
- Water Flow Direction

Figure A.11.2: Unnamed Water Bodies off of Bagsverd Creek Habitat Features

minnow environmental inc.

A.11.1.2 Fish Community Composition

No fish were captured in the two unnamed water bodies during the 2016 fish survey, however an unidentified forage fish was observed in the upstream (west) water body, indicating that this area is frequented by fish (Table A.11.1, Figure A.11.2 and Table D.1).

A.11.1.3 Fish Habitat Evaluation

Although no large bodied fish were captured or observed, both water bodies provide adequate spawning habitat for northern pike or yellow, with abundant wetland and overhanging vegetation present around the perimeter (Table A.1 and Figure A.11.1). The overhead protection offered by the slightly undercut *Sphagnum* wetland and floating vegetation also provide marginal juvenile rearing and adult foraging habitat for these fish (Table A.1). Good spawning and rearing/foraging habitat is available for forage fish as a result of the variety and general abundance of aquatic vegetation present in the water bodies (Table A.1). However, overwintering habitat is limited due to the lack of water depth.

A.11.2. Unnamed Water Bodies Outlet

A.11.2.1 Habitat Description

Three small channels exist upstream of the western water body. These channels have wetted widths of approximately 1 m and an average depth of 0.5 m, with the channel disappearing once it enters the forested area (Figure A.11.1). Water then flows east through the wetland in a low-gradient channel for approximately 75 m to the eastern unnamed water body (Figure A.11.1). Average wetted channel width was 0.5 m, with an average water depth of 0.3 m and substrate consisting of organic material. Discharge from the eastern water body flows for 300 m until it reaches Bagsverd Creek. The low-gradient habitat within this area is characterized by a sinuous stream morphology represented mainly by slow run habitat. The wetted width averages 0.5 m with a maximum depth of 0.5 m. Substrate was dominated by fines and sparse amounts of small woody debris. Water was stained dark yellow-brown. Surface water was warm (24.4 ^{o}C), well oxygenated (7.12 mg/L), and had specific conductivity and the pH measurements of 318 μS/cm and 6.45, respectively (Table C.11).

Low densities of the following macrophytes are present within the stream; yellow and white pond lilies, burred, and milfoil. The stream banks are bordered primarily by overhanging sedges and leatherleaf, with lesser densities of other herbaceous plants such as bog laurel, sheep laurel, Labrador tea, bog rosemary, and sweet gale. Black spruce is the dominant tree species found adjacent to the riparian zone of the stream.

Table A.11.1: Summary of fish catches and catch-per-unit-effort (CPUE) in unnamed water bodies off of Bagsverd Creek, 2016.

a) Minnow Trapping[a]

Species	Total Caught	CPUE (# of fish/trap*d)
no fish captured	0	0
Total	**0**	**0**

[a] Minnow trapping was conducted in the two Water Bodies, but no fish were caught after 12.7 trap hours.

A.11.2.2 Habitat Evaluation

No fish were observed during the summer 2016 survey of the outlet channel. It was assumed that the fish community would be similar that of Basgverd Creek. The large-bodied fish community included moderate to low numbers of northern pike (*Esox lucius*) and yellow perch (*Perca flavescens*), and relatively low numbers of white sucker (*Catostomus commersonii*) and burbot (*Lota lota*; Minnow 2014). The small-bodied fish community included golden shiner (*Notemigonus crysoleucas*), longnose dace (*Rhinichthys cataractae*), finescale dace (*Chrosomus neogaeus*), central mudminnow (*Umbra limi*), and Iowa darter (*Etheostoma exile*; Minnow 2014).

Poor to marginal foraging and spawning habitat is provided to larger sport fish species due to the small nature of the stream and limited overwintering habitat (Table A.1). Marginal spawning, rearing and foraging habitat is available for yellow perch and northern pike through the vegetation found. The outlet provides moderate to good spawning, rearing and foraging habitat for forage fish species (dace, darter and mudminnow; Table A.1) that require woody debris and good cover through overhanging vegetation. No deep pools are found within the outlet, therefore any fish residing within the stream would have to migrate downstream for overwintering (i.e., to unnamed water bodies or downstream in Bagsverd Creek; Figure A.11.1).

A.11.3 References

Minnow 2014. Côté Gold Aquatic Baseline Report. Report Prepared for IAM GOLD Corporation. Prepared by Minnow Environmental Inc. March 2014.

A.12 WATERSHED WEST OF WEST BEAVER POND

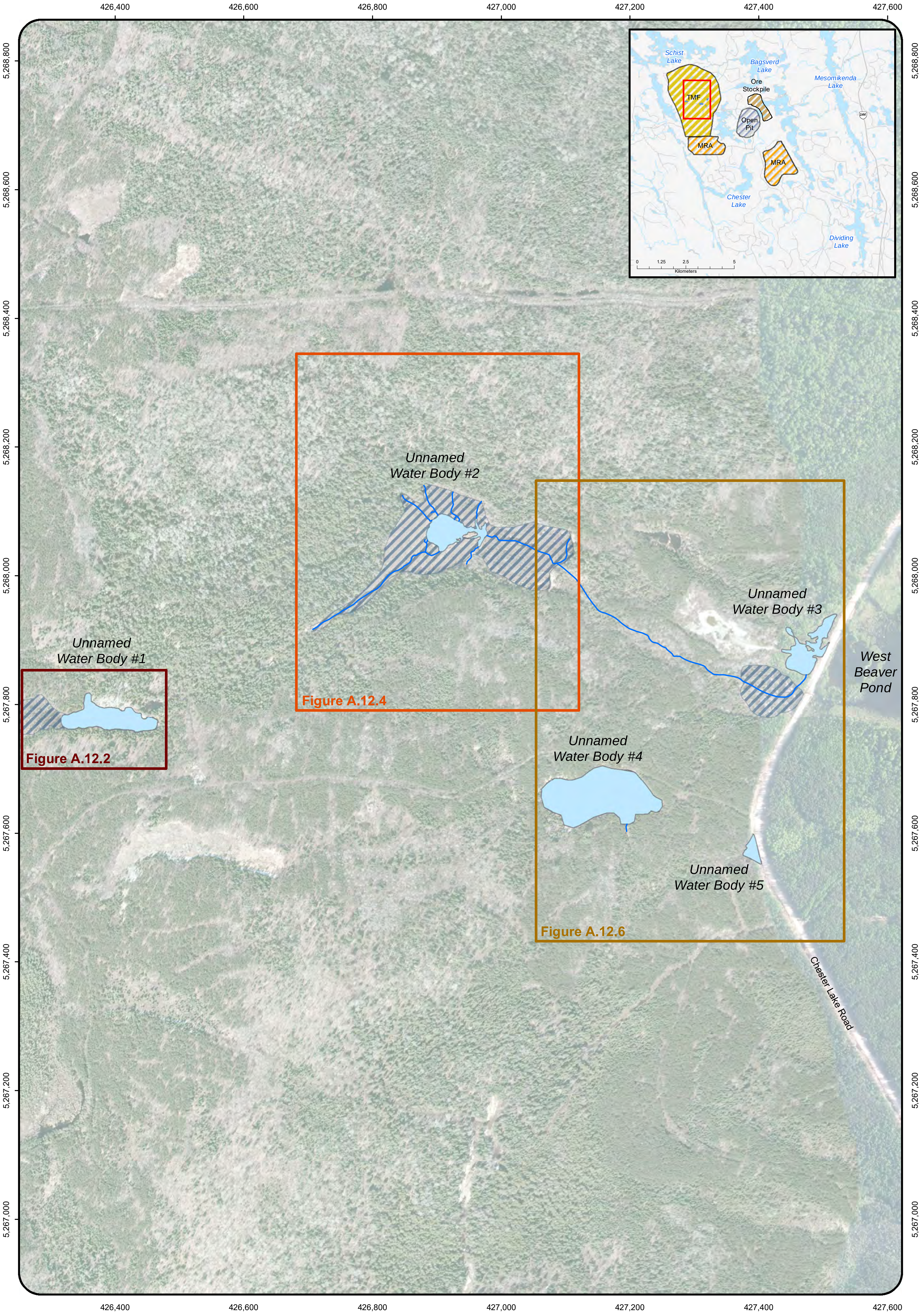
The watershed west of West Beaver Pond is located within the Neville Lake watershed approximately 2 km northwest of the proposed Côté Gold open pit (Figures A.1, A.12.1 to A.12.7). Five unnamed water bodies are present within the watershed upstream of West Beaver Pond (Figure A.12.1). Unnamed Water Body #1 is the furthest (1.1 km) from West Beaver Pond and it is a small headwater pond that has a surface area of approximately 0.45 ha (Figure A.12.2). Flow from this water body seeps northwest to Unnamed Water Body #2, another small water body that is 0.29 ha (Figure A.12.3). Water subsequently drains southeast to Unnamed Water Body #3 (0.30 ha), that is separated from the West Beaver Pond due to the Chester Lake Road at its eastern end (Figure A.12.6). Two other small water bodies drain into West Beaver Pond, located approximately 400 m to the south and southeast and are 1.1 and 0.06 ha in size for Unnamed Water Body #4 and #5, respectively (Figure A.12.6).

With the construction of the Tailings Management Facility (TMF; Figure A.1), this watershed will be lost. The assessment of habitat and fish community of this area was completed during the summer of 2016.

A.12.1 Unnamed Water Bodies

A.12.1.1 Habitat Description

Unnamed Water Body #1 contains a simple, rectangular-shaped basin that is approximately 95 m long and 30 m wide with an estimated maximum depth of one metre (Figure A.12.1). There are no defined inlets or outlets to water body #1; however, there is a wetland area to the west that likely drains into the water body. Topography would suggest water flows northwest to water body #2, however no defined channel was present (Figure A.12.1). The northeast shallow littoral area is mainly bedrock that transitioned to silt at depths of approximately 1 m (Figure A.12.1). Aquatic vegetation is abundant and found throughout and consisted of sedges (*Carex* sp.) and burreed (*Sparganium* sp.) along the shoreline. Yellow and white pond lilies (*Nuphar variegatum* and *Nymphea odorata*), submergent milfoil (*Myriophyllum* sp.), pond weed (*Potamogenton* sp.), and coontail (*Ceratophyllum* sp.) were also found in the water body. Black spruce (*Picea mariana*) is the dominant tree species in the dense surrounding forest, with fewer eastern white cedar (*Thuja occidentalis*), speckled alder (*Alnus incana*), white birch (*Betula papyrifera*), trembling aspen (*Populus tremuloides*), eastern larch (*Larix laricina*) found mixed through the forest. Surface water temperature during the July 2016 field survey was very warm (23.4˚C) and water was well oxygenated (8.0 mg/L), pH was slightly above neutral (7.8) and specific conductance was 73 µS/cm (Figure A.12.3 and Table C.12). Water was stained dark yellow-brown.



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Water Body Assessed For Fish Habitat
Wetland
Watercourse Assessed For Fish Habitat

Figure A.12.1: Overview of Water Bodies West of West Beaver Pond

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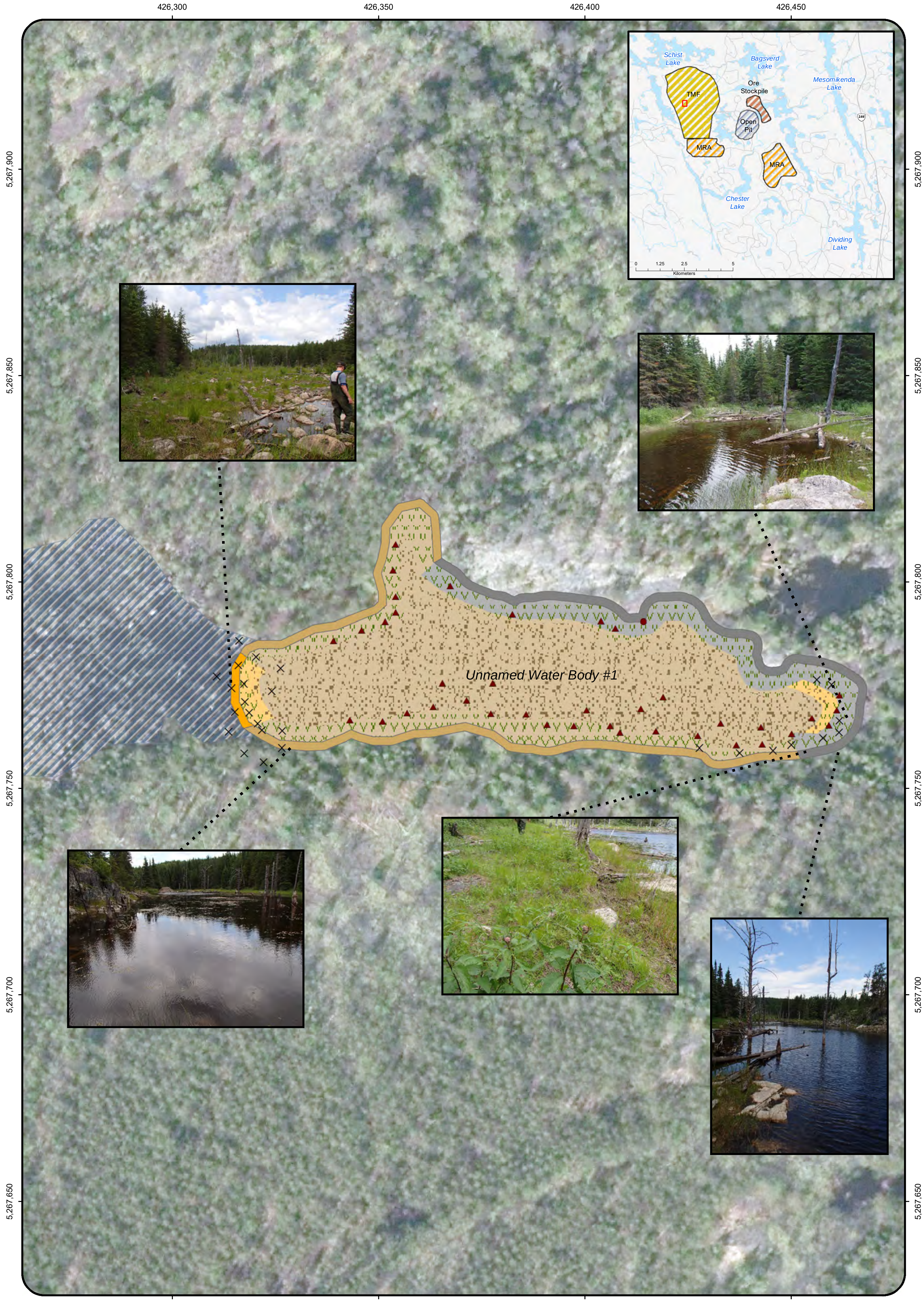

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Project No.: 167202.0065

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

Littoral Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

Habitat Features:
- Beaver Lodge
- Standind Deadwood
- Logs and Fallen Trees
- Rock
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Wetland

Figure A.12.2: Water Bodies West of West Beaver Pond - Unnamed Water Body #1 Habitat Features

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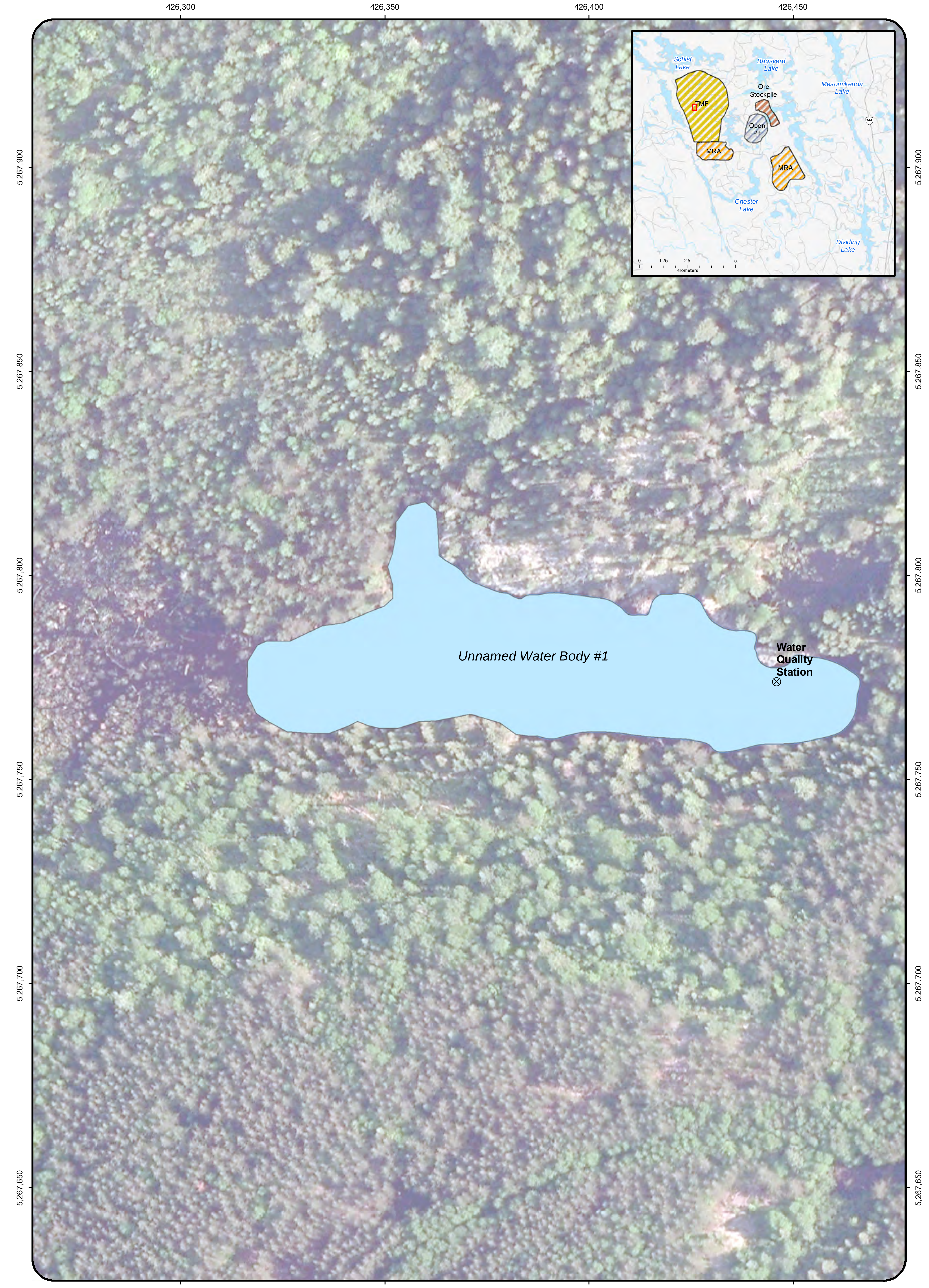

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Project No.: 167202.0065

Sample Location:

⊗ Water Quality Station

Figure A.12.3: Water Bodies West of West Beaver Pond - Unnamed Water Body #1 Sampling Locations

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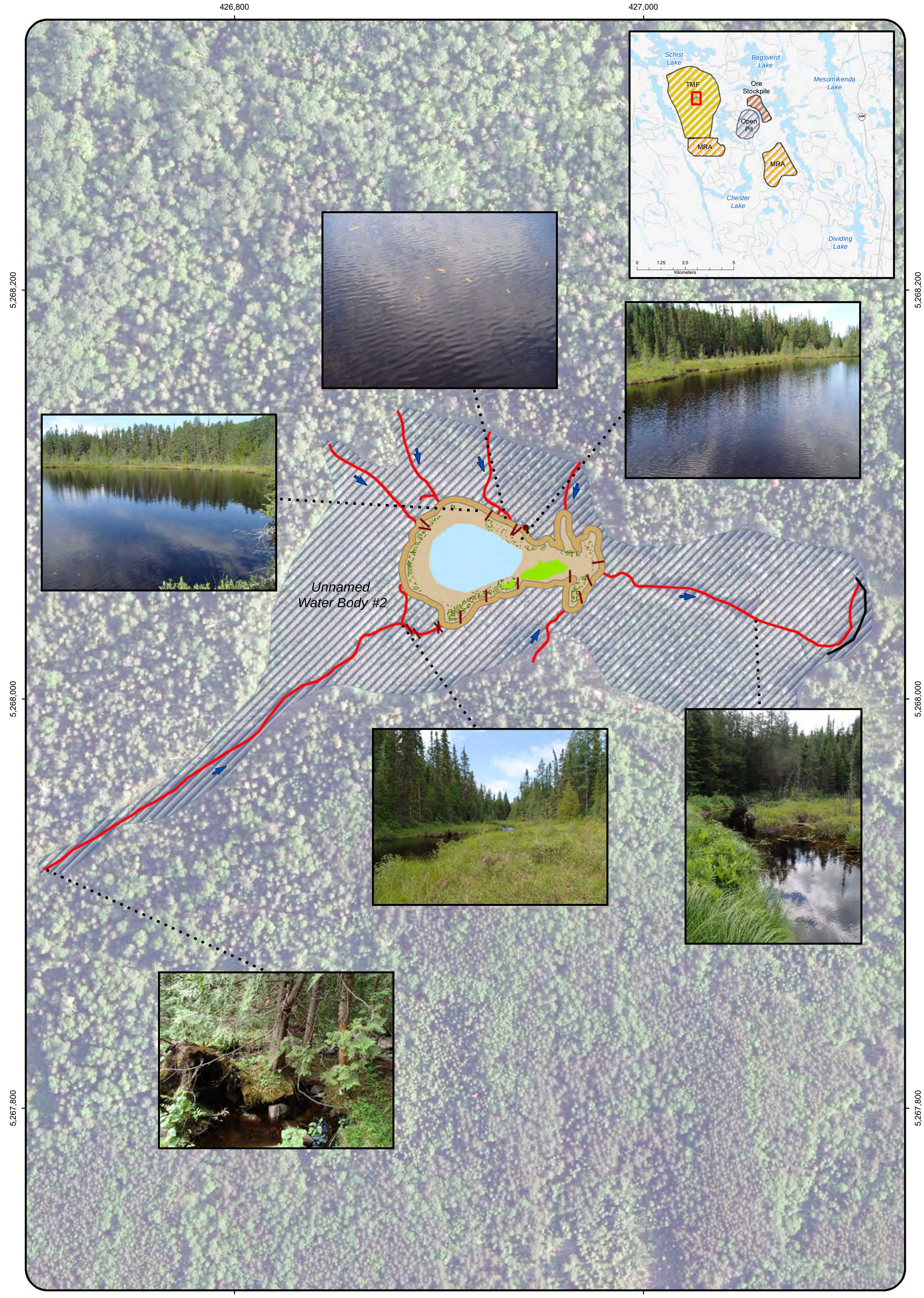

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Creation Date: January 2017
Project No.: 167202.0065

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

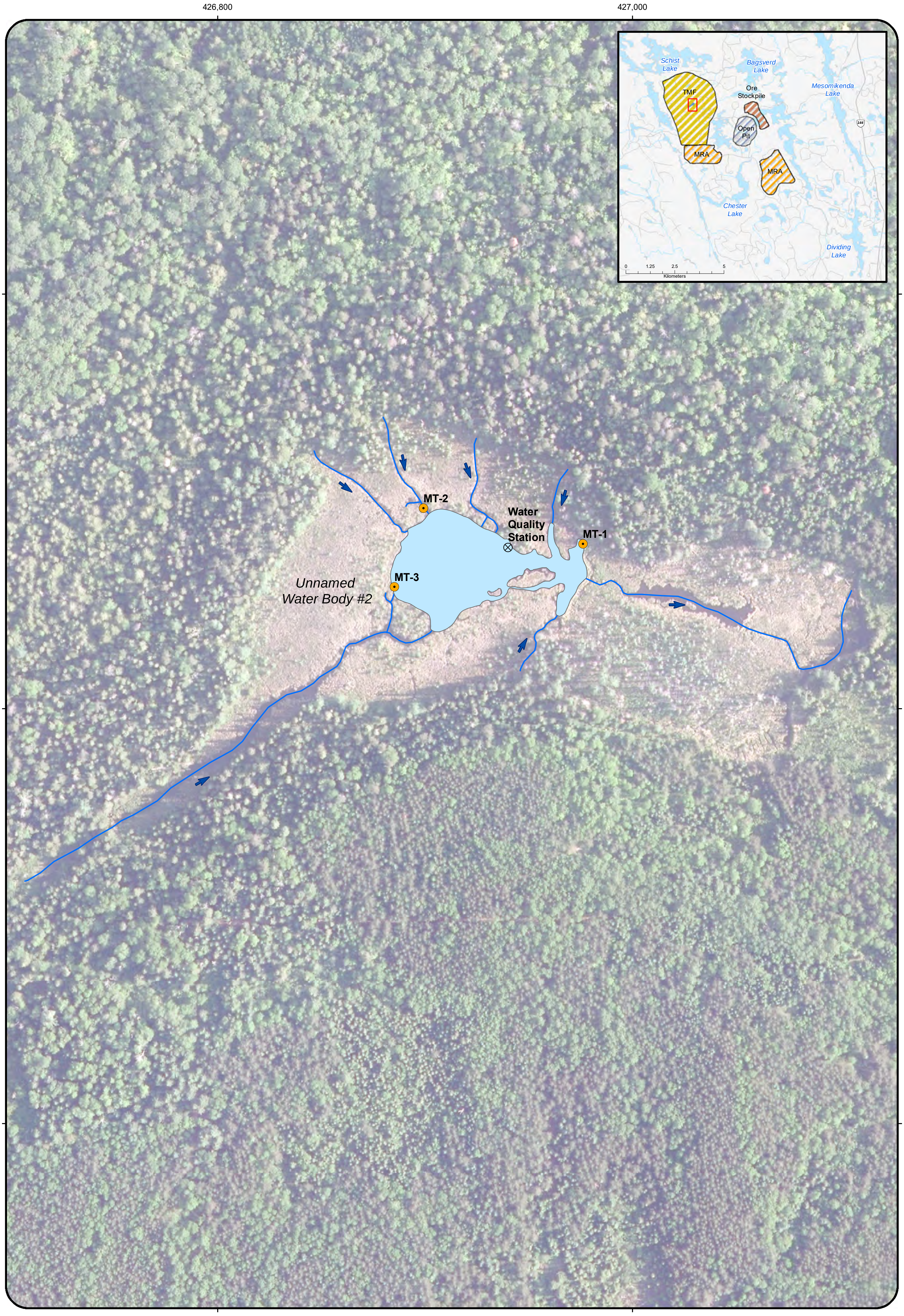
Littoral Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

River Habitat:
- Pool
- High-Gradient
- Moderate-Gradient
- Low-Gradient
- Intermittent Low-Gradient Channel

Habitat Features:
- Beaver Lodge
- Standing Deadwood
- Logs and Fallen Trees
- Rock
- Beaver Dam
- Water Flow Direction
- Floating Fen
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation
- Wetland

Figure A.12.4: Water Bodies West of West Beaver Pond - Unnamed Water Body #2 Habitat Features

minnow environmental Inc.



