2014 FISH AND FISH HABITAT SUPPLEMENTAL BASELINE REPORT FOR THE JAY PROJECT

Prepared for: Dominion Diamond Ekati Corporation

Prepared by: Golder Associates Ltd.

April 2015

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DOMINION DIAMOND

Abbreviations

Abbreviation	Definition
BSA	baseline study area
CPUE	catch-per-unit-effort
DAR	Developer's Assessment Report
Diavik Mine	Diavik Diamond Mine
Dominion Diamond	Dominion Diamond Ekati Corporation
e.g.	for example
Ekati Mine	Ekati Diamond Mine
et al.	and more than one additional author
FWIN	Fall Walleye Index Net
GPS	Global Positioning System
i.e.	that is
NWT	Northwest Territories
Project	Jay Project
SD	standard deviation
UTM	Universal Transverse Mercator
YOY	young-of-the-year

Units of Measure

Unit	Definition
%	percent
±	plus or equal to
<	less than
°C	degrees Celsius
µS/cm	microsiemens per centimetre
h	hour
km	kilometre
m	metre
m/s	metres per second
m^2	square metre
mg/L	milligrams per litre
mm	millimetre
s	second

1 INTRODUCTION

1.1 Background and Scope

Dominion Diamond Corporation (Dominion Diamond) is a Canadian-owned and Northwest Territories (