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Creation Date: January 2017
Project No.: 167202.0065

Sample Location:
- 2016 Minnow Trap
- Water Quality Station

Other Features:
- Water Flow Direction

Figure A.12.5: Water Bodies West of West Beaver Pond - Unnamed Water Body #2 Sampling Locations

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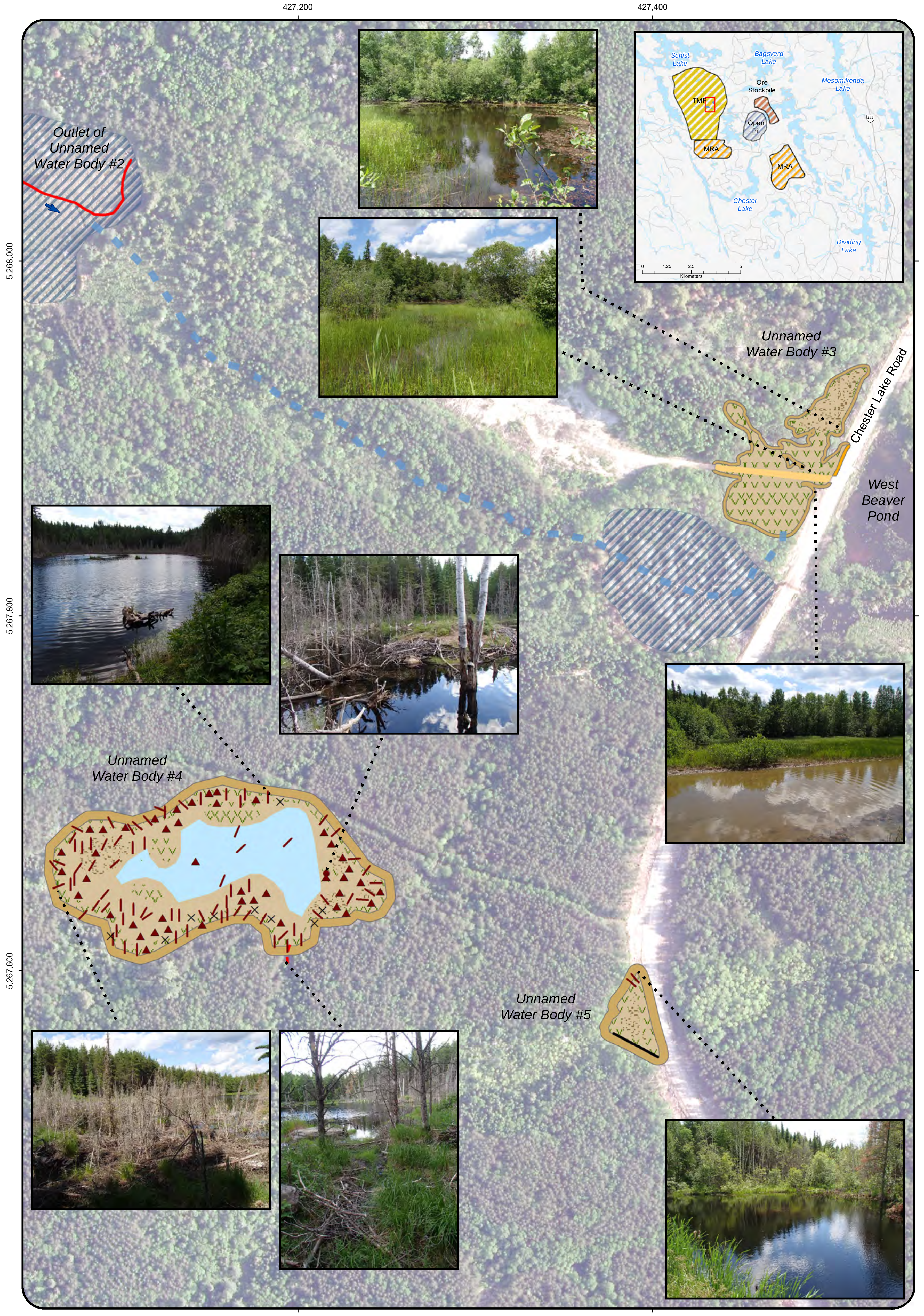
environmental inc.



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Project No.: 167202.0065

Shoreline Type:
- Organic
- Sand
- Cobble
- Bedrock

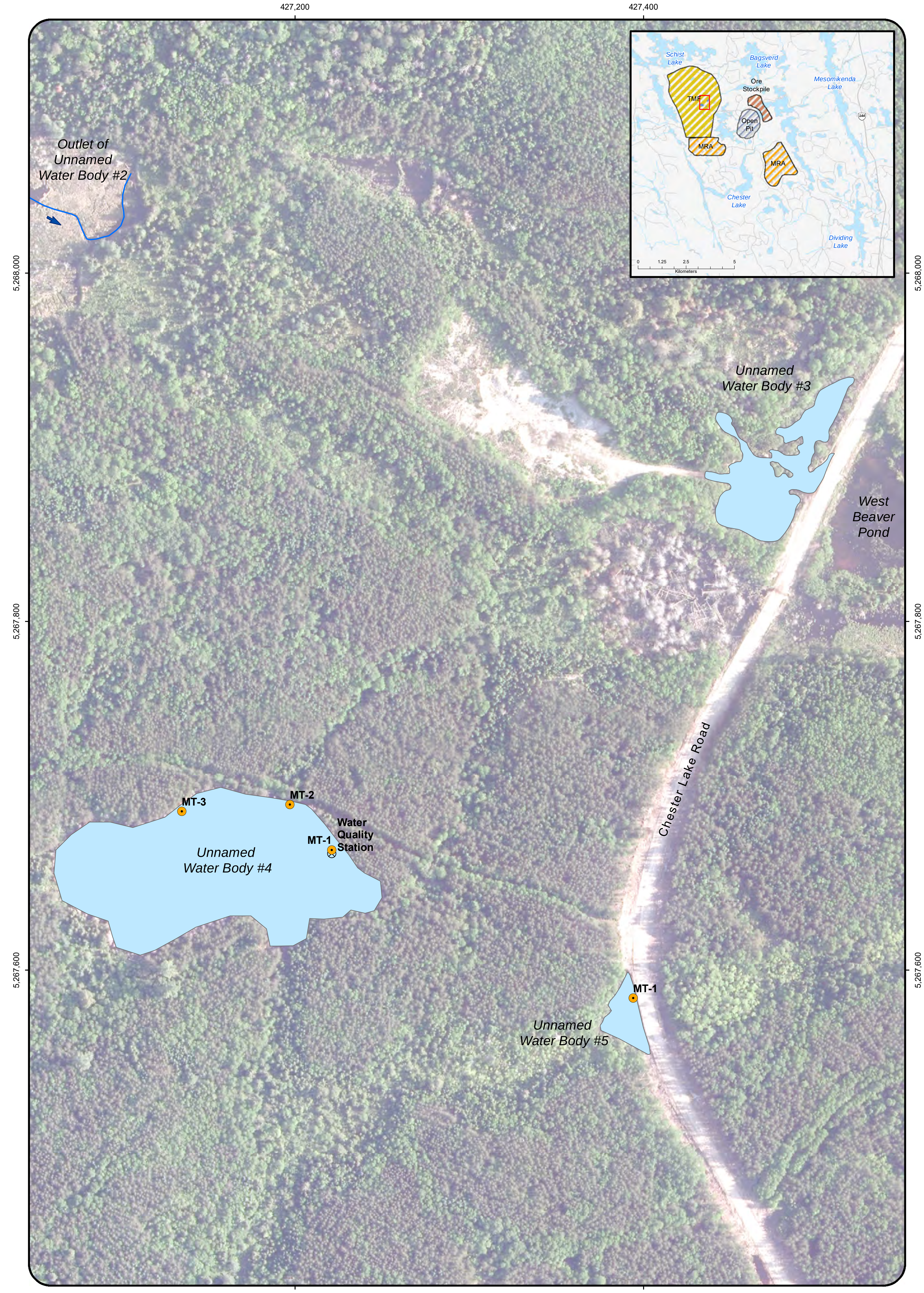
Littoral Substrate Type:
- Silt
- Sand
- Cobble
- Bedrock

River Habitat:
- Pool
- High-Gradient
- Moderate-Gradient
- Low-Gradient
- Intermittent Low-Gradient Channel
- Channel Not Present

Habitat Features:
- Beaver Lodge
- Standing Deadwood
- Logs and Fallen Trees
- Rock
- Beaver Dam
- Emergent Vegetation
- Submergent Vegetation
- Floating Vegetation

Figure A.12.6: Water Bodies West of West Beaver Pond - Unnamed Water Bodies #3, #4 and #5 Habitat Features

minnow environmental Inc.



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Creation Date: January 2017
Project No.: 167202.0065

Sample Location:

- 2016 Minnow Trap
- Water Quality Station

Other Features:

- Water Flow Direction

Figure A.12.7: Water Bodies West of West Beaver Pond - Unnamed Water Bodies #3, #4 and #5 Sampling Locations

minnow environmental Inc.

Unnamed Water Body #2 is a circular-shaped basin that is approximately 95 m long and 60 m wide with an average depth of 0.6 m (Figure A.12.3). Littoral and shoreline substrate is entirely soft organic muck (i.e., silt with high organic content including coarse woody debris). Wetland vegetation consists of a large *Sphagnum* mat (floating fen; Figure A.12.4) with a high diversity of plants characteristic of bog environments, including *Sphagnum* moss, sedges, herbaceous plants such as pitcher plant (*Sarracenia* sp.), bog aster (*Aster nemoralis*), bell flower (*Campanula* sp.), marsh cinquefoil (*Potentilla palustris*), and various shrubs such as bog laurel (*Kalmia polifolia*), sheep laurel (*Kalmia angustifolia*), Labrador tea (*Rhododendron groenlandicum*), bog rosemary (*Andromeda polifolia*), leatherleaf (*Chamaedaphne calyculata*), and sweet gale (*Myrica gale*). Water was stained dark yellow-brown, warm (21.4 °C), oxygenated (5.3 mg/L), with a specific conductance and pH of 61 µS/cm and 6.9, respectively (Figure A.12.5 and Table C.12).

No defined inlet or outlet channel exists for Unnamed Water Body #3; however Unnamed Water Body #2 drains southwest towards Unnamed Water Body #3 (Figure A.12.6). A wetland borders the southern side of the water body, while Chester Lake road boarders the eastern side adjacent to West Beaver Pond. It is 108 m long by 51 m wide, with a maximum depth of 1.1 m. The eastern shoreline is influenced by the road and consists of cobble, while the remainder consists of organic material (Figure A.12.6). Dense vegetation consists of submergent milfoil, coontail, and pond weed throughout the water body. No water quality data were collected during the July 2016 field survey, however the water is stained dark yellow brown.

Unnamed Water Body #4 is 188 m long by 75 m wide and less than 1 m in depth. Similar to Unnamed Water Bodies #1 and #3, no defined inlet or outlet channels were observed during the 2016 field survey (Figure A.12.6). The shoreline and littoral substrates consists of 100% organic material. Aquatic vegetation is abundant and consists of cattails (*Typha* sp.), sedges and burreed along the shoreline. Submergent vegetation consists of milfoil, coontail and pond weed. An abundance of standing deadwood, large woody debris and fallen trees line the shoreline (Figure A.12.5). Mixed forest of black spruce, eastern white cedar, speckled alder, and scattered white birch surround the water body. Surface water was stained dark yellow-brown, with warm water temperature (27.1°C), dissolved oxygen of 6.9 mg/L, neutral pH (7.1) and a specific conductivity of 42 µS/cm (Figure A.12.7 and Table C.12).

Lastly, Unnamed Water Body #5 is a small triangle shaped pond (40 m by 19 m), likely created by road construction and beaver activity (Figure A.12.5). The littoral and shoreline substrates consists of organic material with an estimated maximum depth of one metre. Dense submergent vegetation is present throughout and consists of milfoil, coontail and pond weed. No defined inlet or outlet channels were noted and no water quality data were collected. Riparian vegetation consists of black spruce and speckled alder, with cattails, sedges, and burreed lining the shoreline.

A.12.1.2 Fish Community Composition

A total of five species, all of which were small-bodied were captured in the watershed west of West Beaver Pond (Tables A.12.1 and D.1 and Figures A.12.3, A.12.5 and A.12.7). Fish were observed in water body #1, although no minnow trapping or seining was completed. No fish were observed or captured in water body #5 (Table A.12.1 and D.1). The small-bodied fish community within the watershed west of West Beaver Pond was dominated by finescale dace (*Chrosomus neogaeus)* and northern redbelly dace (*Chrosomus eos*), with fewer pearl dace (*Margariscus nachtriebi*) and fathead minnow (*Pimephales promelas*), and one central mudminnow (*Umbra limi*; Tables A.12.1 and D.1). No COSEWIC (2016) listed endangered, threatened or special concern fish species were observed in 2016.

A.12.3 Fish Habitat Evaluation

Abundant numbers of finescale and northern redbelly dace and lower numbers of fathead minnow and pearl dace suggest good to excellent spawning, rearing, and foraging habitat for these species in the water bodies where they were observed (Tables A.12.1 and A.1). Good spawning habitat is available for central mudminnow through wetland vegetation macrophytes within the water bodies as well as the loose organic substrate provide good rearing, foraging, and cover habitat for these species (Table A.1).

A.12.2 Unnamed West Beaver Pond Stream Habitat

A.12.2.1 Habitat Description

The only defined channels observed within the watershed of West Beaver Pond surrounded Unnamed Water Body #2 (Figure A.12.3). Six inlets and one outlet were observed during the 2016 summer field survey. The main inlet flows from the southwest and is 242 m long with the largest channel width of approximately 2.5 m and depth of 0.5 m. The remaining five inlets were all very small and ranged in size from 0.3 to 0.6 m wide and 0.3 to 0.4 m deep. The outlet flows east in a meandering channel (1.8 m wide and 0.5 m deep) for 161 m to an active beaver dam (Figure A.12.3). Substrate is predominantly fines with organics and woody debris. Banks are lined with overhanging sedges, burreed, grasses, and various shrubs such as bog laurel, sheep laurel, and leatherleaf.

Table A.12.1: Summary of fish catches and catch-per-unit-effort (CPUE) in water bodies west of West Beaver Pond, 2016.

a) Minnow Trapping[a]

Area	Species	Total Caught	CPUE (# of fish/trap*d)
Unnamed Water Body #2	central mudminnow	1	1.80
	fathead minnow	33	59
	finescale dace	177	319
	northern redbelly dace	105	189
	pearl dace	26	47
	Total	**342**	**616**
Unnamed Water Body #3[b]	finescale dace	-	-
	northern redbelly dace	-	-
	pearl dace	-	-
	Total	**-**	**-**
Unnamed Water Body #4	finescale dace	9	100
	Total	**9**	**100**
Unnamed Water Body #5	no fish captured	0	0
	Total	**0**	**0**

[a] Minnow trapping was conducted in unnamed water body #5, but no fish were caught after 48.7 trap hours.

[b] Species identified from a minnow trap set by local fisher, fish were not enumerated.

A.12.2.2 Habitat Evaluation

Good spawning habitat is available for finescale, pearl, and northern redbelly dace as well as central mudminnow through wetland vegetation and macrophytes within the stream habitat, as well as the loose organic substrate provide good rearing, foraging, and cover habitat for these species (Table A.1)

A.12.3 References

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2016. Canadian Wildlife Species at Risk. http://www.registrelep-sararegistry.gc.ca/sar/index/default_e.cfm Accessed November 24, 2016.

APPENDIX B

DATA QUALITY ASSESSMENT

APPENDIX B: DATA QUALITY ASSESSMENT

B1.0 INTRODUCTION

Data Quality Assessment (DQA) was conducted on data collected as part of this study. The objective of DQA is to define the overall quality of the data presented in the report, and, by extension, the confidence with which the data can be used to derive conclusions.

B1.1 Background

A variety of factors can influence the chemical and biological measurements made in an environmental study and thus affect the accuracy and/or precision of the data. Inconsistencies in sampling or laboratory methods, use of instruments that are inadequately calibrated or which cannot measure to the desired level of accuracy or precision, and contamination of samples in the field or laboratory are just some of the potential factors that can lead to the reporting of data that do not accurately reflect actual environmental conditions. Depending on the magnitude of the problem, inaccuracy or imprecision have the potential to affect the reliability of any conclusions made from the data. Therefore, it is important to ensure that monitoring programs incorporate appropriate steps to control the non-natural sources of data variability (i.e., minimize the variability that does not reflect natural spatial and temporal variability in the environment) and thus assure the quality of the data.

Data quality as a concept is meaningful only when it relates to the intended use of the data. That is, one must know the context in which the data will be interpreted in order to establish a relevant basis for judging whether or not the data set is adequate. DQA involves comparison of actual field and laboratory measurement performance to data quality objectives (DQOs) established for a particular study, such as evaluation of method detection limits, and data precision (based on field duplicate samples).

DQOs were established at the outset of the field program that reflect reasonable and achievable performance expectations (Table B.1). Programs involving a large amount of samples and analytes usually result in some results that exceed the DQOs. This is particularly so for multi-element scans (e.g., ICP scans for metals) since the analytical conditions are not necessarily optimal for every element included in the scan. Generally, scan results may be considered acceptable if no more than 20% of the parameters fail to meet the DQOs. Overall, the intent of comparing data to DQOs was not to reject any measurement that did not meet the DQO, but to ensure any questionable data received more scrutiny to determine what effect, if any, this had on interpretation of results within the context of this project.

Table B.1: Data quality objectives for environmental samples.

Quality Control Measure	Quality Control Sample Type	Study Component	
		Water Quality	Fish Tissue Quality
Laboratory Quality Control	Blanks, laboratory duplicates, spike recovery, certified reference material	Laboratory standards are established for each control type, with QC results presented in the analytical reports.	
Method Detection Limits (MDL)	Comparison actual MDL versus target MDL	MDL for each parameter should be at least as low as applicable guidelines, ideally ≤1/10th guideline value[a]	
Field Precision	Field Duplicates	≤25% RPD	≤30% RPD

[a] or below predictions, if applicable and no guideline exists for the substance.
RPD - Relative Percent Difference

B1.2 Types of Quality Control Samples

Several types of quality control (QC) checks are completed during submission and laboratory analysis. The laboratory undertakes a rigorous internal QC regime to ensure results provided are accurate and reproducible. This includes, but is not limited to, blank samples, laboratory duplicates, spike recoveries, and certified reference materials. Laboratory QC results are presented in the analytical reports provided in the appropriate appendices.

Two QC checks were specifically assessed for this report, including:

- **Laboratory Method Detection Limits (MDL);** the lowest detectable value specific laboratory analysis can attain. These MDLs are compared against relevant guidelines to ensure that adequate analytical resolution was achieved.
- **Field Duplicates;** replicate samples collected from a randomly selected field station using identical collection and handling methods that are then analyzed separately in the laboratory. The duplicate samples are handled and analyzed in an identical manner in the laboratory. The data from field replicate samples reflect natural variability, as well as the variability associated with sample collection methods, and therefore provide a measure of field precision.

B2.0 WATER SAMPLES

B2.1 Laboratory DQA Results

No data quality issues were reported by the laboratory for the submitted water samples, and analyzed sample results met internal laboratory data quality standards (See laboratory report in Appendix C).

B2.2 Method Detection Limits

Target laboratory method detection limits (MDL) for water sample analyses were established at levels below all potentially applicable water quality guidelines (Table B.2). All reported MDLs were at or below the applicable water quality guidelines meaning that sample data for this project could be reliably interpreted relative to the guidelines.

B2.3 Data Precision

Field Duplicate Samples

One set of duplicate water samples were collected in the field. Results had close agreement in analyte concentrations (Table B.3). Results suggest that no inadvertent contamination occurred during sample collection and handling, and that data are adequate for presentation in the report.

Table B.2: Laboratory method detection limits (MDLs) relative to water quality guidelines. Any highlighted values indicate MDLs that were above the guideline.

	Parameter	Units	Water Quality Objective[a]	MDLs
Non-Metals	Chloride	mg/L	120	0.1
	Cyanide, Free	mg/L	0.005	0.002
	Fluoride	mg/L	0.12	0.05
	Nitrate as N	mg/L	13	0.05
	Nitrite as N	mg/L	0.06	0.05
	Sulphate	mg/L	218	0.1
	Total Dissolved Solids	mg/L	500	20
	Total Phosphorus	mg/L	0.02	0.005
Total Metals	Aluminum	µg/L	75	4
	Antimony	µg/L	20	1
	Arsenic	µg/L	5	3
	Barium	µg/L	100	2
	Beryllium	µg/L	11	1
	Boron	µg/L	200	10
	Cadmium	µg/L	0.1	0.02
	Chromium	µg/L	8.9	3
	Cobalt	µg/L	0.9	0.5
	Copper	µg/L	5	0.1
	Iron	µg/L	300	10
	Lead	µg/L	3	0.1
	Manganese	µg/L	80	2
	Mercury	µg/L	0.2	0.0019
	Molybdenum	µg/L	40	2
	Nickel	µg/L	25	3
	Selenium	µg/L	100	0.1
	Silver	µg/L	0.1	0.01
	Thallium	µg/L	0.3	0.01
	Tungsten	µg/L	30	10
	Uranium	µg/L	5	2
	Vanadium	µg/L	6	2
	Zinc	µg/L	20	5
	Zirconium	µg/L	4	4

[a] Ontario Provincial Water Quality Objective for the protection of aquatic life (PWQO; OMOEE 1994); interim values used for screening purposes where applicable.

Table B.3: Water sample field duplicate comparisons. Highlighted values did not meet the data quality objective of <25% Relative Percent Difference (RPD)

Parameters		Sample ID	Mollie River	DUP	RPD
		Date Sampled	8-Jul-16	8-Jul-16	
Non-Metals	Acidity (as CaCO3)	mg/L	<5	<5	0
	Alkalinity (as CaCO3)	mg/L	31	31	0
	Ammonia as N	mg/L	<0.02	<0.02	0
	Chloride	mg/L	3.98	3.95	1
	Cyanide, Free	mg/L	<0.002	<0.002	0
	Dissolved Organic Carbon	mg/L	9.8	9.7	1
	Electrical Conductivity	uS/cm	81	81	0
	Fluoride	mg/L	<0.05	<0.05	0
	Nitrate as N	mg/L	<0.05	<0.05	0
	Nitrite as N	mg/L	<0.05	<0.05	0
	pH	pH Units	6.96	6.97	0
	Sulphate	mg/L	2.54	2.61	3
	Total Cyanide	mg/L	<0.002	<0.002	0
	Total Dissolved Solids	mg/L	56	56	0
	Total Hardness (as CaCO3)	µg/L	34,300	34,700	1
	Total Organic Carbon	mg/L	10.0	10.4	4
	Total Phosphorus	mg/L	0.006	0.006	0
	Total Suspended Solids	mg/L	1	1	0
Total Metals	Aluminum	µg/L	55	50	10
	Antimony	µg/L	<1.0	<1.0	0
	Arsenic	µg/L	<3	<3	0
	Barium	µg/L	4	5	22
	Beryllium	µg/L	<1	<1	0
	Boron	µg/L	<10	<10	0
	Cadmium	µg/L	<0.02	<0.02	0
	Calcium	µg/L	10,600	10,700	1
	Chromium	µg/L	<3	<3	0
	Cobalt	µg/L	<0.5	<0.5	0
	Copper	µg/L	0.60	0.60	0
	Iron	µg/L	66	71	7
	Lead	µg/L	<0.1	<0.1	0
	Magnesium	µg/L	1,890	1,930	2
	Manganese	µg/L	11	12	9
	Mercury	mg/L	0.0000050	0.0000048	4
	Molybdenum	µg/L	<2	<2	0
	Nickel	µg/L	<3	<3	0
	Potassium	µg/L	412	406	1
	Selenium	µg/L	<0.1	<0.1	0
	Silver	µg/L	0.02	0.02	0
	Sodium	µg/L	2,360	2,310	2
	Strontium	µg/L	14.0	15.0	7
	Thallium	µg/L	0.09	0.08	12
	Titanium	µg/L	<2	<2	0
	Tungsten	µg/L	<10	<10	0
	Uranium	µg/L	<2	<2	0
	Vanadium	µg/L	<2	<2	0
	Zinc	µg/L	<5	<5	0
	Zirconium	µg/L	<4	<4	0

B3.0 FISH TISSUE SAMPLES

B3.1 Laboratory DQA Results

The laboratory noted that several fish tissue samples were of small volume, therefore detection limits had to be raised. However, the number of affected analytes was small. Overall fish tissue results met internal laboratory data quality standards (See Laboratory Report in Appendix D).

B3.2 Method Detection Limits

Target laboratory MDLs for fish tissue sample analyses were established at levels below potentially applicable human consumption advisory levels or at industry standards if no consumption guidelines were available. All analytes met the target MDLs (Table B.4), with the exception of some samples for arsenic, lead, thallium and titanium. Due to the low number of samples with elevated MDL values, sample data for this project could be reliably interpreted relative to the benchmarks.

B3.3 Data Precision

Field Duplicates

Field duplicate values did not meet the DQO for 14% of samples (Table B.5). The majority of these had low absolute differences between samples, and were often approaching the corresponding MDLs. Two cobalt samples had higher concentrations and also exceeded the DQO. These small differences reflect natural variability within the tissue. Overall, the data suggest that reported sample data were reasonable and were sufficient for presentation in the report.

Table B.4: Laboratory method detection limits (MDL) for fish tissue samples relative to targets and human consumption benchmarks. Highlighted values indicate target MDL was not achieved.

	Parameter	Units	Target MDL	Acheived MDL	Ontario Ministry of the Environment Fish Tissue Ingestion (µg/g) (ILCR = 0.000001)	Health Canada Fish Tissue Ingestion (µg/g) (HQ = 0.2)	Health Canada Fish Tissue Ingestion (µg/g) (ILCR = 0.00001)	United States Environmental Protection Agency Fish Tissue Ingestion (µg/g) (HQ = 1)
Total Metals	Aluminum	µg/g	280	<0.5, <10	-	280	-	1,400
	Antimony	µg/g	0.108	<0.02, <0.5	-	0.108	-	0.54
	Arsenic	µg/g	0.021	<0.02, <0.2	-	0.082	0.021	0.41
	Barium	µg/g	54	<0.01, <0.2	-	54	-	270
	Beryllium	µg/g	0.54	<0.002, <0.05	-	0.54	-	2.7
	Boron	µg/g	54	<0.2, <5	-	54	-	270
	Cadmium	µg/g	0.28	<0.002, <0.05	-	0.28	-	1.4
	Chromium	µg/g	400	<0.1, <2	-	400	-	2,000
	Cobalt	µg/g	0.082	<0.002, <0.05	-	0.082	-	0.41
	Copper	µg/g	10.8	<0.01, <0.2	-	10.8	-	54
	Iron	µg/g	190	<10	-	190	-	950
	Lead	µg/g	0.002	<0.002, <0.05	-	-	-	-
	Manganese	µg/g	38	<0.5	-	38	-	190
	Mercury	µg/g	0.06	<0.045	0.06	0.5	-	0.14
	Molybdenum	µg/g	1.36	<0.02, <0.5	-	1.36	-	6.8
	Nickel	µg/g	5.4	<0.01, <0.2	-	5.4	-	27
	Selenium	µg/g	1.36	<0.2	-	1.36	-	6.8
	Silver	µg/g	1.36	<0.002, <0.05	-	1.36	-	6.8
	Strontium	µg/g	162	<0.02, <0.5	-	162	-	810
	Thallium	µg/g	0.0028	<0.01, <0.2	-	0.0028	-	0.014
	Tin	µg/g	162	<0.01, <0.2	-	162	-	810
	Titanium	µg/g	0.01	<0.2	-	-	-	-
	Uranium	µg/g	0.82	<0.001, <0.02	-	0.82	-	4.1
	Vanadium	µg/g	7	<0.02, <0.5	-	1.36	-	6.8
	Zinc	µg/g	82	<3	-	82	-	410

ILCR - Incremental Lifetime Cancer Risk.

HQ - Health Quotient.

Table B.5: Fish tissue field duplicate comparisons. Highlighted values did not meet the data quality objective of <30% Relative Percent Difference (RPD).

Analyte			ML-NP-02	ML-NP-X	RPD	SPL-NP-02	SPL-NP-X	RPD	CL-NP-04	CL-NP-X	RPD	DL-NP-01	DL-NP-X	RPD	AL-NP-03	AL-NP-X	RPD
			7-Jul-16	7-Jul-16		7-Jul-16	7-Jul-16		8-Jul-16	8-Jul-16		9-Jul-16	9-Jul-16		8-Jul-16	8-Jul-16	
Total Metals	Aluminum	µg/g	2	2.5	22	0.9	0.7	25	<0.5	<0.5	0	0.7	0.8	13	0.6	0.9	40
	Antimony	µg/g	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	Arsenic	µg/g	0.02	0.03	40	0.02	0.02	0	0.04	0.03	29	0.07	0.07	0	0.03	0.03	0
	Barium	µg/g	0.08	0.04	67	0.1	0.13	26	0.07	0.01	150	0.04	0.06	40	0.03	0.03	0
	Beryllium	µg/g	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.002	0
	Boron	µg/g	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0
	Cadmium	µg/g	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.002	0
	Chromium	µg/g	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Cobalt	µg/g	0.002	0.004	67	0.005	0.005	0	<0.002	0.014	150	0.003	0.003	0	0.002	0.036	179
	Copper	µg/g	0.05	0.05	0	0.08	0.06	29	0.05	0.04	22	0.08	0.05	46	0.03	0.04	29
	Iron	µg/g	2.8	5.5	65	2.8	2.3	20	1	0.8	22	1.4	1.6	13	1.8	1.8	0
	Lead	µg/g	0.008	0.009	12	0.006	0.008	29	0.007	0.002	111	0.023	0.054	81	0.006	0.01	50
	Manganese	µg/g	0.28	0.34	19	0.77	0.79	3	0.13	0.11	17	0.11	0.11	0	0.33	0.35	6
	Mercury	µg/g	0.5	0.44	13	0.53	0.54	2	1.2	1.2	0	1.3	1.1	17	0.7	0.75	7
	Molybdenum	µg/g	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	0.02	0
	Nickel	µg/g	0.04	0.03	29	0.02	<0.01	67	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	0.03	100
	Selenium	µg/g	0.55	0.53	4	0.20	0.21	5	0.40	0.37	8	0.28	0.28	0	0.24	0.24	0
	Silver	µg/g	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.002	0
	Strontium	µg/g	0.08	0.08	0	0.42	0.46	9	0.03	<0.02	40	0.03	0.03	0	0.11	0.1	10
	Thallium	µg/g	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
	Tin	µg/g	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
	Titanium	µg/g	0.1	0.15	40	0.04	0.03	29	0.02	0.02	0	0.03	0.04	29	0.04	0.06	40
	Uranium	µg/g	0.002	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0
	Vanadium	µg/g	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
	Zinc	µg/g	4.2	4	5	5.5	5	10	4.1	3.8	8	3.5	3.6	3	3.8	3.5	8

B4.0 DATA QUALITY STATEMENT

Collectively, laboratory and field DQA generally met prescribed water and fish tissue DQOs, with the exception of a few field duplicate results (fish tissue). Overall the quality of data was adequate to serve the project objectives.

APPENDIX C

WATER QUALITY DATA

Table C.1: *In situ* water quality of Attach Lake, Côté Gold Baseline, 2016.

Waterbody	Date	UTM (NAD 83, 17T)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	pH	Sp. Cond (µS/cm)
Water Quality Criteria[a]					-	-	**5-8**[b]	**54-63%**[b]	**6.5-8.5**	-
Attach Lake	08-Jul-16	425929 5265784	8.3	2.0	0	21.34	7.65	86.2	7.39	105
					1	21.27	7.62	86.1	7.39	105
					2	20.06	7.36	81.1	7.25	103
					3	12.19	8.35	78.1	7.08	102
					4	7.80	5.31	44.9	6.66	103
					5	6.14	3.61	28.7	5.56	104
					6	5.35	1.79	14.8	5.49	107
					7	5.03	1.21	9.7	5.55	121
					8	4.96	1.21	9.3	5.79	146

Sp. Cond = Specific Conductivity.

value does not meet Provincial Water Quality Objectives.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen screened against temperature dependent DO guidelines for cold water biota: 0 - 5°C = 8 mg/L and 54%; 5 - 10°C = 7 mg/L and 54%; 10 - 15°C = 6 mg/L and 54%; 15 - 20°C = 6 mg/L and 54%; 20 - 25°C = 5 mg/L and 57%; >25°C = 5 mg/L and 63%.

Table C.2: *In situ* water quality of Chain Lake, Côté Gold Baseline, 2016.

Waterbody	Date	UTM (NAD 83, 17T)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	pH	Sp. Cond (µS/cm)
Water Quality Criteria[a]					**-**	**-**	**5-8[b]**	**54-63%[b]**	**6.5-8.5**	**-**
Chain Lake	08-Jul-16	425697 5266136	3.5	2.4	0	21.30	7.63	86.7	6.62	113
					1	21.30	7.63	83.2	6.95	113
					2	20.43	6.76	76.3	6.90	113
					3	17.65	3.71	38.4	7.00	118

Sp. Cond = Specific Conductivity.

value does not meet Provincial Water Quality Objectives.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen screened against temperature dependent DO guidelines for cold water biota: 0 - 5°C = 8 mg/L and 54%; 5 - 10°C = 7 mg/L and 54%; 10 - 15°C = 6 mg/L and 54%; 15 - 20°C = 6 mg/L and 54%; 20 - 25°C = 5 mg/L and 57%; >25°C = 5 mg/L and 63%.

Table C.3: ***In situ*** **water quality of Upper Chester Lake and Chester Pond, Côté Gold Baseline, 2016.**

Waterbody	Date	UTM (NAD 83, 17T)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	pH	Sp. Cond (µS/cm)
Water Quality Criteria[a]					**-**	**-**	**5-8[b]**	**54-63%[b]**	**6.5-8.5**	**-**
Chester Pond	09-Jul-16	426573 5265032	0.5	-[c]	Surface	20.2	5.42	60.1	6.82	82
Upper Chester Lake	09-Jul-16	426330 5264927	1.0	-	Surface	19.5	5.50	60.7	6.68	98

Sp. Cond = Specific Conductivity.

value does not meet Provincial Water Quality Objectives.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 19

[b] dissolved oxygen screened against temperature dependent DO guidelines for cold water biota: 0 - 5°C = 8 mg/L and 54%; 5 - 10°C = 7 mg/L and 54%; 10 - 15°C = 6 mg/L and 54%; 15 - 20°C = 6 mg/L and 54%; 20 - 25°C = 5 mg/L and 57%; >25°C = 5 mg/L and 63%.

[c] No secchi measurement taken, however bottom substrate was visible throughout the water body from shoreline.

Table C.4: *In situ* water quality of Dividing Lake, Côté Gold Baseline, 2016.

Waterbody	Date	UTM (NAD 83, 17T)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	pH	Sp. Cond (µS/cm)
Water Quality Criteria[a]					-	-	**5-8[b]**	**54-63%[b]**	**6.5-8.5**	-
Dividing Lake (Inlet Area)	09-Jul-16	434575 5261266	1.7	1.7	0.5	18.28	6.53	69.3	6.94	48
					1.0	17.80	6.07	63.9	6.75	44
					1.5	16.40	6.50	72.1	6.31	40
Dividing Lake (Main Basin)	09-Jul-16	435154 5261333	42.2	1.86	0.5	20.18	8.26	91.3	7.30	74
					1.0	20.18	8.20	90.5	7.49	75
					2.0	20.20	8.13	89.7	7.51	75
					3.0	19.80	7.96	87.2	7.46	74
					4.0	13.27	7.48	83.1	7.19	88
					5.0	10.13	7.17	63.7	7.11	87
					6.0	8.33	7.23	61.6	7.02	95
					7.0	7.95	7.05	59.4	7.03	93
					8.0	6.90	7.12	59.9	7.01	94
					9.0	6.21	7.30	58.7	7.03	95
					10.0	5.38	7.28	57.4	7.02	96
					11.0	5.02	7.20	56.6	7.04	97
					12.0	4.94	7.08	55.5	7.04	96
					13.0	4.77	7.12	55.3	7.06	97
					14.0	4.69	7.15	55.5	7.05	98
					15.0	4.61	7.10	55.1	7.17	99
					16.0	4.56	7.06	54.7	7.09	99
					17.0	4.53	7.03	54.5	7.11	99
					18.0	4.51	7.13	55.2	7.06	99
					19.0	4.40	7.08	54.6	7.03	99
					20.0	4.36	7.04	54.1	7.05	100
					20.5	4.36	7.06	54.3	7.05	102

Sp. Cond = Specific Conductivity.

value does not meet Provincial Water Quality Objectives.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen screened against temperature dependent DO guidelines for cold water biota: 0 - 5°C = 8 mg/L and 54%; 5 - 10°C = 7 mg/L and 54%; 10 - 15°C = 6 mg/L and 54%; 15 - 20°C = 6 mg/L and 54%; 20 - 25°C = 5 mg/L and 57%; >25°C = 5 mg/L and 63%.

Table C.5: *In situ* water quality of Mollie River, Côté Gold Baseline, 2016.

Waterbody	Date	UTM (NAD 83, 17T)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	pH	Sp. Cond (µS/cm)
Water Quality Criteria[a]					-	-	5-8[b]	54-63%[b]	6.5-8.5	-
Mollie River (Lower Three Duck Pond)	10-Jul-16	432870 5263446	5.1	1.4	0.0	23.53	4.81	56.4	7.13	84
					1.0	21.71	4.95	56.4	7.08	84
					2.0	19.71	4.48	49.1	7.04	86
					3.0	14.90	1.01	10.1	6.72	93
					4.0	12.12	0.77	7.2	6.38	103
Mollie River (Lower reach upstream of Dividing Lake)	10-Jul-16	433961 5261490	2.6	-	0.5	21.38	7.81	84.4	6.95	36
					1.0	20.88	7.43	83.4	6.88	36
					1.5	18.97	6.22	67.4	6.57	38
					2.0	18.39	5.68	60.4	6.49	38
					2.5	16.68	1.46	15.5	6.42	41
Mollie River (Downstream of Dividing Lake)	10-Jul-16	436088 5260645	0.45	Bottom	0.4	23.1	8.45	98.6	7.61	78

Sp. Cond = Specific Conductivity.

value does not meet Provincial Water Quality Objectives.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen screened against temperature dependent DO guidelines for cold water biota: 0 - 5°C = 8 mg/L and 54%; 5 - 10°C = 7 mg/L and 54%; 10 - 15°C = 6 mg/L and 54%; 15 - 20°C = 6 mg/L and 54%; 20 - 25°C = 5 mg/L and 57%; >25°C = 5 mg/L and 63%.

Table C.6: *In situ* water quality of Moore Lake, Côté Gold Baseline, 2016.

Waterbody	Date	UTM (NAD 83, 17T)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	pH	Sp. Cond (µS/cm)
Water Quality Criteria[a]					-	-	**5-8[b]**	**54-63%[b]**	**6.5-8.5**	-
Moore Lake	07-Jul-16	424953 5268282	15	3.7	0	21.25	5.53	62.3	7.26	106
					1	21.12	5.49	62.0	7.21	104
					2	20.98	5.56	63.2	7.32	99
					3	20.81	5.49	62.0	7.25	98
					4	18.24	5.85	63.0	7.25	96
					5	17.31	5.80	61.0	7.02	97
					6	13.00	5.32	51.8	6.41	98
					7	11.46	5.32	51.0	6.82	102
					8	8.44	4.67	41.0	6.04	101
					9	7.46	4.30	36.2	5.80	102
					10	7.24	4.04	33.6	5.72	102
					11	7.15	3.82	31.7	5.68	106
					12	7.10	3.77	31.3	5.67	104
					13	7.09	3.65	30.3	5.66	105
					14	7.05	3.56	29.4	5.66	106
					15	6.99	3.45	28.4	5.64	104

Sp. Cond = Specific Conductivity.

value does not meet Provincial Water Quality Objectives.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen screened against temperature dependent DO guidelines for cold water biota: 0 - 5°C = 8 mg/L and 54%; 5 - 10°C = 7 mg/L and 54%; 10 - 15°C = 6 mg/L and 54%; 15 - 20°C = 6 mg/L and 54%; 20 - 25°C = 5 mg/L and 57%; >25°C = 5 mg/L and 63%.

Table C.7: *In situ* water quality of Sawpeter Lake watershed, Côté Gold Baseline, 2016.

Waterbody	Date	UTM (NAD 83, 17T)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen		pH	Sp. Cond (µS/cm)
							(mg/L)	(% sat)		
Water Quality Criteria[a]					-	-	**5-8[b]**	**54-63%[b]**	**6.5-8.5**	-
Sawpeter Lake (North Complex)	07-Jul-16	427433 5265211	0.5	Bottom	0.5	21.00	5.39	60.4	6.45	23
	07-Jul-16	427466 5265034	0.5	-	Surface	23.21	6.51	74.8	6.84	48
Sawpeter Lake	07-Jul-16	427497 5264735	3.5	1.76	0.5	23.53	8.19	96.1	7.10	31
					1.0	21.16	8.25	92.7	7.09	30
					1.5	20.05	6.94	76.8	6.50	28
					2.0	18.65	6.25	66.9	6.52	30
					2.5	15.08	2.07	20.6	6.14	33
					3.0	12.25	0.55	4.6	6.05	37
					3.5	10.84	0.27	2.5	6.16	45
	07-Jul-16	427559 5264788	0.5	-	Surface	23.30	7.67	89.7	7.01	31
Sawpeter Lake (South Outlet)	09-Jul-16	427165 5263982	0.5	-	Surface	19.27	5.35	58.4	6.42	92

Sp. Cond = Specific Conductivity.

value does not meet Provincial Water Quality Objectives.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen screened against temperature dependent DO guidelines for cold water biota: 0 - 5°C = 8 mg/L and 54%; 5 - 10°C = 7 mg/L and 54%; 10 - 15°C = 6 mg/L and 54%; 15 - 20°C = 6 mg/L and 54%; 20 - 25°C = 5 mg/L and 57%; >25°C = 5 mg/L and 63%.

Table C.8: ***In situ*** **water quality of Unnamed Lake 3 Outlet, Côté Gold Baseline, 2016.**

Waterbody	Date	UTM (NAD 83, 17T)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen		pH	Sp. Cond (µS/cm)
							(mg/L)	(% sat)		
Water Quality Criteria[a]					-	-	**5-8**[b]	**54-63%**[b]	**6.5-8.5**	-
Unnamed Lake #3 Outlet	10-Jul-16	432407 5263415	0.5	-	0.5	19.15	5.62	61.1	6.12	35

Sp. Cond = Specific Conductivity.

value does not meet Provincial Water Quality Objectives.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen screened against temperature dependent DO guidelines for cold water biota: 0 - 5°C = 8 mg/L and 54%; 5 - 10°C = 7 mg/L and 54%; 10 - 15°C = 6 mg/L and 54%; 15 - 20°C = 6 mg/L and 54%; 20 - 25°C = 5 mg/L and 57%; >25°C = 5 mg/L and 63%.

Table C.9: *In situ* water quality of Unnamed Lake #4, Côté Gold Baseline, 2016.

Waterbody	Date	UTM (NAD 83, 17T)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen		pH	Sp. Cond (µS/cm)
							(mg/L)	(% sat)		
Water Quality Criteria[a]					**-**	**-**	**5-8**[b]	**54-63%**[b]	**6.5-8.5**	**-**
Unnamed Lake #4	10-Jul-16	428306 5263482	0.5	-[c]	Surface	22.64	5.30	61.0	6.43	82

Sp. Cond = Specific Conductivity.

(shaded) value does not meet Provincial Water Quality Objectives.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen screened against temperature dependent DO guidelines for cold water biota: 0 - 5°C = 8 mg/L and 54%; 5 - 10°C = 7 mg/L and 54%; 10 - 15°C = 6 mg/L and 54%; 15 - 20°C = 6 mg/L and 54%; 20 - 25°C = 5 mg/L and 57%; >25°C = 5 mg/L and 63%.

[c] No secchi measurement taken, however bottom substrate was visible throughout the lake from shoreline.

Table C.10: ***In situ*** **water quality of Unnamed Lakes #5 and #6, Côté Gold Baseline, 2016.**

Waterbody	Date	UTM (NAD 83, 17T)	Station Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen		pH	Sp. Cond (µS/cm)
						(mg/L)	(% sat)		
Water Quality Criteria[a]				**-**	**-**	**5-8**[b]	**54-63%**[b]	**6.5-8.5**	**-**
Unnamed Lake #5	06-Jul-16	426783 5269078	0.5	Surface	20.85	6.28	70.5	7.68	73
Unnamed Lake #6	06-Jul-16	427394 5269152	0.5	Surface	20.45	4.80	53.0	6.99	-[c]

Sp. Cond = Specific Conductivity.

value does not meet Provincial Water Quality Objectives.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 19

[b] dissolved oxygen screened against temperature dependent DO guidelines for cold water biota: 0 - 5°C = 8 mg/L and 54%; 5 - 10°C = 7 mg/L and 54%; 10 - 15°C = 6 mg/L and 54%; 15 - 20°C = 6 mg/L and 54%; 20 - 25°C = 5 mg/L and 57%; >25°C = 5 mg/L and 63%.

[c] Water quality meter error, not reading conductivity correctly.

Table C.11: *In situ* water quality of unnamed water bodies off of Bagsverd Creek and Bagsverd Creek, Côté Gold Baseline, 2016.

Waterbody	Date	UTM (NAD 83, 17T)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen		pH	Sp. Cond (µS/cm)
							(mg/L)	(% sat)		
Water Quality Criteria[a]					-	-	**5-8[b]**	**54-63%[b]**	**6.5-8.5**	-
Unnamed water bodies' outlet	05-Jul-16	427583 5269628	0.5	-	Surface	24.44	7.12	85.4	6.45	318
Bagsverd Creek	05-Jul-16	428099 5269631	1.5	-	Surface	24.23	7.56	90.6	7.04	129

Sp. Cond = Specific Conductivity.

value does not meet Provincial Water Quality Objectives.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July 1994.

[b] dissolved oxygen screened against temperature dependent DO guidelines for cold water biota: 0 - 5°C = 8 mg/L and 54%; 5 - 10°C = 7 mg/L and 54%; 10 - 15°C = 6 mg/L and 54%; 15 - 20°C = 6 mg/L and 54%; 20 - 25°C = 5 mg/L and 57%; >25°C = 5 mg/L and 63%.

Table C.12: *In situ* water quality of water bodies west of West Beaver Pond, Côté Gold Baseline, 2016.

Waterbody	Date	UTM (NAD 83, 17T)	Station Depth (m)	Secchi Depth (m)	Measurment Depth (m)	Temperature (°C)	Dissolved Oxygen		pH	Sp. Cond (µS/cm)
							(mg/L)	(% sat)		
Water Quality Criteria[a]					-	-	**5-8[b]**	**54-63%[b]**	**6.5-8.5**	-
Unnamed water body #1	05-Jul-16	426446 5267774	0.5	Bottom	0.5	23.44	8.02	94.3	7.79	73
Unnamed water body #2	06-Jul-16	426940 5268078	0.5	Bottom	0.5	21.43	5.30	60.0	6.85	61
Unnamed water body #4	05-Jul-16	427221 5267667	1.0	Bottom	0.5	27.10	6.85	85.9	7.06	42

Sp. Cond = Specific Conductivity.

value does not meet Provincial Water Quality Objectives.

[a] OMOE (Ontario Ministry of Environment and Energy). 1994. Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment and Energy (Ontario), July

[b] dissolved oxygen screened against temperature dependent DO guidelines for cold water biota: 0 - 5°C = 8 mg/L and 54%; 5 - 10°C = 7 mg/L and 54%; 10 - 15°C = 6 mg/L and 54%
15 - 20°C = 6 mg/L and 54%; 20 - 25°C = 5 mg/L and 57%; >25°C = 5 mg/L and 63%.

Table C.13: Water quality values for Côté Gold Baseline, 2016. Shading denotes water quality values greater than selected benchmark.

	Analyte	Units	Water Quality Guidelines[a]				2013 Baseline (95th Percentile)[L]	Benchmark[e]	Mollie River Watershed								Bagsverd Creek[k]
			Primary			Alternative											
			PWQO[b]	CWQG[c]	Date	BCMOE 2006[d] unless noted			Moore Lake	Chain Lake	Attach Lake	Upper Chester Lake	Sawpeter Lake	Lower Three Duck Pond	Dividing Lake	Lower Mollie River	
Non-Metals	Acidity (as $CaCO_3$)	mg/L	-	-		-	**2.5**	2.5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	Alkalinity (as $CaCO_3$)	mg/L	-	-		-	**29**	29	13	25	22	18	11	15	17	31	20
	Ammonia as N	mg/L	-	**6.89**	2001	-	0.21	6.89	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Chloride	mg/L	-	**120**	2011	-	1.2	120	0.14	0.20	0.19	0.16	0.14	0.26	0.43	3.98	0.29
	Cyanide, Free	mg/L	0.005	-		-	-	0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
	Cyanide, Total	mg/L	-	-		-	**0.001**	0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
	Dissolved Organic Carbon	mg/L	-	-		-	**18**	18	9.60	11.10	10.70	13.20	13.60	11.50	16.20	9.80	9.40
	Conductivity	µS/cm	-	-		-	**79.7**	79.7	38	54	47	43	33	38	46	81	55
	Fluoride	mg/L	-	**0.12**	2002	-	0.025	0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nitrate as N	mg/L	-	**13**	2012	-	0.13	13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	<0.05	<0.05
	Nitrite as N	mg/L	-	**0.06**	1987	-	<0.05	0.060	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	pH	pH Units	**6.5 - 8.5**	6.5 - 8.5	1994	-	7.16	6.5 - 8.5	6.63	6.79	6.74	6.70	6.57	6.70	6.71	6.96	7.17
	Sulphate[f,j]	mg/L	-	-		**218**	4.09	218	2.48	1.88	2.06	2.01	1.73	1.99	1.74	2.54	3.94
	Total Dissolved Solids[g]	mg/L	-	-		**500**	-	500	36	42	46	50	36	54	62	56	48
	Total Hardness (as $CaCO_3$)	µg/L	-	-		-	**33.5**	33.5	17.4	24.7	22.3	21.0	15.0	17.3	23.2	34.3	25.6
	Total Organic Carbon	mg/L	-	-		-	**16**	16	9.7	10.8	11.0	13.5	14.2	12.0	16.8	10.0	9.8
	Total Phosphorus[h]	mg/L	0.02	-		-	**0.035**	0.035	0.006	<0.005	0.008	<0.005	0.011	0.015	0.017	0.006	0.014
	Total Suspended Solids	mg/L	-	-		-	**5**	5	2.0	<1.0	2.0	1.0	1.0	2.0	1.0	1.0	1.0
Total Metals	Aluminum[f]	µg/L	75	100	1987	-	**118**	118	32	49	44	95	127	75	113	55	28
	Antimony	µg/L	**20**	-		-	<6	20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Arsenic	µg/L	**5**	5	1997	-	<3	5	<3	<3	<3	<3	<3	<3	<3	<3	<3
	Barium	µg/L	-	-		**100**	7	100	4	4	4	7	5	5	6	4	5
	Beryllium[f]	µg/L	**11**	-		-	<1	11	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Boron	µg/L	200	**1,500**	2009	-	<10	1,500	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Cadmium[f]	µg/L	**0.1**	0.06	2014	-	0.05	0.1	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02
	Calcium	µg/L	-	-		-	**10,465**	10,465	5,240	8,010	7,160	6,780	4,880	5,310	7,190	10,600	8,160
	Chromium[f]	µg/L	**8.9**	8.9	1997	-	<3	8.9	<3	<3	<3	<3	<3	<3	<3	<3	<3
	Cobalt	µg/L	0.9	**2.5**	2013	-	0.25	2.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Copper[f]	µg/L	**5**	2	1987	-	1	5	0.6	1.4	1.0	1.2	0.7	1.0	0.7	0.6	0.5
	Iron	µg/L	300	300	1987	-	**369**	369	<10	264	124	171	85	97	292	66	20
	Lead[f]	µg/L	**3**	1	1987	-	0.5	3	<0.1	<0.1	<0.1	0.4	0.1	0.1	0.2	<0.1	<0.1
	Magnesium	µg/L	-	-		-	**2,003**	2,003	1,040	1,150	1,080	988	680	976	1,280	1,890	1,270
	Manganese[f]	µg/L	-	-		**80**	88	80	6	21	17	34	16	19	50	11	41
	Mercury	µg/L	0.2	**0.026**	2003	-	-	0.026	0.0043	0.0043	0.0053	0.0190	0.0045	0.0057	0.0100	0.0050	0.0019
	Molybdenum	µg/L	40	**73**	1999	-	<2	73	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Nickel[f]	µg/L	**25**	25	1987	-	1.5	25	<3	<3	<3	<3	<3	<3	<3	<3	<3
	Potassium	µg/L	-	-		-	**490**	490	145	217	194	184	352	314	286	412	176
	Selenium[i]	µg/L	100	**1**	1987	-	<4	1	1.00	1.20	0.80	1.30	0.90	2.10	0.20	<0.10	0.20
	Silver	µg/L	**0.1**	0.25	2015	-	0.05	0.1	0.01	0.06	0.02	0.04	0.04	0.04	0.03	0.02	<0.01
	Sodium	µg/L	-	-		-	**1,337**	1,337	624	796	710	720	648	871	739	2,360	757
	Strontium	µg/L	-	-		-	**26**	26	10	14	12	12	10	11	13	14	22
	Thallium	µg/L	0.3	**0.8**	1999	-	0.15	0.8	0.02	0.02	0.01	0.02	0.02	0.05	0.03	0.09	<0.01
	Titanium	µg/L	-	-		-	**2**	2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Tungsten	µg/L	**30**	-		-	-	30	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Uranium	µg/L	5	**15**	2011	-	<2	15	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Vanadium	µg/L	6	-		-	<2	6	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Zinc	µg/L	20	30	1987	-	**32**	32	<5	7	<5	8	<5	<5	<5	<5	<5
	Zirconium	µg/L	**4**	-		-	<4	4	<4	<4	<4	<4	<4	<4	<4	<4	<4

Notes:

Bold denotes selected criteria for benchmark.

[a] The most recent CWQG or PWQO for the protection of aquatic life was used. If there was no federal or provincial guideline, the most recent guideline from another Canadian jurisdiction (BCMOE) was used

[b] PWQO - Provincial Water Quality Objectives. Ministry of Environment and Energy, July 1994, re-issued in 1999 (OMOEE 1994)

[c] CWQG - Canadian Water Quality Guidelines for the protection of aquatic life. Canadian Council of Ministers of the Environment, http://st-ts.ccme.ca/, accessed November 2016 (CCME 2016). The dates for the derivation of the guideline for each substance is provided.

[d] British Columbia Ministry of Environment, Water Quality Guidelines (BCMOE 2006)

[e] Selected water quality benchmark was the most recent water quality guideline or the upper limit of background whichever was higher

[f] Aluminum guideline depends on pH; total ammonia guideline depends on pH and temperature; beryllium, cadmium, copper, lead, manganese, nickel and sulphate guidelines depend on hardness; guidelines in table assume: pH = 7, temperature = 15°C, hardness = 33 mg/L as CaCO3 based on background water quality (Golder 2013). Guideline for trivalent chromium used for comparison purposes for total chromium.

[g] Total dissolved solids drinking water guideline for aesthetic objectives (Health Canada 1991)

[h] The 95th percentile total phosphorus concentration was calculated based on data from samples collected by IAMGOLD in August 2013 and analyzed via spectrophotometer

[i] The CCME guideline was selected as the PWQO value is not consistent with other jurisdictions in Canada (BCMOE 2006) or internationally (USEPA 2004)

[j] Sulphate guideline established by BCMOE in 2013 (BCMOE 2013)

[k] Drains into the Neville Lake Watershed.

[L] Baseline values used for this table were calculated for the 2013 report (Minnow 2014)

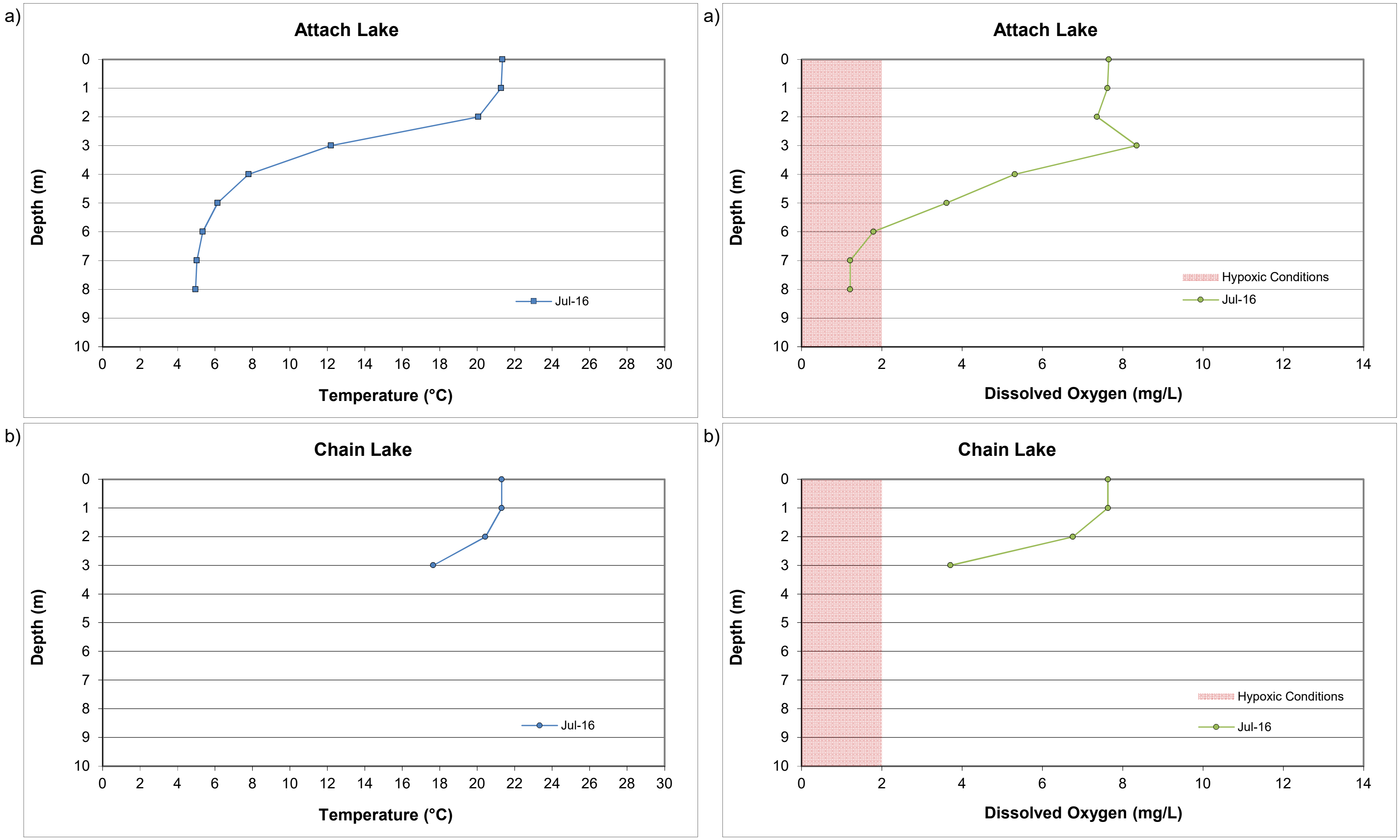


Figure C.1: ***In situ*** **water quality profiles taken for Côté Gold area waterbodies, 2016: a) Attach Lake, b) Chain Lake, c) Dividing Lake, d) Three Duck Pond, e) Moore Lake, and f) Sawpeter Lake.**

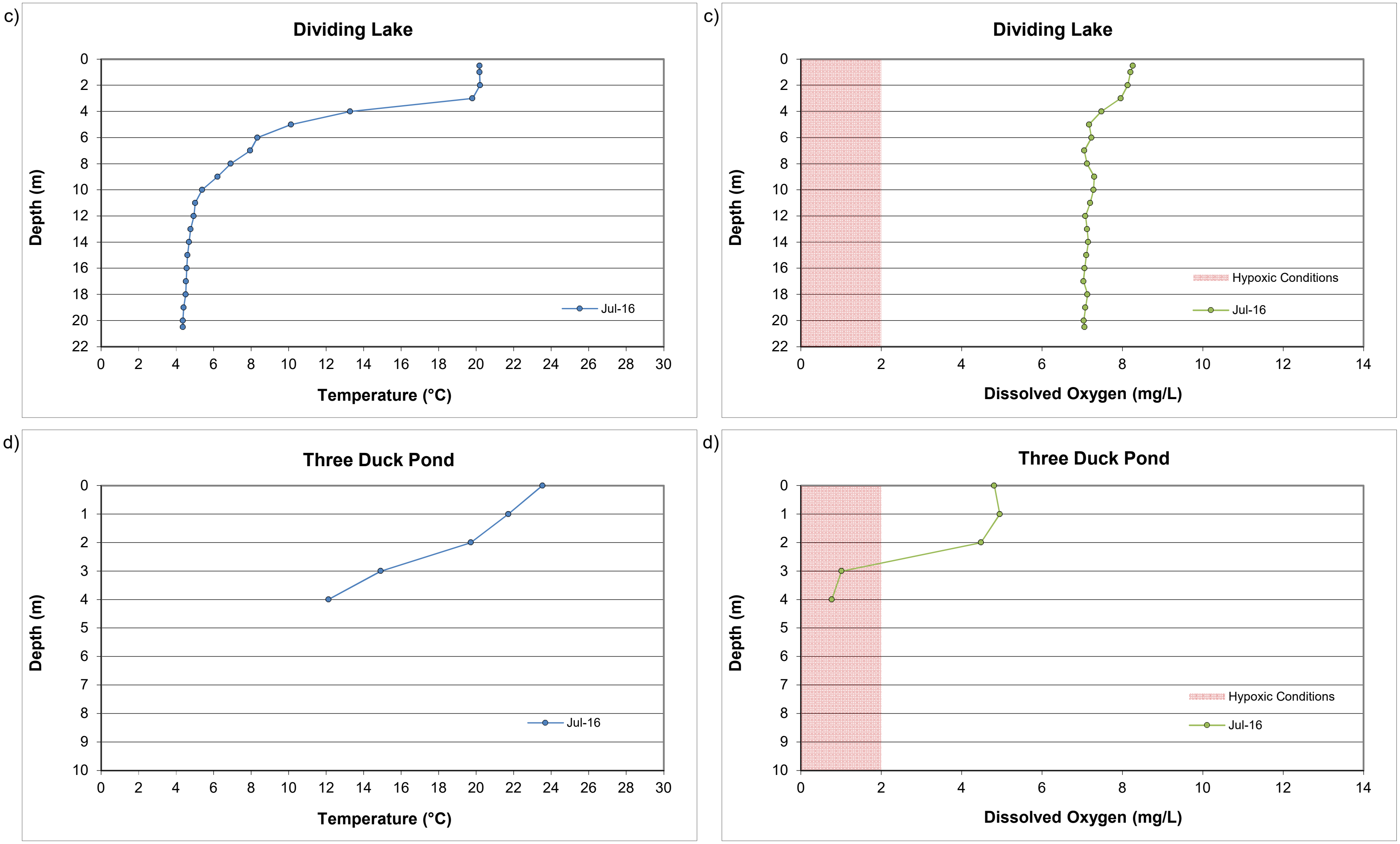
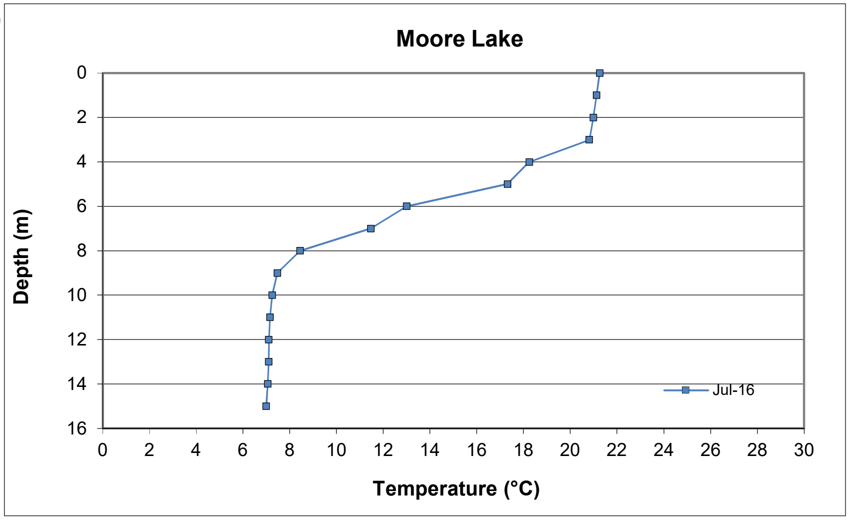
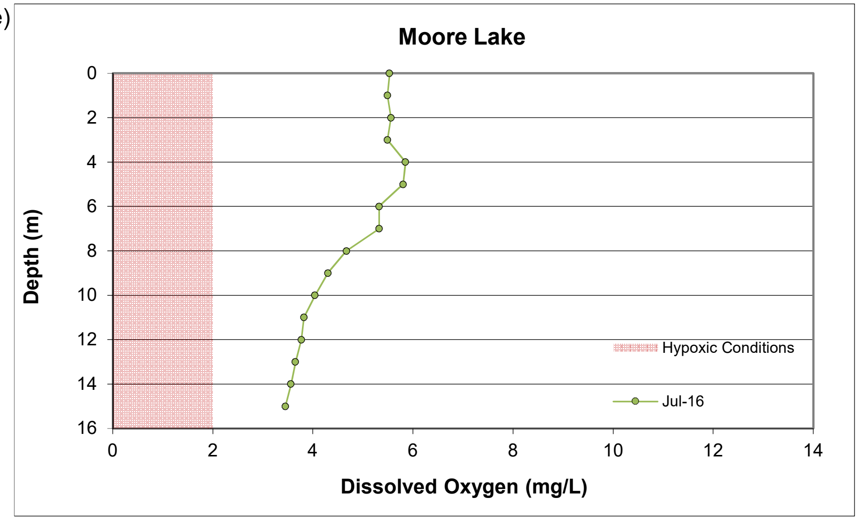


Figure C.1: ***In situ*** **water quality profiles taken for Côté Gold area waterbodies, 2016: a) Attach Lake, b) Chain Lake, c) Dividing Lake, d) Three Duck Pond, e) Moore Lake, and f) Sawpeter Lake.**

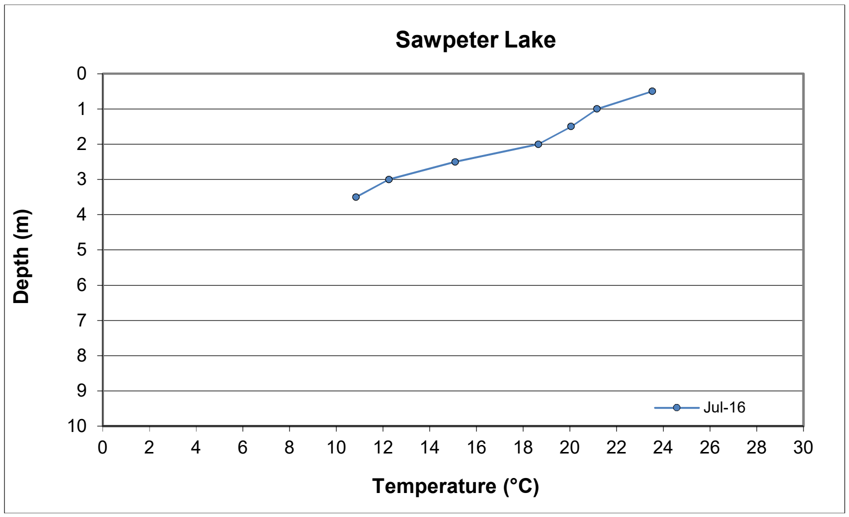
e)



e)



f)



f)

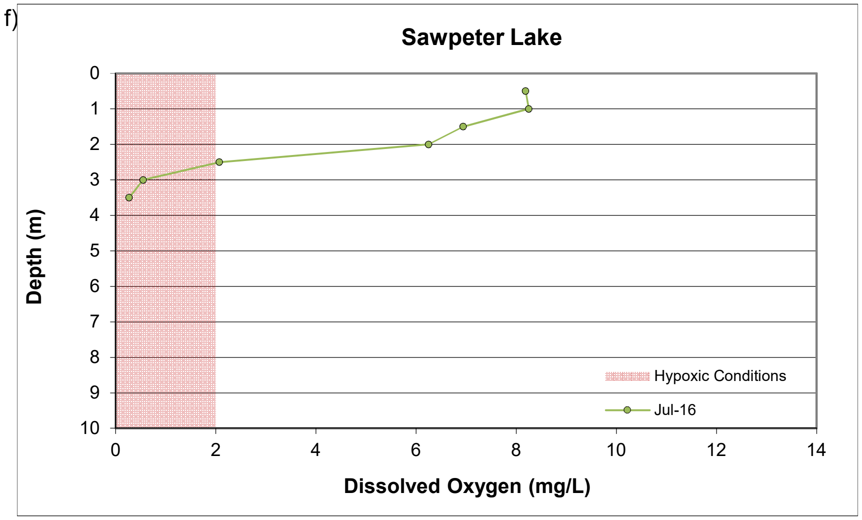


Figure C.1: ***In situ*** **water quality profiles taken for Côté Gold area waterbodies, 2016: a) Attach Lake, b) Chain Lake, c) Dividing Lake, d) Three Duck Pond, e) Moore Lake, and f) Sawpeter Lake.**

WATER LAB DATA

5835 COOPERS AVENUE
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CLIENT NAME: TRELAWNEY MINING & EXPLORATION
CHESTER #1, MINE SITE, P.O. BOX 100
GOGAMA, ON P0M1W0
(705) 269-0010

ATTENTION TO: ROBERT HOBBS

PROJECT: CH2-RMP-Supplemental

AGAT WORK ORDER: 16U114292

WATER ANALYSIS REVIEWED BY: Mike Muneswar, BSc (Chem), Senior Inorganic Analyst

DATE REPORTED: Jul 20, 2016

PAGES (INCLUDING COVER): 10

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

5835 COOPERS AVENUE
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CLIENT NAME: TRELAWNEY MINING & EXPLORATION

ATTENTION TO: ROBERT HOBBS

SAMPLING SITE:

SAMPLED BY:

Dissolved Metals & Hg (CH2-RMP)

DATE RECEIVED: 2016-07-08

DATE REPORTED: 2016-07-20

			SAMPLE DESCRIPTION:	BC
			SAMPLE TYPE:	WaterFilter
			DATE SAMPLED:	7/5/2016
Parameter	Unit	G / S	RDL	7695540
Aluminum	µg/L	75	4	19
Antimony	µg/L	20	1.0	<1.0
Arsenic	µg/L	100	3	<3
Barium	µg/L		2	5
Beryllium	µg/L	11	1	<1
Boron	µg/L	200	10	<10
Cadmium	µg/L	0.2	0.02	<0.02
Chromium	µg/L	8.9	3	<3
Cobalt	µg/L	0.9	0.5	<0.5
Copper	µg/L	5	0.1	0.5
Iron	µg/L	300	10	11
Lead	µg/L	5	0.1	<0.1
Manganese	µg/L		2	<2
Molybdenum	µg/L	40	2	<2
Nickel	µg/L	25	3	<3
Selenium	µg/L	100	0.1	0.2
Silver	µg/L	0.1	0.01	<0.01
Strontium	µg/L		5	21
Thallium	µg/L	0.3	0.01	<0.01
Titanium	µg/L		2	<2
Tungsten	µg/L	30	10	<10
Uranium	µg/L	5	2	<2
Vanadium	µg/L	6	2	<2
Zinc	µg/L	30	5	<5
Zirconium	µg/L		4	<4

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to PWQO.

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 16U114292
PROJECT: CH2-RMP-Supplemental

CLIENT NAME: TRELAWNEY MINING & EXPLORATION
ATTENTION TO: ROBERT HOBBS
SAMPLING SITE:
SAMPLED BY:

Metals & Inorganic Parameters (CH2-RMP)

DATE RECEIVED: 2016-07-08
DATE REPORTED: 2016-07-20

			SAMPLE DESCRIPTION:	BC
			SAMPLE TYPE:	Water
			DATE SAMPLED:	7/5/2016
Parameter	Unit	G / S	RDL	7695534
Total Suspended Solids	mg/L		1	1
Total Dissolved Solids	mg/L		20	48
Electrical Conductivity	uS/cm		2	55
pH	pH Units	6.5-8.5	NA	7.17
Acidity (as CaCO3)	mg/L		5	<5
Alkalinity (as CaCO3)	mg/L		5	20
Total Hardness (as CaCO3)	µg/L		500	25600
Fluoride	mg/L		0.05	<0.05
Chloride	mg/L		0.10	0.29
Nitrate as N	mg/L		0.05	<0.05
Nitrite as N	mg/L		0.05	<0.05
Sulphate	mg/L		0.10	3.94
Ammonia as N	mg/L		0.02	<0.02
Total Phosphorus	mg/L	0.03	0.005	0.014
Total Organic Carbon	mg/L		0.5	9.8
Dissolved Organic Carbon	mg/L		0.5	9.4
Cyanide, Free	mg/L		0.002	<0.002
Total Cyanide	mg/L	5	0.002	<0.002
Calcium	µg/L		50	8160
Magnesium	µg/L		50	1270
Sodium	µg/L		50	757
Potassium	µg/L		50	176
Aluminum	µg/L	75	4	28
Antimony	µg/L	20	1.0	<1.0
Arsenic	µg/L	100	3	<3
Barium	µg/L		2	5
Beryllium	µg/L	11	1	<1
Boron	µg/L	200	10	<10
Cadmium	µg/L	0.2	0.02	<0.02
Chromium	µg/L	8.9	3	<3

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Certificate of Analysis

AGAT WORK ORDER: 16U114292
PROJECT: CH2-RMP-Supplemental

CLIENT NAME: TRELAWNEY MINING & EXPLORATION
ATTENTION TO: ROBERT HOBBS
SAMPLING SITE:
SAMPLED BY:

Metals & Inorganic Parameters (CH2-RMP)

DATE RECEIVED: 2016-07-08
DATE REPORTED: 2016-07-20

			SAMPLE DESCRIPTION:	BC
			SAMPLE TYPE:	Water
			DATE SAMPLED:	7/5/2016
Parameter	Unit	G / S	RDL	7695534
Cobalt	µg/L	0.9	0.5	<0.5
Copper	µg/L	5	0.1	0.5
Iron	µg/L	300	10	20
Lead	µg/L	5	0.1	<0.1
Manganese	µg/L		2	41
Molybdenum	µg/L	40	2	<2
Nickel	µg/L	25	3	<3
Selenium	µg/L	100	0.1	0.2
Silver	µg/L	0.1	0.01	<0.01
Strontium	µg/L		5	22
Thallium	µg/L	0.3	0.01	<0.01
Titanium	µg/L		2	<2
Tungsten	µg/L	30	10	<10
Uranium	µg/L	5	2	<2
Vanadium	µg/L	6	2	<2
Zinc	µg/L	30	5	<5
Zirconium	µg/L		4	<4

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to PWQO.

Certified By:

Certificate of Analysis

AGAT WORK ORDER: 16U114292

PROJECT: CH2-RMP-Supplemental

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CLIENT NAME: TRELAWNEY MINING & EXPLORATION

ATTENTION TO: ROBERT HOBBS

SAMPLING SITE:

SAMPLED BY:

Water Analysis - Low Level Mercury (Total/Dissolved)

DATE RECEIVED: 2016-07-08

DATE REPORTED: 2016-07-20

			SAMPLE DESCRIPTION:	BC
			SAMPLE TYPE:	Water
			DATE SAMPLED:	7/5/2016
Parameter	Unit	G / S	RDL	7695534
Dissolved Mercury- Ultra Low Level	mg/L		0.0000025	0.0000063
Total Mercury- Ultra Low Level	mg/L		0.0000019	0.000014

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

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Quality Assurance

CLIENT NAME: TRELAWNEY MINING & EXPLORATION
PROJECT: CH2-RMP-Supplemental
SAMPLING SITE:

AGAT WORK ORDER: 16U114292
ATTENTION TO: ROBERT HOBBS
SAMPLED BY:

Water Analysis

RPT Date: Jul 20, 2016			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Metals & Inorganic Parameters (CH2-RMP)															
Total Suspended Solids	7696720		2	2	NA	< 1	100%	80%	120%	NA			NA		
Total Dissolved Solids	7691312		100	98	NA	< 20	100%	80%	120%	NA			NA		
Electrical Conductivity	7691312		164	163	0.6%	< 2	106%	80%	120%	NA			NA		
pH	7696059		7.49	7.60	1.5%	NA	99%	90%	110%	NA			NA		
Alkalinity (as CaCO3)	7691312		38	38	0.0%	< 5	95%	80%	120%	NA			NA		
Fluoride	7691761		<0.25	<0.25	NA	< 0.05	94%	90%	110%	104%	90%	110%	83%	80%	120%
Chloride	7691761		146	145	0.7%	< 0.10	94%	90%	110%	102%	90%	110%	101%	80%	120%
Nitrate as N	7691761		6.63	6.58	0.8%	< 0.05	96%	90%	110%	106%	90%	110%	111%	80%	120%
Nitrite as N	7691761		<0.25	<0.25	NA	< 0.05	NA	90%	110%	95%	90%	110%	105%	80%	120%
Sulphate	7691761		35.2	35.1	0.3%	< 0.10	107%	90%	110%	108%	90%	110%	116%	80%	120%
Ammonia as N	7695889		<0.02	<0.02	NA	< 0.02	97%	90%	110%	100%	90%	110%	103%	80%	120%
Total Phosphorus	7691312		0.057	0.055	3.6%	< 0.005	92%	90%	110%	99%	90%	110%	112%	80%	120%
Total Organic Carbon	7695534	7695534	9.8	9.7	1.0%	< 0.5	93%	90%	110%	95%	90%	110%	80%	80%	120%
Dissolved Organic Carbon	7695534	7695534	9.4	9.3	1.1%	< 0.5	93%	90%	110%	95%	90%	110%	90%	80%	120%
Cyanide, Free	7695889		<0.002	<0.002	NA	< 0.002	107%	90%	110%	103%	90%	110%	100%	70%	130%
Total Cyanide	7695889		<0.002	<0.002	NA	< 0.002	108%	80%	120%	105%	90%	110%	101%	70%	130%
Calcium	7694018		59300	58700	1.0%	< 50	104%	90%	110%	105%	90%	110%	104%	70%	130%
Magnesium	7694018		16600	16400	1.2%	< 50	102%	90%	110%	103%	90%	110%	104%	70%	130%
Sodium	7694018		13400	13200	1.5%	< 50	102%	90%	110%	102%	90%	110%	102%	70%	130%
Potassium	7694018		4880	4850	0.6%	< 50	103%	90%	110%	103%	90%	110%	103%	70%	130%
Aluminum	7695145		74	71	4.1%	< 4	107%	90%	110%	106%	90%	110%	95%	70%	130%
Antimony	7695145		<1.0	<1.0	NA	< 1.0	100%	90%	110%	92%	90%	110%	95%	70%	130%
Arsenic	7695145		<3	<3	NA	< 3	101%	90%	110%	97%	90%	110%	102%	70%	130%
Barium	7695145		126	122	3.2%	< 2	100%	90%	110%	93%	90%	110%	96%	70%	130%
Beryllium	7695145		<1	<1	NA	< 1	101%	90%	110%	101%	90%	110%	92%	70%	130%
Boron	7695145		15	15	NA	< 10	101%	90%	110%	98%	90%	110%	84%	70%	130%
Cadmium	7695145		<0.02	<0.02	NA	< 0.02	100%	90%	110%	97%	90%	110%	101%	70%	130%
Chromium	7695145		3	6	NA	< 3	107%	90%	110%	101%	90%	110%	101%	70%	130%
Cobalt	7695145		5.2	4.8	8.0%	< 0.5	104%	90%	110%	99%	90%	110%	96%	70%	130%
Copper	7695145		0.8	0.7	13.3%	< 0.1	104%	90%	110%	101%	90%	110%	97%	70%	130%
Iron	7695145		3670	3600	1.9%	< 10	109%	90%	110%	98%	90%	110%	120%	70%	130%
Lead	7695145		0.3	0.4	NA	< 0.1	102%	90%	110%	96%	90%	110%	92%	70%	130%
Manganese	7695145		1280	1220	4.8%	< 2	106%	90%	110%	101%	90%	110%	108%	70%	130%
Molybdenum	7695145		<2	<2	NA	< 2	101%	90%	110%	97%	90%	110%	104%	70%	130%
Nickel	7695145		<3	<3	NA	< 3	102%	90%	110%	99%	90%	110%	96%	70%	130%
Selenium	7695145		<0.1	0.3	NA	< 0.1	104%	90%	110%	99%	90%	110%	106%	70%	130%
Silver	7695145		0.02	0.02	NA	< 0.01	98%	90%	110%	103%	90%	110%	97%	70%	130%
Strontium	7695145		250	236	5.8%	< 5	108%	90%	110%	100%	90%	110%	103%	70%	130%
Thallium	7695145		0.19	0.21	10.0%	< 0.01	96%	90%	110%	91%	90%	110%	88%	70%	130%

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Quality Assurance

CLIENT NAME: TRELAWNEY MINING & EXPLORATION | AGAT WORK ORDER: 16U114292
PROJECT: CH2-RMP-Supplemental | ATTENTION TO: ROBERT HOBBS
SAMPLING SITE: | SAMPLED BY:

Water Analysis (Continued)

RPT Date: Jul 20, 2016			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Titanium	7695145		3	3	NA	< 2	106%	90%	110%	99%	90%	110%	97%	70%	130%
Tungsten	7695145		<10	<10	NA	< 10	94%	90%	110%	92%	90%	110%	98%	70%	130%
Uranium	7695145		<2	<2	NA	< 2	99%	90%	110%	91%	90%	110%	92%	70%	130%
Vanadium	7695145		<2	<2	NA	< 2	102%	90%	110%	97%	90%	110%	95%	70%	130%
Zinc	7695145		7	7	NA	< 5	105%	90%	110%	102%	90%	110%	84%	70%	130%
Zirconium	7695145		<4	<4	NA	< 4	99%	90%	110%	97%	90%	110%	95%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Water Analysis - Low Level Mercury (Total/Dissolved)															
Dissolved Mercury- Ultra Low Level	1		NA	NA	NA	< 2.50E-06	92%	90%	110%	101%	90%	110%	97%	80%	120%
Total Mercury- Ultra Low Level	1		NA	NA	NA	< 1.90E-06	92%	90%	110%	101%	90%	110%	97%	80%	120%

Comments: If the RPD value is NA, the results of the duplicates are under 5X the RDL and will not be calculated.

Certified By:

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Method Summary

CLIENT NAME: TRELAWNEY MINING & EXPLORATION | AGAT WORK ORDER: 16U114292
PROJECT: CH2-RMP-Supplemental | ATTENTION TO: ROBERT HOBBS
SAMPLING SITE: | SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Titanium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Tungsten	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zirconium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Total Suspended Solids	INOR-93-6028	SM 2540 D	BALANCE
Total Dissolved Solids	INOR-93-6028	SM 2540 C	BALANCE
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Acidity (as CaCO3)		SM 2310 B	TITRATION
Alkalinity (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Total Hardness (as CaCO3)	MET-93-6105	EPA SW-846 6010C & 200.7 & SM 2340 B	ICP/OES
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Ammonia as N	INOR-93-6002	AQ2 EPA-103A & SM 4500 NH3-F	AQ-2 DISCRETE ANALYZER
Total Phosphorus	INOR-93-6022	SM 4500-P B & E	SPECTROPHOTOMETER
Total Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310 B	SHIMADZU CARBON ANALYZER
Dissolved Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310 B	SHIMADZU CARBON ANALYZER
Cyanide, Free	INOR-93-6052	MOE CN-3015 & SM 4500 CN- I	TECHNICON AUTO ANALYZER
Total Cyanide	INOR-93-6051	MOE 3015 & SM 4500 CN- A,B,C	TECHNICON AUTO ANALYZER
Calcium	MET- 93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET- 93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET- 93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET- 93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Aluminum	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS

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Method Summary

CLIENT NAME: TRELAWNEY MINING & EXPLORATION | AGAT WORK ORDER: 16U114292

PROJECT: CH2-RMP-Supplemental | ATTENTION TO: ROBERT HOBBS

SAMPLING SITE: | SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Antimony	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Tungsten	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Zirconium	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Dissolved Mercury- Ultra Low Level	INST 0162	EPA 1631 DW	CV/AFS
Total Mercury- Ultra Low Level	INST 0162	EPA 1631 TW	CV/AFS

AGAT Laboratories

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Mississauga, Ontario; L4Z 1Y2
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CHAIN OF CUSTODY RECORD

LABORATORY USE ONLY

Arrival Condition: ☐ Good ☐ Poor (complete "Notes")

Arrival Temperature: 6.7/6.6/5.8

AGAT Job Number: 16U114292

Notes:

Client Information

Company: Trelawney Mining and Exploration

Contact: Robert Hobbs

Address: Chester#1 Mine, Chester Mine Road

P.O. Box 100 Gogama, Ontario P0M 1W0

Phone: 705-269-0203 Fax:

PO#: Service Agreement#: AGAT TRR-2011

Client Project #: CH2-RMP-supplemental

AGAT Quotation #: 11-602

Report Information

1. Name: Robert Hobbs
   Email: robert_hobbs@iamgold.com
2. Name:
   Email:
3. Name:
   Email:
4. Name:
   Email:

Report Format

(Please "x" those that apply)

☐ Single sample per page

X Multiple samples per page

☐ Results by Fax

Turnaround Time (TAT)*

(Please "x" the applicable box below)

Regular TAT:

X 5 to 7 working days

Rush TAT (Rush Surcharges Apply):

☐ 3 to 5 days

☐ 48 to 72 hours

☐ 24 to 48 hours

Date Required (Rush surcharges may apply)

Regulatory Guideline Required:

(Please "x" those that apply)

☐ Reg 153 Table (indicate one): ☐ Ind/Com ☐ Res/Park ☐ Ag; ☐ Med/Fine ☐ Coarse

☐ Sewer Use; Region (indicate one): ☐ Sanitary ☐ Storm

X PWQO

☐ Reg 558

X CCME

☐ Other (indicate)

Is this a drinking water sample (potable water intended for human consumption)? ☐ Yes x No

If "Yes" please use the Drinking Water Chain of Custody Record

Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments - Site/Sample Info, Sample Containment	pH	Conductivity	Total Metals (incl Cr & Hg l…	Diss. Metals (incl Cr & Hg l…	D.O.C. / T.O.C	Alkalinity / Acidity	Hardness	Total Phosporous (Low Lev…	Total Ammonia	Total and Free Cyanide	Cations (Ca, Na, Mg, K)	Anions (Cl , SO4)	TSS & TDS	Fluoride	Nitrate / Nitrite	
BC	05/18/2016		Water	11		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
TOTAL # OF CONTAINERS				11																	

* Samples received after 2:00 PM will be logged in for the next business day. TAT is exclusive of weekends and statutory holidays

Sample Relinquished By (print name & sign)	Date/Time	Samples Received By (print name and sign)	Date/Time
Robert Hobbs	07/7/2016	Ryan Lawrence	July 7/16 16:30
Sample Relinquished By (print name & sign)	**Date/Time**	**Samples Received By (print name and sign)**	**Date/Time**
Robert Hobbs	07/07/2016	Shaun	July 11/16 9:40a

Special Instructions

No Ra226 - use this bottle for other sample resul

Page 1 of 1

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: TRELAWNEY MINING & EXPLORATION
CHESTER #1, MINE SITE, P.O. BOX 100
GOGAMA, ON P0M1W0
(705) 269-0010

ATTENTION TO: ROBERT HOBBS

PROJECT: CH2-RMP - Supplemental

AGAT WORK ORDER: 16U116231

WATER ANALYSIS REVIEWED BY: Mike Muneswar, BSc (Chem), Senior Inorganic Analyst

DATE REPORTED: Jul 22, 2016

PAGES (INCLUDING COVER): 15

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES
VERSION 1:Partial report sent July 19, 2016.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

5835 COOPERS AVENUE
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AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 16U116231

PROJECT: CH2-RMP - Supplemental

CLIENT NAME: TRELAWNEY MINING & EXPLORATION

ATTENTION TO: ROBERT HOBBS

SAMPLING SITE:

SAMPLED BY:

Dissolved Metals (CH2-RMP)

DATE RECEIVED: 2016-07-14

DATE REPORTED: 2016-07-19

		SAMPLE DESCRIPTION:		LTD	NC	CL	SL	MR	ML	AL	MR-X
		SAMPLE TYPE:		Water-Filter	Water-Filter	Water-Filter	Water-Filter	Water-Filter	Water-Filter	Water-Filter	Water-Filter
		DATE SAMPLED:		7/10/2016	7/9/2016	7/8/2016	7/7/2016	7/10/2016	7/7/2016	7/8/2016	7/10/2016
Parameter	Unit	G / S	RDL	7708690	7708716	7708732	7708747	7708765	7708781	7708803	7708822
Aluminum	µg/L	75	4	64	75	40	103	56	26	43	49
Antimony	µg/L	20	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	µg/L	100	3	<3	<3	<3	<3	<3	<3	<3	<3
Barium	µg/L		2	5	5	4	5	5	3	5	5
Beryllium	µg/L	11	1	<1	<1	<1	<1	<1	<1	<1	<1
Boron	µg/L	200	10	<10	<10	<10	<10	<10	<10	<10	<10
Cadmium	µg/L	0.2	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Chromium	µg/L	8.9	3	<3	<3	<3	<3	<3	<3	<3	<3
Cobalt	µg/L	0.9	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper	µg/L	5	0.1	1.0	1.0	0.8	0.6	0.6	1.0	0.8	0.8
Iron	µg/L	300	10	47	81	186	43	65	<10	61	68
Lead	µg/L	5	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Manganese	µg/L		2	<2	<2	4	5	4	<2	<2	5
Molybdenum	µg/L	40	2	<2	<2	<2	<2	<2	<2	<2	<2
Nickel	µg/L	25	3	<3	<3	<3	<3	<3	<3	<3	<3
Selenium	µg/L	100	0.1	2.8	0.8	1.1	0.6	<0.1	0.6	<0.1	0.2
Silver	µg/L	0.1	0.01	0.05	0.04	0.04	0.05	0.03	0.02	0.02	0.03
Strontium	µg/L		5	10	12	13	9	14	10	11	14
Thallium	µg/L	0.3	0.01	0.03	0.03	0.02	0.01	0.11	<0.01	<0.01	0.09
Titanium	µg/L		2	<2	<2	<2	<2	<2	<2	<2	<2
Tungsten	µg/L	30	10	<10	<10	<10	<10	<10	<10	<10	<10
Uranium	µg/L	5	2	<2	<2	<2	<2	<2	<2	<2	<2
Vanadium	µg/L	6	2	<2	<2	<2	<2	<2	<2	<2	<2
Zinc	µg/L	30	5	5	<5	<5	<5	<5	<5	34	<5
Zirconium	µg/L		4	<4	<4	<4	<4	<4	<4	<4	<4

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CLIENT NAME: TRELAWNEY MINING & EXPLORATION

ATTENTION TO: ROBERT HOBBS

SAMPLING SITE:

SAMPLED BY:

Dissolved Metals (CH2-RMP)

DATE RECEIVED: 2016-07-14

DATE REPORTED: 2016-07-19

			SAMPLE DESCRIPTION:	DL	ML-FB	Trip Blank
			SAMPLE TYPE:	Water-Filter	Water-Filter	Water-Filter
			DATE SAMPLED:	7/9/2016	7/14/2016	7/14/2016
Parameter	Unit	G / S	RDL	7708843	7708858	7708878
Aluminum	µg/L	75	4	92	6	<4
Antimony	µg/L	20	1.0	<1.0	<1.0	<1.0
Arsenic	µg/L	100	3	<3	<3	<3
Barium	µg/L		2	5	<2	<2
Beryllium	µg/L	11	1	<1	<1	<1
Boron	µg/L	200	10	<10	<10	<10
Cadmium	µg/L	0.2	0.02	<0.02	<0.02	<0.02
Chromium	µg/L	8.9	3	<3	<3	<3
Cobalt	µg/L	0.9	0.5	<0.5	<0.5	<0.5
Copper	µg/L	5	0.1	0.7	0.3	<0.1
Iron	µg/L	300	10	176	<10	<10
Lead	µg/L	5	0.1	<0.1	<0.1	<0.1
Manganese	µg/L		2	15	<2	<2
Molybdenum	µg/L	40	2	<2	<2	<2
Nickel	µg/L	25	3	<3	<3	<3
Selenium	µg/L	100	0.1	0.5	<0.1	<0.1
Silver	µg/L	0.1	0.01	0.04	<0.01	<0.01
Strontium	µg/L		5	13	<5	<5
Thallium	µg/L	0.3	0.01	0.02	0.01	<0.01
Titanium	µg/L		2	<2	<2	<2
Tungsten	µg/L	30	10	<10	<10	<10
Uranium	µg/L	5	2	<2	<2	<2
Vanadium	µg/L	6	2	<2	<2	<2
Zinc	µg/L	30	5	<5	<5	<5
Zirconium	µg/L		4	<4	<4	<4

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to PWQO.

Certified By:

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AGAT WORK ORDER: 16U116231
PROJECT: CH2-RMP - Supplemental

CLIENT NAME: TRELAWNEY MINING & EXPLORATION
ATTENTION TO: ROBERT HOBBS
SAMPLING SITE:
SAMPLED BY:

Metals & Inorganic Parameters (CH2-RMP)

DATE RECEIVED: 2016-07-14
DATE REPORTED: 2016-07-19

			SAMPLE DESCRIPTION:	LTD	NC	CL	SL	MR	ML	AL	MR-X
			SAMPLE TYPE:	Water	Water	Water	Water	Water	Water	Water	Water
			DATE SAMPLED:	7/10/2016	7/9/2016	7/8/2016	7/7/2016	7/10/2016	7/7/2016	7/8/2016	7/10/2016
Parameter	Unit	G / S	RDL	7708610	7708694	7708719	7708734	7708750	7708768	7708788	7708807
Total Suspended Solids	mg/L		1	2	1	<1	1	1	2	2	1
Total Dissolved Solids	mg/L		20	54	50	42	36	56	36	46	56
Electrical Conductivity	uS/cm		2	38	43	54	33	81	38	47	81
pH	pH Units	6.5-8.5	NA	6.70	6.70	6.79	6.57	6.96	6.63	6.74	6.97
Acidity (as CaCO3)	mg/L		5	<5	<5	<5	<5	<5	<5	<5	<5
Alkalinity (as CaCO3)	mg/L		5	15	18	25	11	31	13	22	31
Total Hardness (as CaCO3)	µg/L		500	17300	21000	24700	15000	34300	17400	22300	34700
Fluoride	mg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloride	mg/L		0.10	0.26	0.16	0.20	0.14	3.98	0.14	0.19	3.95
Nitrate as N	mg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite as N	mg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L		0.10	1.99	2.01	1.88	1.73	2.54	2.48	2.06	2.61
Ammonia as N	mg/L		0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Total Phosphorus	mg/L	0.03	0.005	0.015	<0.005	<0.005	0.011	0.006	0.006	0.008	0.006
Dissolved Organic Carbon	mg/L		0.5	11.5	13.2	11.1	13.6	9.8	9.6	10.7	9.7
Total Organic Carbon	mg/L		0.5	12.0	13.5	10.8	14.2	10.0	9.7	11.0	10.4
Cyanide, Free	mg/L		0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Total Cyanide	mg/L	5	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Calcium	µg/L		50	5310	6780	8010	4880	10600	5240	7160	10700
Magnesium	µg/L		50	976	988	1150	680	1890	1040	1080	1930
Sodium	µg/L		50	871	720	796	648	2360	624	710	2310
Potassium	µg/L		50	314	184	217	352	412	145	194	406
Aluminum	µg/L	75	4	75	95	49	127	55	32	44	50
Antimony	µg/L	20	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	µg/L	100	3	<3	<3	<3	<3	<3	<3	<3	<3
Barium	µg/L		2	5	7	4	5	4	4	4	5
Beryllium	µg/L	11	1	<1	<1	<1	<1	<1	<1	<1	<1
Boron	µg/L	200	10	<10	<10	<10	<10	<10	<10	<10	<10
Cadmium	µg/L	0.2	0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Chromium	µg/L	8.9	3	<3	<3	<3	<3	<3	<3	<3	<3

Certified By:

Certificate of Analysis

AGAT WORK ORDER: 16U116231

PROJECT: CH2-RMP - Supplemental

5835 COOPERS AVENUE
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CLIENT NAME: TRELAWNEY MINING & EXPLORATION

ATTENTION TO: ROBERT HOBBS

SAMPLING SITE:

SAMPLED BY:

Metals & Inorganic Parameters (CH2-RMP)

DATE RECEIVED: 2016-07-14

DATE REPORTED: 2016-07-19

			SAMPLE DESCRIPTION:	LTD	NC	CL	SL	MR	ML	AL	MR-X
			SAMPLE TYPE:	Water	Water	Water	Water	Water	Water	Water	Water
			DATE SAMPLED:	7/10/2016	7/9/2016	7/8/2016	7/7/2016	7/10/2016	7/7/2016	7/8/2016	7/10/2016
Parameter	Unit	G / S	RDL	7708610	7708694	7708719	7708734	7708750	7708768	7708788	7708807
Cobalt	µg/L	0.9	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper	µg/L	5	0.1	1.0	1.2	1.4	0.7	0.6	0.6	1.0	0.6
Iron	µg/L	300	10	97	171	264	85	66	<10	124	71
Lead	µg/L	5	0.1	0.1	0.4	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
Manganese	µg/L		2	19	34	21	16	11	6	17	12
Molybdenum	µg/L	40	2	<2	<2	<2	<2	<2	<2	<2	<2
Nickel	µg/L	25	3	<3	<3	<3	<3	<3	<3	<3	<3
Selenium	µg/L	100	0.1	2.1	1.3	1.2	0.9	<0.1	1.0	0.8	<0.1
Silver	µg/L	0.1	0.01	0.04	0.04	0.06	0.04	0.02	0.01	0.02	0.02
Strontium	µg/L		5	11	12	14	10	14	10	12	15
Thallium	µg/L	0.3	0.01	0.05	0.02	0.02	0.02	0.09	0.02	0.01	0.08
Titanium	µg/L		2	<2	<2	<2	<2	<2	<2	<2	<2
Tungsten	µg/L	30	10	<10	<10	<10	<10	<10	<10	<10	<10
Uranium	µg/L	5	2	<2	<2	<2	<2	<2	<2	<2	<2
Vanadium	µg/L	6	2	<2	<2	<2	<2	<2	<2	<2	<2
Zinc	µg/L	30	5	<5	8	7	<5	<5	<5	<5	<5
Zirconium	µg/L		4	<4	<4	<4	<4	<4	<4	<4	<4

Certified By:

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CLIENT NAME: TRELAWNEY MINING & EXPLORATION

ATTENTION TO: ROBERT HOBBS

SAMPLING SITE:

SAMPLED BY:

Metals & Inorganic Parameters (CH2-RMP)

DATE RECEIVED: 2016-07-14

DATE REPORTED: 2016-07-19

			SAMPLE DESCRIPTION:	DL	ML-FB	Trip Blank
			SAMPLE TYPE:	Water	Water	Water
			DATE SAMPLED:	7/9/2016	7/14/2016	7/14/2016
Parameter	Unit	G / S	RDL	7708830	7708845	7708867
Total Suspended Solids	mg/L		1	1	<1	<1
Total Dissolved Solids	mg/L		20	62	<20	<20
Electrical Conductivity	uS/cm		2	46	<2	<2
pH	pH Units	6.5-8.5	NA	6.71	5.31	5.29
Acidity (as CaCO3)	mg/L		5	<5	<5	<5
Alkalinity (as CaCO3)	mg/L		5	17	<5	<5
Total Hardness (as CaCO3)	µg/L		500	23200	<500	<500
Fluoride	mg/L		0.05	<0.05	<0.05	<0.05
Chloride	mg/L		0.10	0.43	<0.10	<0.10
Nitrate as N	mg/L		0.05	0.08	<0.05	<0.05
Nitrite as N	mg/L		0.05	<0.05	<0.05	<0.05
Sulphate	mg/L		0.10	1.74	<0.10	<0.10
Ammonia as N	mg/L		0.02	<0.02	<0.02	<0.02
Total Phosphorus	mg/L	0.03	0.005	0.017	<0.005	<0.005
Dissolved Organic Carbon	mg/L		0.5	16.2	<0.5	<0.5
Total Organic Carbon	mg/L		0.5	16.8	<0.5	<0.5
Cyanide, Free	mg/L		0.002	<0.002	<0.002	<0.002
Total Cyanide	mg/L	5	0.002	<0.002	<0.002	<0.002
Calcium	µg/L		50	7190	<50	<50
Magnesium	µg/L		50	1280	<50	<50
Sodium	µg/L		50	739	<50	<50
Potassium	µg/L		50	286	<50	<50
Aluminum	µg/L	75	4	113	<4	<4
Antimony	µg/L	20	1.0	<1.0	<1.0	<1.0
Arsenic	µg/L	100	3	<3	<3	<3
Barium	µg/L		2	6	<2	<2
Beryllium	µg/L	11	1	<1	<1	<1
Boron	µg/L	200	10	<10	<10	<10
Cadmium	µg/L	0.2	0.02	<0.02	<0.02	<0.02
Chromium	µg/L	8.9	3	<3	<3	<3

Certified By:

Certificate of Analysis

AGAT WORK ORDER: 16U116231
PROJECT: CH2-RMP - Supplemental

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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CLIENT NAME: TRELAWNEY MINING & EXPLORATION
ATTENTION TO: ROBERT HOBBS
SAMPLING SITE:
SAMPLED BY:

Metals & Inorganic Parameters (CH2-RMP)

DATE RECEIVED: 2016-07-14
DATE REPORTED: 2016-07-19

			SAMPLE DESCRIPTION:	DL	ML-FB	Trip Blank
			SAMPLE TYPE:	Water	Water	Water
			DATE SAMPLED:	7/9/2016	7/14/2016	7/14/2016
Parameter	Unit	G / S	RDL	7708830	7708845	7708867
Cobalt	µg/L	0.9	0.5	<0.5	<0.5	<0.5
Copper	µg/L	5	0.1	0.7	<0.1	<0.1
Iron	µg/L	300	10	292	<10	<10
Lead	µg/L	5	0.1	0.2	<0.1	<0.1
Manganese	µg/L		2	50	<2	<2
Molybdenum	µg/L	40	2	<2	<2	<2
Nickel	µg/L	25	3	<3	<3	<3
Selenium	µg/L	100	0.1	0.2	<0.1	<0.1
Silver	µg/L	0.1	0.01	0.03	<0.01	<0.01
Strontium	µg/L		5	13	<5	<5
Thallium	µg/L	0.3	0.01	0.03	<0.01	<0.01
Titanium	µg/L		2	<2	<2	<2
Tungsten	µg/L	30	10	<10	<10	<10
Uranium	µg/L	5	2	<2	<2	<2
Vanadium	µg/L	6	2	<2	<2	<2
Zinc	µg/L	30	5	<5	<5	<5
Zirconium	µg/L		4	<4	<4	<4

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to PWQO.

Certified By:

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CLIENT NAME: TRELAWNEY MINING & EXPLORATION

ATTENTION TO: ROBERT HOBBS

SAMPLING SITE:

SAMPLED BY:

Water Analysis - Low Level Mercury (Total/Dissolved)

DATE RECEIVED: 2016-07-14

DATE REPORTED: 2016-07-19

			SAMPLE DESCRIPTION:	LTD	NC	CL	SL	MR	ML	AL	MR-X
			SAMPLE TYPE:	Water	Water	Water	Water	Water	Water	Water	Water
			DATE SAMPLED:	7/10/2016	7/9/2016	7/8/2016	7/7/2016	7/10/2016	7/7/2016	7/8/2016	7/10/2016
Parameter	Unit	G / S	RDL	7708610	7708694	7708719	7708734	7708750	7708768	7708788	7708807
Dissolved Mercury- Ultra Low Level	mg/L		0.0000025	0.0000030	0.0000043	0.0000040	0.0000041	0.0000052	0.0000037	0.0000056	0.0000040
Total Mercury- Ultra Low Level	mg/L		0.0000019	0.0000057	0.0000190	0.0000043	0.0000045	0.0000050	0.0000043	0.0000053	0.0000048

			SAMPLE DESCRIPTION:	DL	ML-FB	Trip Blank
			SAMPLE TYPE:	Water	Water	Water
			DATE SAMPLED:	7/9/2016	7/14/2016	7/14/2016
Parameter	Unit	G / S	RDL	7708830	7708845	7708867
Dissolved Mercury- Ultra Low Level	mg/L		0.0000025	0.0000042	< 2.50E-06	< 2.50E-06
Total Mercury- Ultra Low Level	mg/L		0.0000019	0.0000100	0.0000047	< 1.90E-06

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

AGAT Laboratories
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MISSISSAUGA, ONTARIO
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CLIENT NAME: TRELAWNEY MINING & EXPLORATION

ATTENTION TO: ROBERT HOBBS

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	GUIDEVALUE	RESULT
7708694	NC	PWQO.	Metals & Inorganic Parameters (CH2-RMP)	Aluminum	75	95
7708734	SL	PWQO.	Metals & Inorganic Parameters (CH2-RMP)	Aluminum	75	127
7708747	SL	PWQO.	Dissolved Metals (CH2-RMP)	Aluminum	75	103
7708803	AL	PWQO.	Dissolved Metals (CH2-RMP)	Zinc	30	34
7708830	DL	PWQO.	Metals & Inorganic Parameters (CH2-RMP)	Aluminum	75	113
7708843	DL	PWQO.	Dissolved Metals (CH2-RMP)	Aluminum	75	92
7708845	ML-FB	PWQO.	Metals & Inorganic Parameters (CH2-RMP)	pH	6.5-8.5	5.31
7708867	Trip Blank	PWQO.	Metals & Inorganic Parameters (CH2-RMP)	pH	6.5-8.5	5.29

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Quality Assurance

CLIENT NAME: TRELAWNEY MINING & EXPLORATION | AGAT WORK ORDER: 16U116231

PROJECT: CH2-RMP - Supplemental | ATTENTION TO: ROBERT HOBBS

SAMPLING SITE: | SAMPLED BY:

Water Analysis

RPT Date:			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Metals & Inorganic Parameters (CH2-RMP)															
Total Suspended Solids	7708610	7708610	2	2	NA	< 1	NA	80%	120%	NA			NA		
Total Dissolved Solids	7708610	7708610	54	56	NA	< 20	100%	80%	120%	NA			NA		
Electrical Conductivity	7708252		287	284	1.1%	< 2	104%	80%	120%	NA			NA		
pH	7708252		7.50	7.55	0.7%	NA	98%	90%	110%	NA			NA		
Alkalinity (as CaCO3)	7708252		107	108	0.9%	< 5	108%	80%	120%	NA			NA		
Fluoride	7702573		<0.5	<0.5	NA	< 0.05	98%	90%	110%	97%	90%	110%	99%	80%	120%
Chloride	7702573		233	232	0.4%	< 0.10	97%	90%	110%	103%	90%	110%	105%	80%	120%
Nitrate as N	7702573		1.2	1.2	0.0%	< 0.05	92%	90%	110%	104%	90%	110%	100%	80%	120%
Nitrite as N	7702573		<0.5	<0.5	NA	< 0.05	NA	90%	110%	95%	90%	110%	98%	80%	120%
Sulphate	7702573		644	642	0.3%	< 0.10	96%	90%	110%	106%	90%	110%	101%	80%	120%
Ammonia as N	7708252		<0.02	0.02	NA	< 0.02	95%	90%	110%	98%	90%	110%	104%	80%	120%
Total Phosphorus	7708610	7708610	0.015	0.014	NA	< 0.005	94%	90%	110%	97%	90%	110%	93%	80%	120%
Dissolved Organic Carbon	7708807	7708807	9.7	10.1	4.0%	< 0.5	102%	90%	110%	91%	90%	110%	116%	80%	120%
Total Organic Carbon	7708807	7708807	10.4	9.85	5.4%	< 0.5	97%	90%	110%	91%	90%	110%	103%	80%	120%
Cyanide, Free	7701936		<0.002	<0.002	NA	< 0.002	101%	90%	110%	100%	90%	110%	99%	70%	130%
Total Cyanide	7706270		<0.002	0.002	NA	< 0.002	101%	80%	120%	101%	90%	110%	103%	70%	130%
Calcium	7705318		72600	73200	0.8%	< 50	105%	90%	110%	106%	90%	110%	103%	70%	130%
Magnesium	7705318		27300	29000	6.0%	< 50	101%	90%	110%	101%	90%	110%	106%	70%	130%
Sodium	7705318		289000	288000	0.3%	< 50	105%	90%	110%	104%	90%	110%	109%	70%	130%
Potassium	7705318		9840	9990	1.5%	< 50	100%	90%	110%	98%	90%	110%	111%	70%	130%
Aluminum	7708610	7708610	75	83	10.1%	< 4	103%	90%	110%	106%	90%	110%	99%	70%	130%
Antimony	7708610	7708610	< 1.0	<1.0	NA	< 1.0	100%	90%	110%	96%	90%	110%	97%	70%	130%
Arsenic	7708610	7708610	< 3	<3	NA	< 3	95%	90%	110%	92%	90%	110%	92%	70%	130%
Barium	7708610	7708610	5	5	NA	< 2	95%	90%	110%	93%	90%	110%	90%	70%	130%
Beryllium	7708610	7708610	< 1	<1	NA	< 1	109%	90%	110%	110%	90%	110%	111%	70%	130%
Boron	7708610	7708610	< 10	<10	NA	< 10	109%	90%	110%	106%	90%	110%	106%	70%	130%
Cadmium	7708610	7708610	< 0.02	0.02	NA	< 0.02	95%	90%	110%	104%	90%	110%	90%	70%	130%
Chromium	7708610	7708610	< 3	<3	NA	< 3	99%	90%	110%	100%	90%	110%	99%	70%	130%
Cobalt	7708610	7708610	< 0.5	<0.5	NA	< 0.5	94%	90%	110%	94%	90%	110%	94%	70%	130%
Copper	7708610	7708610	1.0	1.0	0.0%	< 0.1	99%	90%	110%	99%	90%	110%	97%	70%	130%
Iron	7708610	7708610	97	89	8.6%	< 10	94%	90%	110%	92%	90%	110%	97%	70%	130%
Lead	7708610	7708610	0.1	0.1	NA	< 0.1	98%	90%	110%	101%	90%	110%	100%	70%	130%
Manganese	7708610	7708610	19	20	5.1%	< 2	103%	90%	110%	102%	90%	110%	100%	70%	130%
Molybdenum	7708610	7708610	< 2	<2	NA	< 2	98%	90%	110%	99%	90%	110%	95%	70%	130%
Nickel	7708610	7708610	< 3	<3	NA	< 3	97%	90%	110%	93%	90%	110%	94%	70%	130%
Selenium	7708610	7708610	2.1	2.4	13.3%	< 0.1	94%	90%	110%	92%	90%	110%	92%	70%	130%
Silver	7708610	7708610	0.04	0.04	NA	< 0.01	95%	90%	110%	101%	90%	110%	99%	70%	130%
Strontium	7708610	7708610	11	11	NA	< 5	98%	90%	110%	94%	90%	110%	97%	70%	130%
Thallium	7708610	7708610	0.05	0.04	NA	< 0.01	91%	90%	110%	96%	90%	110%	96%	70%	130%

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Quality Assurance

CLIENT NAME: TRELAWNEY MINING & EXPLORATION | AGAT WORK ORDER: 16U116231

PROJECT: CH2-RMP - Supplemental | ATTENTION TO: ROBERT HOBBS

SAMPLING SITE: | SAMPLED BY:

Water Analysis (Continued)

RPT Date:			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Titanium	7708610	7708610	< 2	<2	NA	< 2	97%	90%	110%	93%	90%	110%	91%	70%	130%
Tungsten	7708610	7708610	< 10	<10	NA	< 10	94%	90%	110%	98%	90%	110%	99%	70%	130%
Uranium	7708610	7708610	< 2	<2	NA	< 2	94%	90%	110%	95%	90%	110%	94%	70%	130%
Vanadium	7708610	7708610	< 2	<2	NA	< 2	95%	90%	110%	93%	90%	110%	92%	70%	130%
Zinc	7708610	7708610	< 5	<5	NA	< 5	100%	90%	110%	98%	90%	110%	105%	70%	130%
Zirconium	7708610	7708610	< 4	<4	NA	< 4	94%	90%	110%	91%	90%	110%	90%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Water Analysis - Low Level Mercury (Total/Dissolved)															
Dissolved Mercury- Ultra Low Level	1		< 2.50E-06	< 2.50E-06	0.0%	< 2.50E-06	109%	90%	110%	94%	90%	110%	NA	80%	120%
Total Mercury- Ultra Low Level	1		< 1.90E-06	< 1.90E-06	0.0%	< 1.90E-06	109%	90%	110%	94%	90%	110%	NA	80%	120%

Comments: If the RPD value is NA, the results of the duplicates are under 5X the RDL and will not be calculated.

Certified By:

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Method Summary

CLIENT NAME: TRELAWNEY MINING & EXPLORATION
AGAT WORK ORDER: 16U116231
PROJECT: CH2-RMP - Supplemental
ATTENTION TO: ROBERT HOBBS
SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Strontium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Titanium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Tungsten	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zirconium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Total Suspended Solids	INOR-93-6028	SM 2540 D	BALANCE
Total Dissolved Solids	INOR-93-6028	SM 2540 C	BALANCE
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Acidity (as CaCO3)		SM 2310 B	TITRATION
Alkalinity (as CaCO3)	INOR-93-6000	SM 2320 B	PC TITRATE
Total Hardness (as CaCO3)	MET-93-6105	EPA SW-846 6010C & 200.7 & SM 2340 B	ICP/OES
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Ammonia as N	INOR-93-6002	AQ2 EPA-103A & SM 4500 NH3-F	AQ-2 DISCRETE ANALYZER
Total Phosphorus	INOR-93-6022	SM 4500-P B & E	SPECTROPHOTOMETER
Dissolved Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310 B	SHIMADZU CARBON ANALYZER
Total Organic Carbon	INOR-93-6049	EPA 415.1 & SM 5310 B	SHIMADZU CARBON ANALYZER
Cyanide, Free	INOR-93-6052	MOE CN-3015 & SM 4500 CN- I	TECHNICON AUTO ANALYZER
Total Cyanide	INOR-93-6051	MOE 3015 & SM 4500 CN- A,B,C	TECHNICON AUTO ANALYZER
Calcium	MET- 93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Magnesium	MET- 93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Sodium	MET- 93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Potassium	MET- 93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Aluminum	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS

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Method Summary

CLIENT NAME: TRELAWNEY MINING & EXPLORATION | AGAT WORK ORDER: 16U116231
PROJECT: CH2-RMP - Supplemental | ATTENTION TO: ROBERT HOBBS
SAMPLING SITE: | SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Antimony	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Iron	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Manganese	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Tungsten	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Zirconium	MET-93- 6103	EPA SW-846 6020A & 200.8	ICP-MS
Dissolved Mercury- Ultra Low Level	INST 0162	EPA 1631 DW	CV/AFS
Total Mercury- Ultra Low Level	INST 0162	EPA 1631 TW	CV/AFS

AGAT Laboratories

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CHAIN OF CUSTODY RECORD

SLG

LABORATORY USE ONLY

Arrival Condition: ☐ Good ☐ Poor (complete "Notes")
Arrival Temperature:
AGAT Job Number: 16U116231
Notes:

Client Information

Company: Trelawney Mining and Exploration
Contact: Robert Hobbs
Address: Chester#1 Mine, Chester Mine Road
P.O. Box 100 Gogama, Ontario P0M 1W0
Phone: 705-269-0203 Fax:
PO#: Service Agreement#: AGAT TRR-2011
Client Project #: CH2-RMP-supplemental
AGAT Quotation #: 11-602

Report Information

1. Name: Robert Hobbs
Email: robert_hobbs@iamgold.com
2. Name:
Email:
3. Name:
Email:
4. Name:
Email:

Report Format

(Please "x" those that apply)

☐ Single sample per page
X Multiple samples per page
☐ Results by Fax

Turnaround Time (TAT)*

(Please "x" the applicable box below)

Regular TAT:
☐ 5 to 7 working days

Rush TAT (Rush Surcharges Apply):
X 3 to 5 days
☐ 48 to 72 hours
☐ 24 to 48 hours

Date Required (Rush surcharges may apply

Regulatory Guideline Required:

(Please "x" those that apply)

☐ Reg 153 Table ____ (indicate one) ☐ Ind/Com ☐ Res/Park ☐ Ag ☐ Med/Fine ☐ Coarse
☐ Sewer Use Region ____ (indicate one) ☐ Sanitary ☐ Storm
X PWQO
☐ Reg 558
X CCME
☐ Other (indicate)

Is this a drinking water sample (potable water intended for human consumption)?
☐ Yes
x No

If "Yes" please use the Drinking Water Chain of Custody Record

Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments - Site/Sample Info. Sample Containment	pH	Conductivity	Total Metals (incl Cr & Hg l	Diss. Metals (incl Cr & Hg l	D.O.C. / T.O.C	Alkalinity / Acidity	Hardness	Total Phosporous (Low Lev	Total Ammonia	Total and Free Cyanide	Cations (Ca, Na, Mg, K)	Anions (Cl , SO4)	TSS & TDS	Fluoride	Nitrate / Nitrite	
LTD	07/10/2016		water	12		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
NC	07/09/2016		water	12		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
CL	07/08/2016		water	12		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
SL	07/07/2016		water	12		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
MR	07/10/2016		water	12		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
ML	07/07/2016		water	12		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
AL	07/08/2016		water	12		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
MR-X	07/10/2016		water	12		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
DL	07/09/2016		water	12		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
ML-FB	07/14/2016		water	12		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Trip Blank	07/14/2016		water	12		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
TOTAL # OF CONTAINERS				132	* Samples received after 2:00 PM will be logged in for the next business day. TAT is exclusive of weekends and statutory holidays																

Sample Relinquished By (print name & sign)	Date/Time	Samples Received By (print name and sign)	Date/Time	Special Instructions
Robert Hobbs	07/14/2016	Ryan Lawrence	July 14/16 14:30	Not Field Filtered!!!
Sample Relinquished By (print name & sign)	**Date/Time**	**Samples Received By (print name and sign)**	**Date/Time**	
Robert Hobbs		Sima 16/7/15	900	

Page 1 of 1

AGAT Laboratories

Sample Temperature Log

Client: TRELAWNEY

Work Order #: ____________

Arrival Temperatures - Branch/Driver

Cooler #1:	8^{6}	8^{8}	9^{1}
Cooler #2:	8^{5}	8^{7}	8^{4}
Cooler #3:	9	8^{8}	8^{6}
Cooler #4:	8^{3}	8^{4}	8^{7}
Cooler #5:	9	8^{7}	8^{9}
Cooler #6:			
Cooler #7:			
Cooler #8			
Cooler #9:			
Cooler #10:			

IR Gun ID: ____________

Taken By: ____________

Date (yyyy/mm/dd): ____________ Time: ___:___ AM / PM

Arrival Temperatures - Laboratory

Cooler #1:			
Cooler #2:			
Cooler #3:			
Cooler #4:			
Cooler #5:			
Cooler #6:			
Cooler #7:			
Cooler #8			
Cooler #9:			
Cooler #10:			

IR Gun ID: ____________

Taken By: ____________

Date (yyyy/mm/dd): ____________ Time: ___:___ AM / PM

APPENDIX D

FISH DATA

Table D.1: Catch-per-unit-effort (CPUE) records for fish caught during minnow trapping, Côté Gold Baseline Study, 2016.

Location	Station	Location (17T, NAD83)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	# of Traps	Effort (trap*d)	Central Mudminnow			Fathead Minnow			Finescale Dace			Iowa Darter			Northern Pike			Northern Redbelly Dace			Pearl Dace			White Sucker		
		Northing	Easting								Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE	Catch	Mortalities/ Sacrificed	CPUE
Attach Lake	MT-1	5265662	426015	08-Jul-16	08-Jul-16	14:14	18:05	3.85	2	0.32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chain Lake	MT-1	5266360	425518	08-Jul-16	08-Jul-16	8:55	13:25	4.50	2	0.38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chester Pond	MT-1	5265063	426551	09-Jul-16	09-Jul-16	11:15	12:15	1.00	2	0.08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dividing Lake	MT-1	5261595	435089	08-Jul-16	09-Jul-16	14:45	13:15	22.50	1	0.94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MT-2	5261296	434765	08-Jul-16	09-Jul-16	14:50	13:20	22.50	1	0.94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MT-3	5261268	434553	08-Jul-16	09-Jul-16	14:55	13:35	22.67	1	0.94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
							Total	**67.67**	**3**	**2.82**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Mollie River (Downstream of Lower Three Duck Pond)	MT-1	5261632	434004	09-Jul-16	10-Jul-16	15:15	14:15	23.00	1	0.96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MT-2	5261999	433850	09-Jul-16	10-Jul-16	17:10	8:55	15.75	1	0.66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MT-3	5261440	433774	09-Jul-16	10-Jul-16	17:15	8:45	15.50	1	0.65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
							Total	**54.25**	**3**	**2.26**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Mollie River (Upstream of Chain Lake)	MT-1	5266662	425320	07-Jul-16	08-Jul-16	15:20	8:20	17.00	1	0.71	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1.41	0	0	0	0	0	0	0	0	0
Sawpeter Lake	MT-1	5264788	427559	7-Jul-16	7-Jul-16	13:30	17:10	3.67	1	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MT-2	5264792	427634	7-Jul-16	7-Jul-16	13:20	17:05	3.75	1	0.16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
							Total	**7.42**	**2**	**0.31**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Sawpeter Lake (North Complex)	MT-1	5265034	427466	6-Jul-16	7-Jul-16	17:20	8:10	14.83	1	0.62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MT-2	5265031	427447	6-Jul-16	7-Jul-16	17:30	8:15	14.75	1	0.61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MT-3	5265027	427463	6-Jul-16	7-Jul-16	17:45	8:30	14.75	1	0.61	0	0	0	0	0	0	60	10	98	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1.63
	MT-4	5265165	427451	7-Jul-16	7-Jul-16	9:30	11:55	2.42	1	0.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MT-5	5265209	427432	7-Jul-16	7-Jul-16	9:50	11:30	1.67	1	0.07	0	0	0	0	0	0	24	18	346	0	0	0	0	0	0	25	10	360	0	0	0	0	0	0
	MT-6	5265202	427457	7-Jul-16	7-Jul-16	9:55	11:35	1.67	1	0.07	0	0	0	0	0	0	44	0	634	0	0	0	0	0	0	74	0	1,066	0	0	0	0	0	0
							Total	**50.08**	**6**	**2.09**	**0**	**0**	**0**	**0**	**0**	**0**	**128**	**28**	**61**	**0**	**0**	**0**	**0**	**0**	**0**	**99**	**10**	**47**	**0**	**0**	**0**	**1**	**0**	**0.48**
Sawpeter Lake (South Outlet)	MT-1	5263949	427180	09-Jul-16	09-Jul-16	13:30	14:50	1.33	2	0.11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unnamed Lake #3 Outlet	MT-1	5263235	432609	10-Jul-16	10-Jul-16	10:25	12:35	2.17	1	0.09	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MT-2	5263384	432424	10-Jul-16	10-Jul-16	11:05	12:30	1.42	1	0.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
							Total	**3.58**	**2**	**0.15**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Unnamed Lake #4	MT-1	5263455	428298	09-Jul-16	09-Jul-16	15:40	16:40	1.00	2	0.08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MT-2	5263493	428168	10-Jul-16	10-Jul-16	10:20	16:21	6.02	2	0.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
							Total	**7.02**	**4**	**0.58**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Unnamed Lake #5	MT-1	5269078	426783	6-Jul-16	6-Jul-16	11:20	13:15	1.92	1	0.08	0	0	0	4	0	50	59	0	739	0	0	0	0	0	0	97	0	1,215	3	0	38	0	0	0
	MT-2	5269024	426775	6-Jul-16	6-Jul-16	11:30	12:55	1.42	1	0.06	0	0	0	2	0	34	33	0	559	1	0	16.94	0	0	0	38	0	644	3	0	51	0	0	0
	MT-3	5268974	426732	6-Jul-16	6-Jul-16	11:40	12:20	0.67	1	0.03	0	0	0	8	0	288	56	0	2,016	0	0	0	0	0	0	53	0	1,908	11	0	396	0	0	0
							Total	**4.00**	**3**	**0.17**	**0**	**0**	**0**	**14**	**0**	**84**	**148**	**0**	**888**	**1**	**0**	**6.00**	**0**	**0**	**0**	**188**	**0**	**1,128**	**17**	**0**	**102**	**0**	**0**	**0**
Unnamed Lake #6	MT-1	5269152	427384	06-Jul-16	06-Jul-16	9:20	14:30	5.17	1	0.22	0	0	0	2	0	9	72	1	334	0	0	0	0	0	0	25	0	116	1	0	4.65	0	0	0
	MT-2	5269119	427334	06-Jul-16	06-Jul-16	9:30	14:15	4.75	1	0.20	0	0	0	1	0	5	91	1	460	0	0	0	0	0	0	13	0	66	1	0	5.05	0	0	0
	MT-3	5269078	427269	06-Jul-16	06-Jul-16	9:45	14:00	4.25	1	0.18	0	0	0	0	0	0	50	0	282	0	0	0	0	0	0	1	0	6	0	0	0	0	0	0
							Total	**14.17**	**3**	**0.59**	**0**	**0**	**0**	**3**	**0**	**5.08**	**213**	**2**	**361**	**0**	**0**	**0**	**0**	**0**	**0**	**39**	**0**	**66**	**2**	**0**	**3.39**	**0**	**0**	**0**
Unnamed Waterbodies off of Bagsverd Creek	MT-1	5269779	428302	05-Jul-16	05-Jul-16	9:55	13:49	3.90	2	0.32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MT-2	5269577	427439	05-Jul-16	05-Jul-16	10:46	12:15	1.48	2	0.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MT-3	5269558	427291	05-Jul-16	05-Jul-16	10:46	11:45	0.98	2	0.08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
							Total	**6.37**	**6**	**0.53**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Unnamed Water Body #2	MT-1	5268081	426978	05-Jul-16	05-Jul-16	8:55	13:45	4.83	1	0.20	1	0	4.97	7	0	35	39	0	194	0	0	0	0	0	0	30	0	149	15	0	74	0	0	0
	MT-2	5268095	426897	05-Jul-16	05-Jul-16	9:00	13:30	4.50	1	0.19	0	0	0	15	0	80	80	0	427	0	0	0	0	0	0	42	0	224	2	0	11	0	0	0
	MT-3	5268058	426880	05-Jul-16	05-Jul-16	9:30	13:30	4.00	1	0.17	0	0	0	11	0	66	58	0	348	0	0	0	0	0	0	33	0	198	9	0	54	0	0	0
							Total	**13.33**	**3**	**0.56**	**1**	**0**	**1.80**	**33**	**0**	**59**	**177**	**0**	**319**	**0**	**0**	**0**	**0**	**0**	**0**	**105**	**0**	**189**	**26**	**0**	**47**	**0**	**0**	**0**
Unnamed Water Body #4	MT-1	5267669	427221	05-Jul-16	05-Jul-16	15:45	16:40	0.92	1	0.04	0	0	0	0	0	0	2	0	52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MT-2	5267695	427197	05-Jul-16	05-Jul-16	16:05	16:45	0.67	1	0.03	0	0	0	0	0	0	1	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MT-3	5267691	427135	05-Jul-16	05-Jul-16	16:15	16:50	0.58	1	0.02	0	0	0	0	0	0	6	0	247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
							Total	**2.17**	**3**	**0.09**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**100**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Unnamed Water Body #5	MT-1	5267584	427394	05-Jul-16	06-Jul-16	15:30	17:12	25.70	1	1.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5267584	427394	05-Jul-16	06-Jul-16	17:12	16:10	22.97	1	0.96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
							Total	**48.67**	**2**	**2.03**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Total CPUE = total # of fish / trap*d

Table D.2: Catch-per-unit-effort (CPUE) records for fish caught during seining, Côté Gold Baseline Study, 2016.

Location	Station	Location (17T, NAD83)		Set Date	Set Time	Haul Distance		# of Hauls	Area Seined (m^2)	Finescale Dace			Golden Shiner			Iowa Darter			Johnny Darter			Northern Pike			Northern Pike (YOY)[a]			White Sucker			Yellow Perch			Yellow Perch (YOY)[a]		
		Northing	Easting			Length (m)	Width (m)			Caught	Mortalities/ Sacrificed	CPUE	Caught	Mortalities/ Sacrificed	CPUE	Caught	Mortalities/ Sacrificed	CPUE	Caught	Mortalities/ Sacrificed	CPUE	Caught	Mortalities/ Sacrificed	CPUE	Caught	Mortalities/ Sacrificed	CPUE	Caught	Mortalities/ Sacrificed	CPUE	Caught	Mortalities/ Sacrificed	CPUE	Caught	Mortalities/ Sacrificed	CPUE
Attach Lake	SN-1	5265586	426072	08-Jul-16	17:15	10	4	1	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0.03	0	0	0
	SN-2	5265536	426072	08-Jul-16	17:20	10	20	1	200	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.01	0	0	0	0	0	0	0	0	0	0	0	0
	SN-3	5265683	426089	08-Jul-16	17:35	10	30	1	300	0	0	0	28	0	0.09	1	0	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
								Total	**540**	**0**	**0**	**0**	**28**	**0**	**0.05**	**1**	**0**	**0.002**	**0**	**0**	**0**	**1**	**1**	**0.002**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0.002**	**0**	**0**	**0**
Chain Lake	SN-1	5266156	425640	08-Jul-16	12:45	10	4	1	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SN-2	5266235	425682	08-Jul-16	13:00	10	3	1	30	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0.07	0	0	0	0	0	0	0	0	0	0	0	0
	SN-3	5266235	425682	08-Jul-16	13:05	8	4	1	32	0	0	0	0	0	0	1	0	0.03	0	0	0	2	0	0.06	0	0	0	0	0	0	0	0	0	0	0	0
	SN-4	5266357	425453	08-Jul-16	13:20	10	4	1	40	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0.03	0	0	0	0	0	0	0	0	0	0	0	0
								Total	**142**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0.01**	**0**	**0**	**0**	**5**	**0**	**0.04**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Dividing Lake	SN-1	5261214	435033	8-Jul-16	15:40	30	25	1	750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0.001	142	0	4.73	31	27	0.04	0	0	0
	SN-2	5261439	434977	8-Jun-13	16:45	20	15	1	300	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0.003	0	0	0	1	0	0.05	0	0	0	0	0	0
								Total	**1,050**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0.001**	**1**	**0**	**0.001**	**143**	**0**	**0.14**	**31**	**27**	**0.03**	**0**	**0**	**0**
Mollie River	SN-1	5261503	433962	10-Jul-16	14:05	10	5	1	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SN-2	5261763	434001	10-Jul-16	14:30	15	3	1	46	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0.06	0	0	0	0	0	0	3	0	0.06	0	0	0
								Total	**96**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0.03**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0.03**	**0**	**0**	**0**
Moore Lake	SN-1	5269231	424654	07-Jul-16	11:15	15	15	1	225	0	0	0	0	0	0	2	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0	48	25	0.21	0	0	0
	SN-2	5268310	425210	07-Jul-16	12:00	10	5	1	50	3	3	0.06	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0.04	0	0	0	0	0	0	178	0	3.56
								Total	**275**	**3**	**3**	**0.01**	**0**	**0**	**0**	**2**	**0**	**0.01**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0.01**	**0**	**0**	**0**	**48**	**25**	**0.17**	**178**	**0**	**0.65**
Sawpeter Lake	SN-1	5264806	427602	7-Jul-16	13:15	5	20	1	100	0	0	0	155	25	1.55	0	0	0	1	0	0.01	3	1	0.03	0	0	0	0	0	0	0	0	0	0	0	0
	SN-2	5264771	427476	8-Jul-16	10:15	5	15	1	75	0	0	0	0	0	0	1	0	0.01	0	0	0	0	0	0	2	0	0.03	0	0	0	0	0	0	0	0	0
								Total	**175**	**0**	**0**	**0**	**155**	**25**	**0.89**	**1**	**0**	**0.01**	**1**	**0**	**0.01**	**3**	**1**	**0.02**	**2**	**0**	**0.01**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Total CPUE = # of fish / m^2

[a] Fish were classified as adults unless otherwise specified in the field to be young-of-the-year (YOY).

Table D.3: Catch-per-unit-effort (CPUE) records for fish caught during gill netting, Côté Gold Baseline Study, 2016.

Location	Station	Location (17T, NAD83)		Panel Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hr)	Mesh Size (in)	Effort (m*hr/100 m)	Golden Shiner					Lake Whitefish					Northern Pike					Walleye					White Sucker					Yellow Perch				
		Northing	Easting									Caught	Sacrificed	Released	Additional Mortalities	CPUE	Caught	Sacrificed	Released	Additional Mortalities	CPUE	Caught	Sacrificed	Released	Additional Mortalities	CPUE	Caught	Sacrificed	Released	Additional Mortalities	CPUE	Caught	Sacrificed	Released	Additional Mortalities	CPUE	Caught	Sacrificed	Released	Additional Mortalities	CPUE
Attach Lake	GN-1	5265793	425912	10.16	7-Jul-16	8-Jul-16	16:30	14:20	21.83	1	2.22	1	1	0	0	0.45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	2.25
										1.5	2.22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										2	2.22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										2.5	2.22	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0.45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										3	2.22	0	0	0	0	0	1	1	0	0	0.45	3	3	0	0	1.35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										4	2.22	0	0	0	0	0	5	5	0	0	2.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										Total	**13.31**	**1**	**1**	**0**	**0**	**0.08**	**6**	**6**	**0**	**0**	**0.45**	**4**	**4**	**0**	**0**	**0.30**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**5**	**0**	**0**	**0.38**
	GN-2	5265637	425954	10.16	8-Jul-16	8-Jul-16	14:35	16:10	1.58	1	0.16	0	0	0	0	0	0	0	0	0	0	1	1	0	0	6.22	0	0	0	0	0	0	0	0	0	0	3	3	0	0	18.65
										1.5	0.16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										2	0.16	0	0	0	0	0	0	0	0	0	0	1	1	0	0	6.22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										2.5	0.16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										3	0.16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										4	0.16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										Total	**0.97**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**2.07**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**0**	**0**	**3.11**
										TOTAL	**14.27**	**1**	**1**	**0**	**0**	**0.07**	**6**	**6**	**0**	**0**	**0.42**	**6**	**6**	**0**	**0**	**0.42**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**8**	**0**	**0**	**0.56**
Chain Lake	GN-1	5266147	425640	10.16	7-Jul-16	8-Jul-16	15:55	9:30	17.58	1	1.79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	1.68	15	15	0	0	8.40
										1.5	1.79	0	0	0	0	0	0	0	0	0	0	4	4	0	0	2.24	0	0	0	0	0	2	2	0	0	1.12	0	0	0	0	0
										2	1.79	0	0	0	0	0	0	0	0	0	0	3	3	0	0	1.68	0	0	0	0	0	1	1	0	0	0.56	0	0	0	0	0
										2.5	1.79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										3	1.79	0	0	0	0	0	0	0	0	0	0	2	2	0	0	1.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										4	1.79	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0.56	0	0	0	0	0	4	4	0	0	2.24	0	0	0	0	0
										Total	**10.72**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	**10**	**0**	**0**	**0.93**	**0**	**0**	**0**	**0**	**0**	**10**	**10**	**0**	**0**	**0.93**	**15**	**15**	**0**	**0**	**1.40**
Dividing Lake	GN-1	5261255	435041	10.16	8-Jul-16	9-Jul-16	15:15	9:20	18.08	1	1.84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	1.09
										1.5	1.84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	0	0	3.27	0	0	0	0	0	0	0	0	0	0
										2	1.84	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0.54	4	4	0	0	2.18	1	0	1	0	0.54	0	0	0	0	0
										2.5	1.84	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0.54	4	4	0	0	2.18	1	0	1	0	0.54	0	0	0	0	0
										3	1.84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										4	1.84	0	0	0	0	0	2	0	1	1	1.09	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										Total	**11.02**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**1**	**0.18**	**2**	**2**	**0**	**0**	**0.18**	**14**	**14**	**0**	**0**	**1.27**	**2**	**0**	**2**	**0**	**0.18**	**2**	**2**	**0**	**0**	**0.18**
	GN-2	5261394	434702	10.16	8-Jul-16	9-Jul-16	15:30	8:40	17.17	1	1.74	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0.57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										1.5	1.74	0	0	0	0	0	0	0	0	0	0	4	4	0	0	2.29	0	0	0	0	0	0	0	0	0	0	5	5	0	0	2.87
										2	1.74	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0.57	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0.57
										2.5	1.74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										3	1.74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	1.72	0	0	0	0	0
										4	1.74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	4	2	3.44	0	0	0	0	0
										Total	**10.46**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**6**	**0**	**0**	**0.57**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**7**	**2**	**0.86**	**6**	**5**	**0**	**1**	**0.57**
										TOTAL	**21.49**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**1**	**0.09**	**8**	**8**	**0**	**0**	**0.37**	**14**	**14**	**0**	**0**	**0.65**	**11**	**0**	**9**	**2**	**0.51**	**8**	**7**	**0**	**1**	**0.37**

Total CPUE = total # of fish / 100 m * hour

Table D.3: Catch-per-unit-effort (CPUE) records for fish caught during gill netting, Côté Gold Baseline Study, 2016.

Location	Station	Location (17T, NAD83)		Panel Length (m)	Set Date	Lift Date	Set Time	Lift Time	Total Time (hr)	Mesh Size (in)	Effort (m*hr/100 m)	Golden Shiner					Lake Whitefish					Northern Pike					Walleye					White Sucker					Yellow Perch				
		Northing	Easting									Caught	Sacrificed	Released	Additional Mortalities	CPUE	Caught	Sacrificed	Released	Additional Mortalities	CPUE	Caught	Sacrificed	Released	Additional Mortalities	CPUE	Caught	Sacrificed	Released	Additional Mortalities	CPUE	Caught	Sacrificed	Released	Additional Mortalities	CPUE	Caught	Sacrificed	Released	Additional Mortalities	CPUE
Moore Lake	GN-1	5267125	425502	10.16	6-Jul-16	6-Jul-16	10:25	15:01	4.60	1	0.47	1	1	0	0	2.14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	11	0	0	23.54
										1.5	0.47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										2	0.47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										2.5	0.47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										3	0.47	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2.14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										4	0.47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										Total	**2.80**	**1**	**1**	**0**	**0**	**0.36**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0.36**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**11**	**0**	**0**	**3.92**
	GN-2	5967001	425484	10.16	6-Jul-16	6-Jul-16	10:35	15:50	5.25	1	0.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	9.37
										1.5	0.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										2	0.53	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1.87	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										2.5	0.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										3	0.53	0	0	0	0	0	0	0	0	0	0	3	3	0	0	5.62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										4	0.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										Total	**3.20**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**4**	**0**	**0**	**1.25**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**5**	**0**	**0**	**1.56**
										TOTAL	**6.00**	**1**	**1**	**0**	**0**	**0.17**	**0**	**0**	**0**	**0**	**0**	**5**	**5**	**0**	**0**	**0.83**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**16**	**0**	**0**	**2.66**
Sawpeter Lake	GN-1	5264741	427656	10.16	7-Jul-16	7-Jul-16	15:30	17:15	1.75	1	0.18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										1.5	0.18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										2	0.18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										2.5	0.18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										3	0.18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										4	0.18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										Total	**1.07**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	GN-2	5264664	427365	10.16	7-Jul-16	7-Jul-16	15:34	17:30	1.93	1	0.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	5.09
										1.5	0.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										2	0.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										2.5	0.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										3	0.20	0	0	0	0	0	0	0	0	0	0	1	1	0	0	5.09	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										4	0.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										Total	**1.18**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0.85**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0.85**
	GN-3	5264623	427388	10.16	7-Jul-16	8-Jul-16	17:40	9:15	15.58	1	1.58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0.63
										1.5	1.58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										2	1.58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										2.5	1.58	0	0	0	0	0	0	0	0	0	0	4	1	3	0	2.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										3	1.58	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1.26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										4	1.58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										Total	**9.50**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**1**	**5**	**0**	**0.63**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0.11**
	GN-4	5264704	427491	10.16	7-Jul-16	8-Jul-16	17:50	9:40	15.83	1	1.61	1	0	1	0	0.62	0	0	0	0	0	2	0	0	0	1.24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										1.5	1.61	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0.62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										2	1.61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										2.5	1.61	0	0	0	0	0	0	0	0	0	0	2	2	0	0	1.24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										3	1.61	0	0	0	0	0	0	0	0	0	0	2	2	2	0	1.24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										4	1.61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										Total	**9.65**	**1**	**0**	**1**	**0**	**0.10**	**0**	**0**	**0**	**0**	**0**	**7**	**5**	**2**	**0**	**0.73**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
										TOTAL	**21.40**	**1**	**0**	**1**	**0**	**0.05**	**0**	**0**	**0**	**0**	**0**	**14**	**7**	**7**	**0**	**0.65**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**1**	**0.09**
Unnamed Lake #4	GN-1	5263480	428210	10.16	10-Jul-16	10-Jul-16	10:30	16:20	5.83	1	0.59	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1.69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										1.5	0.59	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1.69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										2	0.59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										2.5	0.59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										3	0.59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										4	0.59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
										Total	**3.56**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**0.56**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Total CPUE = total # of fish / 100 m * hr

Table D.4: Individual fish data for fish sampled in Attach Lake, Côté Gold Baseline Study, 2016.

Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Abnormalities
Northern Pike	8-Jul-16	AL-NP-01	53.3	50.5	820	muscle	Sc, Cl	5	-
	8-Jul-16	AL-NP-02	51.4	48.8	760	muscle	Sc, Cl	5	-
	8-Jul-16	AL-NP-03	44.6	41.8	500	muscle	Sc, Cl	4	-
	8-Jul-16	AL-NP-04	20.6	20.4	48	muscle	Sc, Cl	1	-
	8-Jul-16	AL-NP-05	31.9	30.1	155	muscle	Sc, Cl	2	-
	8-Jul-16	AL-NP-06	40.2	37.6	261	-	-	-	-
	8-Jul-16	AL-NP-07	26.0	24.6	80	-	-	-	-
Yellow Perch	8-Jul-16	AL-YP-01	11.7	-	18.25	muscle	Sc, Ds	3	-
	8-Jul-16	AL-YP-02	9.2	8.9	10.25	muscle	Sc, Ds	2	-
	8-Jul-16	AL-YP-03	10.8	10.2	13.25	muscle	Sc, Ds	2	-
	8-Jul-16	AL-YP-04	9.7	9.2	10.50	muscle	Sc, Ds	2	-
	8-Jul-16	AL-YP-05	11.9	11.4	17.75	muscle	Sc, Ds	2	-
	8-Jul-16	AL-YP-06	10.6	9.9	11.50	-	-	-	-
	8-Jul-16	AL-YP-07	10.1	9.5	11.25	-	-	-	-

Sc = scales.
Cl = cleithrum.
Ds = dorsal spine.

Table D.5: Individual fish data for fish sampled in Chain Lake, Côté Gold Baseline Study,

Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Abnormalities
Northern Pike	8-Jul-16	CL-NP-01	75.6	71.6	2,525	muscle	Sc, Cl	5	-
	8-Jul-16	CL-NP-02	46.1	43.6	560	muscle	Sc, Cl	4	-
	8-Jul-16	CL-NP-03	52.0	49.0	820	muscle	Sc, Cl	4	-
	8-Jul-16	CL-NP-04	76.8	72.4	2,820	muscle	Sc, Cl	3	-
	8-Jul-16	CL-NP-05	52.2	49.9	880	muscle	Sc, Cl	2	-
	8-Jul-16	CL-NP-06	68.1	65.4	1,780	-	-	-	-
	8-Jul-16	CL-NP-07	49.0	41.3	690	-	-	-	-
	8-Jul-16	CL-NP-08	48.6	46.0	660	-	-	-	-
	8-Jul-16	CL-NP-09	46.2	42.8	590	-	-	-	-
	8-Jul-16	CL-NP-10	68.8	56.1	1,000	-	-	-	-
Yellow Perch	8-Jul-16	CL-YP-01	9.2	9.7	9.5	muscle	Sc, Ds	1	-
	8-Jul-16	CL-YP-02	14.6	14.0	39.0	muscle	Sc, Ds	2	-
	8-Jul-16	CL-YP-03	9.9	9.4	11.5	muscle	Sc, Ds	1	-
	8-Jul-16	CL-YP-04	11.2	10.8	17.5	muscle	Sc, Ds	1	-
	8-Jul-16	CL-YP-05	9.8	9.4	11.5	muscle	Sc, Ds	1	-
	8-Jul-16	CL-YP-06	10.4	10.0	12.8	-	-	-	-
	8-Jul-16	CL-YP-07	10.7	10.1	14.5	-	-	-	-
	8-Jul-16	CL-YP-08	9.5	9.1	11.0	-	-	-	-
	8-Jul-16	CL-YP-09	11.3	10.9	18.8	-	-	-	-
	8-Jul-16	CL-YP-10	9.5	9.1	10.8	-	-	-	-

Sc = scales.
Cl = cleithrum.
Ds = dorsal spine.

Table D.6: Individual fish data for fish sampled in Dividing Lake, Côté Gold Baseline Study, 2016.

Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Abnormailties
Northern Pike	9-Jul-16	DL-NP-01	73.3	69.9	2,700	muscle	Sc, Cl	7	blackspot
	9-Jul-16	DL-NP-02	62.9	59.1	1,420	muscle	Sc, Cl	4	small blackspot
	9-Jul-16	DL-NP-03	49.2	46.1	760	muscle	Sc, Cl	4	blackspot
	9-Jul-16	DL-NP-04	37.7	35.3	320	muscle	Sc, Cl	2	blackspot
	9-Jul-16	DL-NP-05	35.0	32.8	248	muscle	Sc, Cl	2	blackspot
	9-Jul-16	DL-NP-06	34.5	31.9	224	-	-	-	-
	9-Jul-16	DL-NP-07	24.3	22.8	80	-	-	-	-
	9-Jul-16	DL-NP-08	38.3	35.9	280	-	-	-	-
Walleye	9-Jul-16	DL-WA-01	38.5	35.8	475	muscle	Sc, Ds	-	-
	9-Jul-16	DL-WA-02	34.1	32.6	360	muscle	Sc, Ds	-	-
	9-Jul-16	DL-WA-03	33.8	32.0	305	muscle	Sc, Ds	-	-
	9-Jul-16	DL-WA-04	32.1	30.4	300	muscle	Sc, Ds	-	-
	9-Jul-16	DL-WA-05	32.4	30.5	290	muscle	Sc, Ds	-	-
	9-Jul-16	DL-WA-06	31.2	29.7	280	-	-	-	-
	9-Jul-16	DL-WA-07	29.5	27.5	232	-	-	-	-
	9-Jul-16	DL-WA-08	28.8	27.0	228	-	-	-	-
	9-Jul-16	DL-WA-09	28.6	27.0	196	-	-	-	-
	9-Jul-16	DL-WA-10	26.9	24.9	152	-	-	-	-
Yellow Perch	9-Jul-16	DL-YP-01	4.2	3.8	0.755	whole body composite	Sc, Ds	0	-
	9-Jul-16	DL-YP-02	4.4	4.0	0.873		-	-	-
	9-Jul-16	DL-YP-03	4.1	3.7	0.595		-	-	-
	9-Jul-16	DL-YP-04	3.8	3.5	0.588		-	-	-
	9-Jul-16	DL-YP-05	3.6	3.2	0.479		-	-	-
	9-Jul-16	DL-YP-06	4.4	4.2	0.956	whole body composite	Sc, Ds	0	-
	9-Jul-16	DL-YP-07	4.2	3.9	0.741		-	-	-
	9-Jul-16	DL-YP-08	3.9	3.7	0.587		-	-	-
	9-Jul-16	DL-YP-09	4.1	3.9	0.647		-	-	-
	9-Jul-16	DL-YP-10	3.8	3.6	0.611		-	-	-
	9-Jul-16	DL-YP-11	4.2	4.0	0.754	whole body composite	Sc, Ds	0	-
	9-Jul-16	DL-YP-12	4.2	3.9	0.725		-	-	-
	9-Jul-16	DL-YP-13	4.1	3.8	0.687		-	-	-
	9-Jul-16	DL-YP-14	4.0	3.8	0.608		-	-	-
	9-Jul-16	DL-YP-15	4.1	3.9	0.727		-	-	-
	9-Jul-16	DL-YP-16	4.2	3.9	0.725	whole body composite	Sc, Ds	0	-
	9-Jul-16	DL-YP-17	3.9	3.6	0.564		-	-	-
	9-Jul-16	DL-YP-18	3.6	3.3	0.498		-	-	-
	9-Jul-16	DL-YP-19	4.3	4.1	0.770		-	-	-
	9-Jul-16	DL-YP-20	4.3	4.0	0.873		-	-	-
	9-Jul-16	DL-YP-21	4.7	4.4	1.014	whole body composite	Sc, Ds	0	-
	9-Jul-16	DL-YP-22	4.0	3.7	0.637		-	-	-
	9-Jul-16	DL-YP-23	4.0	3.8	0.691		-	-	-
	9-Jul-16	DL-YP-24	4.7	4.5	1.049		-	-	-
	9-Jul-16	DL-YP-25	4.0	3.7	0.602		-	-	-
	9-Jul-16	DL-YP-26	19.1	18.0	102	muscle	Sc, Ds	-	blackspot
	9-Jul-16	DL-YP-27	19.0	18.0	85	muscle	Sc, Ds	-	blackspot
	9-Jul-16	DL-YP-28	18.1	17.4	83	muscle	Sc, Ds	-	blackspot
	9-Jul-16	DL-YP-29	17.0	16.0	52	muscle	Sc, Ds	-	blackspot
	9-Jul-16	DL-YP-30	13.6	13.1	34	muscle	Sc, Ds	-	blackspot
	9-Jul-16	DL-YP-31	13.6	13.0	34	-	-	-	blackspot
	9-Jul-16	DL-YP-32	10.0	9.6	10.5	-	-	-	blackspot

Sc = scales.
Cl = cleithrum.
Ds = dorsal spine.

Table D.7: Individual fish data for fish sampled in Moore Lake, Côté Gold Baseline Study, 2016.

Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Abnormalities
Northern Pike	6-Jul-16	ML-NP-01	52.0	49.9	830	muscle	Sc, Cl	3	-
	6-Jul-16	ML-NP-02	46.5	43.8	520	muscle	Sc, Cl	2	-
	6-Jul-16	ML-NP-03	53.0	49.8	940	muscle	Sc, Cl	2	-
	6-Jul-16	ML-NP-04	55.0	51.2	910	muscle	Sc, Cl	3	-
	6-Jul-16	ML-NP-05	57.3	54.0	1,010	muscle	Sc, Cl	3	-
Yellow Perch	6-Jul-16	ML-YP-01	12.2	11.7	16.5	-	-	-	-
	6-Jul-16	ML-YP-02	11.1	10.2	12.3	-	-	-	-
	6-Jul-16	ML-YP-03	9.8	9.4	9.8	-	-	-	-
	6-Jul-16	ML-YP-04	11.2	10.7	14.3	-	-	-	-
	6-Jul-16	ML-YP-05	12.1	11.5	16.3	-	-	-	-
	6-Jul-16	ML-YP-06	10.6	10.1	11.0	muscle	Sc, Ds	-	-
	6-Jul-16	ML-YP-07	10.7	10.2	12.0	muscle	Sc, Ds	-	-
	6-Jul-16	ML-YP-08	11.6	11.2	13.5	muscle	Sc, Ds	-	-
	6-Jul-16	ML-YP-09	11.9	11.2	15.0	muscle	Sc, Ds	-	-
	6-Jul-16	ML-YP-10	10.4	9.8	11.5	muscle	Sc, Ds	-	-
	7-Jul-16	ML-YP-11	5.8	5.5	1.8	whole body composite	Sc, Ds	1	-
	7-Jul-16	ML-YP-12	6.8	6.4	2.6		Sc, Ds	-	-
	7-Jul-16	ML-YP-13	8.5	8.0	5.8		Sc, Ds	-	-
	7-Jul-16	ML-YP-14	5.9	5.6	1.8		Sc, Ds	-	-
	7-Jul-16	ML-YP-15	6.2	5.9	2.4		Sc, Ds	-	-
	7-Jul-16	ML-YP-16	8.3	8.0	5.8	whole body composite	Sc, Ds	2	-
	7-Jul-16	ML-YP-17	7.3	7.0	3.9		Sc, Ds	-	-
	7-Jul-16	ML-YP-18	7.1	6.7	3.7		Sc, Ds	-	-
	7-Jul-16	ML-YP-19	6.6	6.2	2.9		Sc, Ds	-	-
	7-Jul-16	ML-YP-20	5.8	5.5	1.9		Sc, Ds	-	-
	7-Jul-16	ML-YP-21	6.8	6.4	3.2	whole body composite	Sc, Ds	1	-
	7-Jul-16	ML-YP-22	6.0	5.6	1.9		Sc, Ds	-	-
	7-Jul-16	ML-YP-23	7.5	7.1	4.1		Sc, Ds	-	-
	7-Jul-16	ML-YP-24	5.8	5.5	1.5		Sc, Ds	-	-
	7-Jul-16	ML-YP-25	7.3	6.9	3.5		Sc, Ds	-	-
	7-Jul-16	ML-YP-26	7.8	7.5	3.1	whole body composite	Sc, Ds	1	-
	7-Jul-16	ML-YP-27	5.6	5.3	1.5		Sc, Ds	-	-
	7-Jul-16	ML-YP-28	6.9	6.5	2.6		Sc, Ds	-	-
	7-Jul-16	ML-YP-29	6.5	6.2	2.6		Sc, Ds	-	-
	7-Jul-16	ML-YP-30	7.0	6.6	3.2		Sc, Ds	-	-
	7-Jul-16	ML-YP-31	7.4	7.1	4.2	whole body composite	Sc, Ds	1	-
	7-Jul-16	ML-YP-32	5.8	5.5	1.6		Sc, Ds	-	-
	7-Jul-16	ML-YP-33	6.5	6.2	3.2		Sc, Ds	-	-
	7-Jul-16	ML-YP-34	6.6	6.4	2.5		Sc, Ds	-	-
	7-Jul-16	ML-YP-35	6.1	5.7	2.0		Sc, Ds	-	-

Sc = scales.
Cl = cleithrum.
Ds = dorsal spine.

Table D.8: Individual fish data for fish sampled North of Sawpeter Lake, Côté Gold Baseline Study, 2016.

Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Abnormalities
Finescale Dace	7-Jul-16	NSL-FSD-01	7.9	7.5	4.893	-	-	-	-
	7-Jul-16	NSL-FSD-02	8.1	7.8	5.111	-	-	-	-
	7-Jul-16	NSL-FSD-03	6.1	5.8	1.943	-	-	-	-
	7-Jul-16	NSL-FSD-04	7.1	6.7	3.135	-	-	-	-
	7-Jul-16	NSL-FSD-05	4.9	4.6	1.036	-	-	-	-
	7-Jul-16	NSL-FSD-06	4.4	4.2	0.742	-	-	-	-
	7-Jul-16	NSL-FSD-07	6.1	5.7	1.886	-	-	-	-
	7-Jul-16	NSL-FSD-08	6.2	5.3	2.062	-	-	-	-
	7-Jul-16	NSL-FSD-09	5.6	5.4	1.678	-	-	-	-
	7-Jul-16	NSL-FSD-10	6.6	6.3	2.417	-	-	-	-
	7-Jul-16	NSLb-FSD-01	5.1	4.8	1.052	-	-	-	-
	7-Jul-16	NSLb-FSD-02	4.9	4.7	1.152	-	-	-	-
	7-Jul-16	NSLb-FSD-03	5.7	5.4	1.572	-	-	-	-
	7-Jul-16	NSLb-FSD-04	5.1	4.8	1.248	-	-	-	-
	7-Jul-16	NSLb-FSD-05	5.7	5.3	1.757	-	-	-	-
	7-Jul-16	NSLb-FSD-06	7.9	7.4	3.872	-	-	-	-
	7-Jul-16	NSLb-FSD-07	6.4	6.0	2.233	-	-	-	-
	7-Jul-16	NSLb-FSD-08	5.9	5.6	2.010	-	-	-	-
	7-Jul-16	NSLb-FSD-09	5.8	5.5	1.773	-	-	-	-
	7-Jul-16	NSLb-FSD-10	5.4	5.1	1.510	-	-	-	-
Northern Redbelly Dace	7-Jul-16	NSL-NRD-01	5.7	5.4	1.689	-	-	-	-
	7-Jul-16	NSL-NRD-02	6.0	5.8	1.913	-	-	-	-
	7-Jul-16	NSL-NRD-03	5.5	5.1	1.349	-	-	-	-
	7-Jul-16	NSL-NRD-04	5.4	5.1	1.441	-	-	-	-
	7-Jul-16	NSL-NRD-05	5.8	5.5	1.683	-	-	-	-
	7-Jul-16	NSL-NRD-06	5.5	5.1	1.298	-	-	-	-
	7-Jul-16	NSL-NRD-07	5.9	5.6	1.737	-	-	-	-
	7-Jul-16	NSL-NRD-08	5.7	5.3	1.536	-	-	-	-
	7-Jul-16	NSL-NRD-09	5.6	5.2	1.297	-	-	-	-
	7-Jul-16	NSL-NRD-10	5.6	4.8	1.538	-	-	-	-

Sc = scales.
Cl = cleithrum.
Ds = dorsal spine.

Table D.9: Individual fish data for fish sampled in Unnamed Lake #4, Côté Gold Baseline Study, 2016.

Location	Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Abnormalities
Unnamed Lake #4	Northern Pike	8-Jul-16	UN4-NP-01	36.6	34.7	265	-	-	-	-
		8-Jul-16	UN4-NP-02	32.2	30.8	185	-	-	-	-

Table D.10: Individual fish data for fish sampled in Sawpeter Lake, Côté Gold Baseline Study, 2016.

Fish Species	Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Tissue Collected	Aging Structures Collected	Age (yrs)	Abnormalities
Golden Shiner	7-Jul-16	SPL-GS-01	5.3	5.8	1.590	whole body composite	-	-	-
	7-Jul-16	SPL-GS-02	5.7	6.2	1.691		-	-	-
	7-Jul-16	SPL-GS-03	5.8	6.3	2.123		-	-	-
	7-Jul-16	SPL-GS-04	6.1	6.7	2.352		-	-	-
	7-Jul-16	SPL-GS-05	5.4	6.0	1.724		-	-	-
	7-Jul-16	SPL-GS-06	5.4	6.0	1.732	whole body composite	-	-	-
	7-Jul-16	SPL-GS-07	5.9	6.5	2.196		-	-	-
	7-Jul-16	SPL-GS-08	5.9	6.6	2.216		-	-	-
	7-Jul-16	SPL-GS-09	6.2	6.9	2.442		-	-	-
	7-Jul-16	SPL-GS-10	5.1	5.6	1.354		-	-	-
	7-Jul-16	SPL-GS-11	6.3	7.0	2.388	whole body composite	-	-	-
	7-Jul-16	SPL-GS-12	6.0	6.6	2.295		-	-	-
	7-Jul-16	SPL-GS-13	5.8	5.3	1.385		-	-	-
	7-Jul-16	SPL-GS-14	6.1	5.5	1.823		-	-	-
	7-Jul-16	SPL-GS-15	6.3	5.7	1.903		-	-	-
	7-Jul-16	SPL-GS-16	6.9	6.2	2.616	whole body composite	-	-	-
	7-Jul-16	SPL-GS-17	6.0	5.5	1.539		-	-	-
	7-Jul-16	SPL-GS-18	6.1	5.5	1.828		-	-	-
	7-Jul-16	SPL-GS-19	5.7	5.2	1.407		-	-	-
	7-Jul-16	SPL-GS-20	5.5	5.0	1.336		-	-	-
	7-Jul-16	SPL-GS-21	5.9	5.4	1.587	whole body composite	-	-	-
	7-Jul-16	SPL-GS-22	6.1	5.5	1.671		-	-	-
	7-Jul-16	SPL-GS-23	6.5	5.9	2.138		-	-	-
	7-Jul-16	SPL-GS-24	6.1	5.5	1.757		-	-	-
	7-Jul-16	SPL-GS-25	5.5	5.0	1.309		-	-	-
Northern Pike	7-Jul-16	SPL-NP-01	26.9	28.6	146	muscle	Sc, Cl	1	-
	7-Jul-16	SPL-NP-02	43.2	46.0	470	muscle	Sc, Cl	5	-
	7-Jul-16	SPL-NP-03	47.4	50.2	645	muscle	Sc, Cl	4	-
	7-Jul-16	SPL-NP-04	49.6	52.6	750	muscle	Sc, Cl	4	-
	7-Jul-16	SPL-NP-05	47.2	50.2	625	muscle	Sc, Cl	4	-
	7-Jul-16	SPL-NP-06	46.3	49	560	muscle	Sc, Cl	-	-
	7-Jul-16	SPL-NP-07	45.3	47.7	570	muscle	Sc, Cl	-	-
	7-Jul-16	SPL-NP-08	45.9	48.6	610	-	-	-	-
	7-Jul-16	SPL-NP-09	46.6	49.1	625	-	-	-	-
	7-Jul-16	SPL-NP-10	47.8	50.5	635	-	-	-	-
Yellow Perch	7-Jul-16	SPL-YP-01	11.3	10.7	16.5	muscle	Sc, Ds	1	-

Sc = scales.
Cl = cleithrum.
Ds = dorsal spine.

Table D.11: Fish concentration benchmarks from calculated tolerable daily intake values.

Parameter	Calculated Tolerable Daily Intake (mg/kg/d)	Reference	Fish Concentration Limits (mg/kg) Based on a Consumption Rate of 111 g/d
Aluminum	1	ATSDR, 2008[e]	637
Antimony	0.0004	US EPA IRIS, 1991	0.3
Arsenic	SL of 1.8 $(mg/kg/d)^{-1}$	Health Canada, 2010[a]	0.0035
	0.0003	US EPA IRIS, 1998	0.2
Barium	0.2	Health Canada, 2010	127
Beryllium	0.002	US EPA IRIS, 1998	1.3
Boron	0.0175	Health Canada, 2010	11
Cadmium	0.001	Health Canada, 2010	0.6
Chromium	0.001	Health Canada, 2010	0.6
Cobalt	0.01	ATSDR, 2004[f]	6.4
Copper	0.141	Health Canada, 2010	90
Iron	0.6	Health Canada, 2010 b	382
Lead	0.00185	MOEE, 1994	1.2
Manganese	0.156	Health Canada, 2010	99
Mercury	0.0003	Health Canada, 2010[b]	0.2
	-	OMOEE, 2016[c]	0.15
	-	OMOEE, 2016[d]	0.06
Molybdenum	0.028	Health Canada, 2010	18
Nickel	0.011	Health Canada, 2010[e]	7.0
Selenium	0.0057	Health Canada, 2010	3.6
Silver	0.005	US EPA IRIS, 1996	3.2
Strontium	0.6	US EPA IRIS, 1996	382
Thallium	NV	--	--
Tin	0.3	ATSDR, 2005[f]	191
Titanium	NV	--	--
Uranium	0.0006	Health Canada, 2010	0.4
Vanadium	0.009	US EPA IRIS, 1996[g]	5.7
Zinc	0.6	Health Canada, 2010	382

SL - Safe limit.

US EPA IRIS - United States Environmental Protection Agency Integrated Risk Information System.

ATSDR - Agency for Toxic Substances and Disease Registry.

OMOEE - Ontario Ministry of Environment and Energy.

NV - No Value available.

TDI - Tolerable Daily Intake.

Values for the tolerable daily intake were selected if available, from Health Canada. In cases where Health Canada did not have a value, US EPA IRIS and ATSDR were used.

[a] Based on a carcinogenic endpoint.

[b] TDI is for the inorganic form of mercury.

[c] General population - Based off 16 to 32 meals per month. Restrictions on fish consumption begin at 0.15 ppm for the general population. Complete restrictions are advised at 1.8 ppm.

[d] Sensitive population - Based off 16 to 32 meals per month. Restrictions on fish consumption at 0.06 ppm for women of child-bearing age and children under 15. Complete restrictions are advised at 0.5 ppm.

[e] TDI is for the soluble form of nickel.

[f] Based on an intermediate minimal risk level as no chronic value was available.

[g] TDI is for the pentoxide form of vanadium.

Health Canada, 2010 b - Dietary Reference Intakes. Value is based on a tolerable upper intake level of 45 mg/d for iron for adult males and females converted using a standard body weight of 70.7 kg for an adult.

Note: There are currently fish consumption advisories in place for mercury which are also protective of other parameters including thallium and titanium for which no oral toxicity reference or tolerable daily intakes have been derived for the oral route of exposure.

Table D.12: Fish tissue data (wet weight) from large- and small-bodied fish sampled in the Mollie River Watershed, Côté Gold Baseline, 2016.

		Lake	Moore Lake										Chain Lake									
		Species	northern pike					yellow perch					northern pike					yellow perch				
		Date	7-Jul-16	7-Jul-16	7-Jul-16	7-Jul-16	7-Jul-16	7-Jul-16	7-Jul-16	7-Jul-16	7-Jul-16	7-Jul-16	8-Jul-16	8-Jul-16	8-Jul-16	8-Jul-16	8-Jul-16	8-Jul-16	8-Jul-16	8-Jul-16	8-Jul-16	8-Jul-16
		Total Length (cm)	52.0	46.5	53.0	55.0	57.3	5.8 - 8.5	5.8 - 8.3	5.8 - 7.5	5.6 - 7.8	5.8 - 7.4	75.6	46.1	52	76.8	52.2	9.2	14.6	9.9	11.2	9.8
		Sample Type	MT	MT	MT	MT	MT	WhComp	WhComp	WhComp	WhComp	WhComp	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT
Parameter	**Units**	**Consumption Concentration Benchmarks[a]**	ML-NP-01	ML-NP-02	ML-NP-03	ML-NP-04	ML-NP-05	ML-YPComp-01	ML-YPComp-02	ML-YPComp-03	ML-YPComp-04	ML-YPComp-05	CL-NP-01	CL-NP-02	CL-NP-03	CL-NP-04	CL-NP-05	CL-YP-01	CL-YP-02	CL-YP-03	CL-YP-04	CL-YP-05
Mercury	µg/g	0.15,0.06,0.033[b]	***0.5***	***0.5***	***0.5***	***0.5***	***0.48***	***0.1***	***0.08***	***0.07***	***0.078***	***0.08***	***0.81***	***0.24***	***0.81***	***1.20***	***0.69***	***0.13***	***0.07***	***0.18***	***0.07***	***0.08***
Aluminum	µg/g	637	0.90	2.00	<0.5	0.60	1.0	2.8	6.0	6.2	2.4	7.9	1.0	0.6	<0.5	<0.5	<0.5	<10	<10	<10	<10	<10
Antimony	µg/g	0.3	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.5	<0.5	<0.5	<0.5	<0.5
Arsenic	µg/g	0.2, 0.0035[c]	***0.02***	***0.02***	***0.02***	***0.03***	***0.03***	***0.03***	***0.03***	***0.04***	***0.03***	***0.02***	***0.06***	***0.03***	***0.04***	***0.04***	***0.02***	<0.2	<0.2	<0.2	<0.2	<0.2
Barium	µg/g	127	<0.090	<0.08	<0.03	<0.05	<0.02	0.83	0.86	0.54	0.83	0.92	0.04	0.02	0.03	0.07	0.02	0.20	0.20	4.50	0.50	<0.2
Beryllium	µg/g	1.3	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.05	<0.05	<0.05	<0.05	<0.05
Boron	µg/g	11	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<5	<5	<5	<5	<5
Cadmium	µg/g	0.6	<0.002	<0.002	<0.002	<0.002	<0.002	0.03	0.031	0.018	0.015	0.018	<0.002	<0.002	<0.002	<0.002	<0.002	<0.05	<0.05	<0.05	<0.05	<0.05
Chromium	µg/g	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<2	<2	<2	<2	<2
Cobalt	µg/g	6.4	0.002	0.002	<0.002	<0.002	<0.002	0.031	0.036	0.032	0.038	0.031	0.008	0.006	<0.002	<0.002	0.008	<0.05	<0.05	<0.05	<0.05	<0.05
Copper	µg/g	90	0.07	0.05	0.04	0.04	0.06	0.46	0.56	0.45	0.39	0.67	0.02	0.07	0.04	0.05	0.04	<0.2	<0.2	<0.2	<0.2	<0.2
Iron	µg/g	382	1.3	2.8	1.0	0.9	1.2	12.0	17.0	24.0	11.0	24.0	2.0	1.4	1.1	1.0	1.3	10.0	<10	<10	<10	<10
Lead	µg/g	1.2	0.010	0.008	0.006	0.003	0.013	0.016	0.024	0.025	0.046	0.04	0.008	0.003	<0.002	0.007	<0.002	0.14	<0.05	0.07	<0.05	<0.05
Manganese	µg/g	99	0.37	0.28	0.150	0.130	0.13	6.3	9.6	10.0	9.8	7.5	0.2	0.2	0.1	0.1	0.2	0.7	0.6	0.6	1.1	1.0
Molybdenum	µg/g	18	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	µg/g	7.0	<0.01	0.04	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.2	<0.2	<0.2	<0.2	<0.2
Selenium	µg/g	3.6	0.53	0.55	0.55	0.53	0.44	0.38	0.44	0.43	0.42	0.35	0.41	0.27	0.24	0.40	0.32	0.20	0.30	0.30	0.30	0.20
Silver	µg/g	3.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.05	<0.05	<0.05	<0.05	<0.05
Strontium	µg/g	382	0.16	0.08	0.05	<0.02	0.04	4.50	5.20	3.90	4.20	4.40	0.03	0.04	<0.02	0.03	0.04	<0.5	<0.5	<0.5	0.60	0.50
Thallium	µg/g	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.2	<0.2	<0.2	<0.2	<0.2
Tin	µg/g	191	<0.01	<0.01	<0.01	<0.01	<0.01	0.110	0.030	0.030	0.010	0.020	<0.01	<0.01	<0.01	<0.01	<0.01	0.300	<0.2	<0.2	<0.2	<0.2
Titanium	µg/g	--	0.02	0.10	0.02	0.01	0.02	0.27	0.28	0.38	0.94	1.80	0.07	0.01	0.01	0.02	0.01	0.40	0.20	0.40	<0.2	<0.2
Uranium	µg/g	0.4	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.02	<0.02	<0.02	<0.02	<0.02
Vanadium	µg/g	5.7	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc	µg/g	382	4.4	4.2	4.0	4.0	3.5	29.0	28.0	24.0	23.0	26.0	3.2	3.9	4.4	4.1	3.4	7.0	4.0	5.0	5.0	4.0

MT - muscle tissue

WhComp - whole body composite

Parameter concetration exceeds consumption benchmark.

[a] See Appendix Table D.11 for for Consumption Benchmark references.

[b] Indicates that the concentration exceeds the advisory guideline for the general population of 0.15 µg/g.

[b] ***Bold Text*** indicates that the concentration exceeds the advisory guideline for the sensitive population of 0.06 µg/g.

[b] Red Text indicates that the concentration exceeds the guideline of 0.033 ug/g for MeHg for the protection of wildlife consumers of aquatic biota (CCME 2000).

[c] Indicates that the concentration exceeds the benchmark of 0.2 µg/g. ***Bold Text*** indicates that the concentration exceeds the benchmark of 0.0035 µg/g.

Table D.12: Fish tissue data (wet weight) from large- and small-bodied fish sampled in the Mollie River Watershed, Côté Gold Baseline, 2016.

		Lake	Attach Lake										Sawpeter Lake					
		Species	northern pike					yellow perch					northern pike					yellow perch
		Date	8-Jul-16	8-Jul-16	8-Jul-16	8-Jul-16	8-Jul-16	8-Jul-16	8-Jul-16	8-Jul-16	8-Jul-16	8-Jul-16	7-Jul-16	7-Jul-16	7-Jul-16	7-Jul-16	7-Jul-16	7-Jul-16
		Total Length (cm)	53.3	51.4	44.6	20.6	31.9	11.7	9.2	10.8	9.7	11.9	26.9	43.2	47.4	49.6	47.2	11.3
		Sample Type	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT
Parameter	**Units**	**Consumption Concentration Benchmarks**[a]	AL-NP-01	AL-NP-02	AL-NP-03	AL-NP-04	AL-NP-05	AL-YP-01	AL-YP-02	AL-YP-03	AL-YP-04	AL-YP-05	SPL-NP-01	SPL-NP-02	SPL-NP-03	SPL-NP-04	SPL-NP-05	SPL-YP-01
Mercury	µg/g	0.15,0.06,0.033[b]	***1.20***	***1.20***	***0.70***	***0.31***	***0.34***	***0.14***	***0.09***	***0.11***	***0.12***	***0.09***	***0.26***	***0.53***	***0.55***	***0.86***	***0.64***	***0.09***
Aluminum	µg/g	637	<0.5	1.5	0.6	<10	1.1	<10	<10	<10	<10	<10	1.5	0.9	1.5	0.8	0.7	1.7
Antimony	µg/g	0.3	<0.02	<0.02	<0.02	<0.5	<0.02	<0.5	<0.5	<0.5	<0.5	<0.5	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/g	0.2, 0.0035[c]	***0.07***	***0.05***	***0.03***	<0.2	***0.02***	<0.2	<0.2	<0.2	<0.2	<0.2	***0.02***	***0.02***	***0.02***	***0.02***	***0.02***	***0.02***
Barium	µg/g	127	<0.01	0.03	0.03	<0.2	0.06	<0.2	1.00	0.20	<0.2	<0.2	0.07	0.10	0.11	0.08	0.04	0.04
Beryllium	µg/g	1.3	<0.002	<0.002	<0.002	<0.05	<0.002	<0.05	<0.05	<0.05	<0.05	<0.05	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Boron	µg/g	11	<0.2	<0.2	<0.2	<5	<0.2	<5	<5	<5	<5	<5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	µg/g	0.6	<0.002	<0.002	<0.002	<0.05	<0.002	<0.05	<0.05	<0.05	<0.05	<0.05	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chromium	µg/g	0.6	<0.1	<0.1	<0.1	<2	0.5	<2	<2	<2	<2	<2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cobalt	µg/g	6.4	<0.002	0.002	0.002	<0.05	0.003	<0.05	<0.05	<0.05	<0.05	<0.05	0.006	0.005	0.007	0.006	0.006	0.005
Copper	µg/g	90	0.03	0.04	0.03	<0.2	<0.01	<0.2	<0.2	<0.2	<0.2	<0.2	0.07	0.08	0.09	0.05	0.12	0.07
Iron	µg/g	382	1.3	2.0	1.8	<10	4.3	<10	<10	<10	<10	<10	2.2	2.8	3.1	2.5	2.4	2.7
Lead	µg/g	1.2	0.005	0.015	0.006	<0.05	0.015	0.49	0.05	0.05	<0.05	<0.05	0.008	0.006	0.018	0.003	0.004	0.007
Manganese	µg/g	99	0.2	0.3	0.3	<0.5	0.3	<0.5	<0.5	<0.5	0.5	0.6	0.4	0.8	0.3	0.5	0.2	0.3
Molybdenum	µg/g	18	<0.02	<0.02	<0.02	<0.5	0.06	<0.5	<0.5	<0.5	<0.5	<0.5	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel	µg/g	7.0	<0.01	<0.01	<0.01	<0.2	0.02	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	0.02	<0.01	<0.01	<0.01	<0.01
Selenium	µg/g	3.6	0.23	0.26	0.24	<0.2	0.21	0.30	0.20	0.20	<0.2	0.20	0.18	0.20	0.19	0.19	0.18	0.23
Silver	µg/g	3.2	<0.002	<0.002	<0.002	<0.05	<0.002	<0.05	<0.05	<0.05	<0.05	<0.05	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Strontium	µg/g	382	0.05	0.10	0.11	<0.5	0.08	<0.5	0.50	<0.5	<0.5	<0.5	0.22	0.42	0.22	0.42	0.10	0.10
Thallium	µg/g	--	<0.01	<0.01	<0.01	<0.2	<0.01	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	<0.01	0.010	<0.01	<0.01	0.020
Tin	µg/g	191	<0.01	<0.01	<0.01	<0.2	<0.01	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Titanium	µg/g	--	0.01	0.05	0.04	<0.2	0.03	<0.2	<0.2	<0.2	<0.2	<0.2	0.07	0.04	0.09	0.07	0.04	0.06
Uranium	µg/g	0.4	<0.001	<0.001	<0.001	<0.02	<0.001	<0.02	<0.02	<0.02	<0.02	<0.02	<0.001	<0.001	0.001	<0.001	<0.001	<0.001
Vanadium	µg/g	5.7	<0.02	<0.02	<0.02	<0.5	<0.02	<0.5	<0.5	<0.5	<0.5	<0.5	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Zinc	µg/g	382	4.4	3.2	3.8	3.0	3.8	4.0	4.0	4.0	4.0	4.0	4.4	5.5	3.7	5.8	5.3	4.9

MT - muscle tissue

WhComp - whole body composite

Parameter concetration exceeds consumption benchmark.

[a] See Appendix Table D.11 for for Consumption Benchmark references.

[b] Indicates that the concentration exceeds the advisory guideline for the general population of 0.15 µg/g.

[b] **Bold *Text*** indicates that the concentration exceeds the advisory guideline for the sensitive population of 0.06 µg/g.

[b] Red Text indicates that the concentration exceeds the guideline of 0.033 ug/g for MeHg for the protection of wildlife consumers of aquatic biota (CCME 2000).

[c] Indicates that the concentration exceeds the benchmark of 0.2 µg/g. **Bold *Text*** indicates that the concentration exceeds the benchmark of 0.0035 µg/g.

Table D.12: Fish tissue data (wet weight) from large- and small-bodied fish sampled in the Mollie River Watershed, Côté Gold Baseline, 2016.

		Lake	**Dividing Lake**									
		Species	northern pike					yellow perch				
		Date	9-Jul-16	9-Jul-16	9-Jul-16	9-Jul-16	9-Jul-16	9-Jul-16	9-Jul-16	9-Jul-16	9-Jul-16	9-Jul-16
		Total Length (cm)	73.3	62.9	49.2	37.7	35	3.6 - 4.4	3.8 - 4.4	4.0 - 4.2	3.6 - 4.3	4.0 - 4.7
		Sample Type	MT	MT	MT	MT	MT	WhComp	WhComp	WhComp	WhComp	WhComp
Parameter	**Units**	**Consumption Concentration Benchmarks[a]**	DL-NP-01	DL-NP-02	DL-NP-03	DL-NP-04	DL-NP-05	DL-YPComp-01	DL-YPComp-02	DL-YPComp-03	DL-YPComp-04	DL-YPComp-05
Mercury	µg/g	0.15,0.06,0.033[b]	***1.30***	***0.59***	***0.39***	***0.33***	***0.21***	0.05	0.05	0.05	0.05	0.05
Aluminum	µg/g	637	0.7	<0.5	<0.5	<0.5	0.6	2.7	11.0	3.3	2.2	5.6
Antimony	µg/g	0.3	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/g	0.2, 0.0035[c]	***0.07***	***0.09***	***0.05***	***0.03***	***0.04***	***0.05***	***0.05***	***0.05***	***0.05***	***0.05***
Barium	µg/g	127	0.04	0.03	0.02	<0.01	0.06	0.61	0.63	0.70	0.59	0.82
Beryllium	µg/g	1.3	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Boron	µg/g	11	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	µg/g	0.6	<0.002	<0.002	<0.002	<0.002	<0.002	0.023	0.048	0.025	0.02	0.037
Chromium	µg/g	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cobalt	µg/g	6.4	0.003	0.008	0.049	0.04	0.009	0.034	0.044	0.033	0.033	0.037
Copper	µg/g	90	0.08	0.10	0.04	0.06	0.07	0.67	0.85	0.58	0.55	0.73
Iron	µg/g	382	1.4	1.4	1.1	1.3	2.0	16.0	29.0	17.0	15.0	21.0
Lead	µg/g	1.2	0.023	0.007	0.051	0.002	0.051	0.026	0.022	0.015	0.01	0.022
Manganese	µg/g	99	0.1	0.3	0.1	0.2	1.6	5.6	7.2	5.0	4.0	5.6
Molybdenum	µg/g	18	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.04	0.03	0.02	0.03
Nickel	µg/g	7.0	<0.01	<0.01	0.04	0.03	<0.01	0.02	<0.01	<0.01	<0.01	0.01
Selenium	µg/g	3.6	0.28	0.25	0.20	0.22	0.26	0.26	0.24	0.25	0.26	0.24
Silver	µg/g	3.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.0020	<0.002	<0.002	0.0020
Strontium	µg/g	382	0.03	0.14	<0.02	0.03	0.45	4.30	4.10	4.50	4.20	4.70
Thallium	µg/g	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.010	<0.01	<0.01	<0.01
Tin	µg/g	191	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Titanium	µg/g	--	0.03	0.02	0.01	0.01	0.03	0.19	0.59	0.14	0.09	0.34
Uranium	µg/g	0.4	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	0.001
Vanadium	µg/g	5.7	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.07	0.06	0.05	0.07
Zinc	µg/g	382	3.5	3.5	3.9	4.5	6.6	23.0	25.0	23.0	22.0	24.0

MT - muscle tissue
WhComp - whole body composite
Parameter concetration exceeds consumption benchmark.
[a] See Appendix Table D.11 for for Consumption Benchmark references.
[b] Indicates that the concentration exceeds the advisory guideline for the general population of 0.15 µg/g.
[b] **Bold *Text*** indicates that the concentration exceeds the advisory guideline for the sensitive population of 0.06 µg/g.
[b] Red Text indicates that the concentration exceeds the guideline of 0.033 ug/g for MeHg for the protection of wildlife consumers of aquatic biota (CCME 2000).
[c] Indicates that the concentration exceeds the benchmark of 0.2 µg/g. **Bold *Text*** indicates that the concentration exceeds the benchmark of 0.0035 µg/g.

LICENCES TO COLLECT FISH FOR SCIENTIFIC PURPOSES

Ontario | Ministry of Natural Resources | Ministère des Richesses naturelles

Licence to Collect Fish for Scientific Purposes

Permis pour faire la collecte de poissons à des fins scientifiques

Licence No. / N° de permis	1083772
Local Reference No. / N° de référence local	
Issuer Account No. / N° de compte du délivreur de permis.	10001617

This licence is issued under Part I of the Fish Licensing Regulation made under the Fish and Wildlife Conservation Act, 1997 to:

Ce permis est délivré en vertu de la Partie I du règlement sur la délivrance de permis de pêche formulé conformément à la Loi sur la protection du poisson et de la faune de 1997 à:

Name of Licencee
Nom du titulaire du permis

Last Name / Nom de famille	First Name / Prénom	Middle Name / Second Prénom
Mr. Wilson	Justin	S.

Name of Business/Organization/Affiliation (if applicable) / Nom de l'entreprise/de l'organisme/de l'affiliation (le cas échéant)

Minnow Environmental Inc

Mailing address of Licencee
Adresse postale du titulaire du permis

Street Name & No./PO Box/RR#/Gen. Del./ N° rue/C.P./R.R./poste restante

2 Lamb St

City/Town/Municipality / Ville/village/municipalité	Province/State Province/État	Postal Code/Zip Code Code Postal/Zip
Georgetown	ON	L7G 3M9

to collect the species, size and quantites of fish from the waters as set out below.
Pour faire la collecte des espèces suivantes (stade et nombre indiqués ci-dessous):

Species Espèces	Eggs Oeuf X	Juvenile Fretin X	Adults Adulte X	Numbers Nombre	Name of Waterbody Nom de l'étendue d'eau
Small bodied fish			X	300	See list of Waterbody Names
Northern Pike and Walleye			X	60	See list of Waterbodies Names

Yes/Oui ☐ Additional species/Waterbody list attached / Liste d'espèces/d'étendue d'eau additionnelles ci-jointe

Purpose of collection
But de la collecte

Work will include identifying and characterizing fish habitat, fish community and relative abundance.

Additionally, further muscle tissue samples will be collected for total mercury analysis.

Licence Dates
Dates du permis

Effective Date / Date d'entrée en vigueur (YYYY-MM-DD)	Expiry Date / Date d'expiration (YYYY-MM-DD)
2016-07-04	2016-07-24

Licence conditions This licence is subject to the conditions contained in Schedule A if included. / Ce permis doit respecter les conditions de l'annexe A si celle-ci est jointe.

Conditions du permis Yes/Oui ☒ No/Non ☐ Schedule A included. / Annexe A ci-jointe

Issued by (please print) Délivré par (veuillez écrire en caractères d'imprimerie)	Signature of Issuer / Signature du délivreur	Date of Issue/Date de délivrance (YYYY-MM-DD)
Tuovi Haapakoski		2016-06-16

Signature of Licencee / Signature du titulaire du permis	Date (YYYY-MM-DD)
	2016-06-16

Licence to Collect Fish for Scientific Purposes
Minnow Environmental Inc
Licence 1083772

Waterbody List

Species 1	Eggs	Juvenile	Adults	Numbers
Small bodied fish (most likely yellow Perch			x	300

Name of Waterbody
Moore Lake, Chain Lake, Attach Lake, Sawpeter Lake, Unnamed Lake #4, Unnamed Lake #5, Unnamed Lake #6, Dividing Lake, Lower Three Duck Lake, Mollie River, small creeks (see Figure 1)

Species 2	Eggs	Juvenile	Adults	Numbers
Large Bodied Fish (Northern Pike and Or Walleye if available)			x	60

Name of Waterbody
Moore Lake, Chain Lake, Attach Lake, Sawpeter Lake, Unnamed Lake #4, Unnamed Lake #5, Unnamed Lake #6, Dividing Lake, Lower Three Duck Lake, Mollie River, small creeks (see Figure 1)

Licence to Collect Fish for Scientific Purposes
Permis pour faire la collecte de poissons à des fins scientifiques
Schedule A - Licence Conditions
Annexe A - Conditions du permis

Licence No. 1083772
No de permis

This licence is subject to the conditions listed below.

1. This Licence is valid only for the persons, species, numbers, areas and calendar year indicated. Mandatory report forms documenting the sampling conducted under this licence must be submitted to the licence issuer within 30 days of the termination date, but in no case later than January 31 next following the year of issue. The digital Mandatory Report form (Part 1) must be completed for each Sampling Program and the digital Site Collection Reports (Part 2) must be completed for each collection site. A separate map clearly indicating the location of each collection site must be attached to the Site Collection Reports. Submit Mandatory Report forms to the "Fish & Wildlife Technical Specialist, Regional Operations Division, Northeast Region, Timmins District, P.O. Bag 3090, 5520, Hwy 101 E, South Porcupine, ON P0N 1H0". The submission of a satisfactory report is a prerequisite to any subsequent renewals.
2. Before carrying out any operation under the licence in any area the licenced person shall inform the Area Supervisor or Lake Manager of his or her intentions at least a week before commencing work and include information as to the type of operation, location, duration, and the name or names of personnel involved.
3. A copy of the original licence must be carried by the licenced person when working at the designated sites. An assistant of the licenced person who is carrying out activities under this licence during the absence of the licenced person shall carry a copy of the licence on his or her person.
4. All collection gear shall be clearly marked with the licenced person's and the organization's name.
5. This licence is not valid in Provincial Parks, park reserves, or National Parks without the written permission from the authorized person in charge of the area concerned.
6. Capture gear shall be inspected regularly and live holding traps must be inspected at least once daily.
7. This licence does not allow access to any property without permission of the landowner.
8. Name of assistants :
    Tyrell L. Worrall
    Mike S. White
    Sam G. McEachran
    Kim B. Connors

9. Gear to be used :
    Experimental Gill Nets, Minnow Traps, Seine.

Ce permis doit se conformer aux conditions ci-dessous.

1. Ce permis n'est valide que pour les personnes, espèces, nombres, zones et année civile indiqués. Un rapport obligatoire documentant les activités échantillonnage effectué en vertu de cette licence doivent être soumis au délivreur du permis dans les 30 jours suivant la date d'expiration et jamais plus tard que le 31 janvier qui suit la date de délivrance. Le rapport numérique obligatoire (Partie 1) doit être rempli pour chaque programme d'échantillonnage et le rapport numérique de collection de site (Partie 2) doit être rempli pour chaque site de la collection. Une carte indiquant clairement l'emplacement de chaque collection doit être jointe au rapport. Soumettre des formulaires de déclaration obligatoire à "Technicienne Spécialiste des pêches et de la faune, Division des Opérations Régionales, District de Timmins, Ministère des Richesses naturelles et des Forêts, 5520 Route 101, Sac Postal 3090, South Porcupine, ON, P0N 1H0". La présentation d'un rapport satisfaisant est une condition préalable pour obtenir un renouvellement de permis.
2. Avant de réaliser toute activité visée par le permis dans toute zone, le titulaire du permis doit aviser le superviseur de la zone ou le gestionnaire du lac de ses intentions au moins une semaine avant de commencer ses activités et il doit fournir des renseignements sur le type d'activité, l'emplacement, la durée et le nom de toutes les personnes impliquées.
3. Le titulaire du permis doit avoir en sa possession un exemplaire du permis original lorsqu'il travaille dans les endroits désignés. Si un adjoint du titulaire du permis réalise des activités visées par le permis en l'absence du titulaire du permis, il devra avoir un exemplaire du permis en sa possession.
4. Tout le matériel de collecte doit indiquer bien clairement le nom du titulaire du permis et de son organisme.
5. Ce permis n'est pas valide dans les parcs provinciaux, les réserves de parcs et les parcs nationaux sans la permission écrite de la personne autorisée qui est responsable de la zone en question.
6. Tout le matériel de collecte doit être inspecté régulièrement et les viviers doivent être inspectés au moins une fois par jour.
7. Ce permis ne permet pas au titulaire d'avoir accès à une propriété privée sans la permission du propriétaire foncier.
8. Nom des assistants :
9. Équipement à utiliser :

Signature of Licencee / Signature du titulaire du permis **Date**

2016-06-16

Ontario Ministry of Natural Resources and Forestry

Application for a Licence to Collect Fish for Scientific Purposes

Personal information contained on this form is collected under the authority of the *Fish and Wildlife Conservation Act, 1997* and will be used for the purpose of licensing, identification, enforcement, resource management and customer service surveys. Please direct further enquiries to the District Manager of the MNRF issuing district.

☑ New Licence Application

☐ Licence Renewal   Current Licence Number ____________

Applicant Information

Last Name	First Name	Middle Initial
Wilson	Justin	S

Name of Business/Organization/Affiliation
Minnow Environmental Inc.

Mailing Address of Applicant

Unit Number	Street Number	Street Name	PO Box
	2	Lamb St	

City/Town	Province	Postal Code
Georgetown	Ontario	L7G 3M9

Physical Address of Applicant (if different from mailing address) ☑ If address is same as above

Unit Number	Street Number	Street Name	PO Box

City/Town	Province	Postal Code

Telephone Number	Business Telephone Number	Fax Number
905 873-3371 ext.233	905 873-3371 ext.233	905 873-6370 ext.

Assistant Last Name	Assistant First Name	Assistant Middle Initial
Worrall	Tyrell	L
White	Mike	S
McEachran	Sam	G
Connors	Kim	B

Gear to be Used

1. Experimental Gill Nets
2. Minnow Traps
3. Seine

Collection Information

Collection Period Start Date (yyyy/mm/dd)	Collection Period End Date (yyyy/mm/dd)
2016/07/04	2016/07/24

Species	Specify Size (eggs, fry, adults)	Numbers	MNR District	Name of Water Body
Small-bodied (most likely yellow	adults (5 samples	300	Algoma	Moore Lake, Chain Lake, Attach

FISH TISSUE
LABORATORY RESULTS

MINNOW ENVIRONMENTAL INCORPORATED
2 Lamb Street
Georgetown, Ontario L7G 3M9
ı: 905-873-337
x: 905-873-63

CHAIN OF COUSTODY RECORD

Laboratory:	15 Irwin Lane	Page	1 of 2
	RR #1	Minnow Contact:	Tyrell Worrall
	Maynooth, ON K0L 2S0	Minnow Project #:	16-65
Contact:	Bob Irwin		
Phone:	613-332-3882	Date Results Required By:	01-Dec-16

Sample Number	Minnow Sample ID	Matrix	Number of Containers	scale / cleithra		Comments
1	ML-NP-01	sc,cl	1	no sc	3+	go with * age
2	ML-NP-02	sc,cl	1	2+	2+	
3	ML-NP-03	sc,cl	1	2+	2+	
4	ML-NP-04	sc,cl	1	no sc	3+	
5	ML-NP-05	sc,cl	1	3+	3+	
6	SPL-NP-01	sc,cl	1	1+	1+	
7	SPL-NP-02	sc,cl	1	4+	5+ *	
8	SPL-NP-03	sc,cl	1	4+ *	3+	
9	SPL-NP-04	sc,cl	1	no sc	4+	
10	SPL-NP-05	sc,cl	1	4+	4+	
11	CL-NP-01	sc,cl	1	5+	5+	
12	CL-NP-02	sc,cl	1	3+	4+ *	
13	CL-NP-03	sc,cl	1	4+	4+	
14	CL-NP-04	sc,cl	1	3+	3+	
15	CL-NP-05	sc,cl	1	2+	2+	
16	DL-NP-01	sc,cl	1	7+	7+	
17	DL-NP-02	sc,cl	1	4+	4+	
18	DL-NP-03	sc,cl	1	4+	4+	
19	DL-NP-04	sc,cl	1	2+	2+	
20	DL-NP-05	sc,cl	1	2+	2+	
21	AL-NP-01	sc,cl	1	5+	5+	
22	AL-NP-02	sc,cl	1	5+	5+	
23	AL-NP-03	sc,cl	1	4+	4+	
24	AL-NP-04	sc,cl	1	1+	1+	
25	AL-NP-05	sc,cl	1	2+	2+	
26	SPL-YP-01	sc,ds	1	1+		
27	CL-YP-01	sc,ds	1	1+		
28	CL-YP-02	sc,ds	1	2+		
29	CL-YP-03	sc,ds	1	1+		
30	CL-YP-04	sc,ds	1	1+		
31	CL-YP-05	sc,ds	1	1+		

Samples Relinquished to Lab By: Tyrell Worrall (Minnow Employee Signature)	Date: 25-Oct-16	Shipment Method:	FedEx
	Time: 12:00		
Samples Received in Lab By: (Lab Employee Signature)	Date:	Sample Condition upon Receipt:	
	Time:		

SUBMIT ORIGINAL TO LAB WITH SAMPLES AND RETAIN TWO PHOTOCOPIES AT MINNOW

MINNOW ENVIRONMENTAL INCORPORATED

2 Lamb Street
Georgetown, Ontario L7G 3M9

ı: 905-873-337
x: 905-873-63

CHAIN OF CUSTODY RECORD

Laboratory:	15 Irwin Lane	Page	2 of 2
	RR #1	Minnow Contact:	Tyrell Worrall
	Maynooth, ON K0L 2S0	Minnow Project #:	16-65
Contact:	Bob Irwin		
Phone:	613-332-3882	Date Results Required By:	01-Dec-16

Sample Number	Minnow Sample ID	Matrix	Number of Containers	scale age		Comments
32	ML-YP-11	sc,ds	1	1+		
33	ML-YP-16	sc,ds	1	2+		
34	ML-YP-21	sc,ds	1	1+		
35	ML-YP-26	sc,ds	1	1+		
36	ML-YP-31	sc,ds	1	1+		
37	DL-YP-01	sc,ds	1	0+		
38	DL-YP-06	sc,ds	1	0+		
39	DL-YP-11	sc,ds	1	0+		
40	DL-YP-16	sc,ds	1	0+		
41	DL-YP-21	sc,ds	1	0+		
42	AL-YP-01	sc,ds	1	3+		
43	AL-YP-02	sc,ds	1	2+		
44	AL-YP-03	sc,ds	1	2+		
45	AL-YP-04	sc,ds	1	2+		
46	AL-YP-05	sc,ds	1	2+		go with * age

Samples Relinquished to Lab By:	Tyrell Worrall	Date:	25-Oct-16	Shipment Method:	FedEx
(Minnow Employee Signature)		Time:	12:00		
Samples Received in Lab By:		Date:		Sample Condition upon Receipt:	
(Lab Employee Signature)		Time:			

SUBMIT ORIGINAL TO LAB WITH SAMPLES AND RETAIN TWO PHOTOCOPIES AT MINNOW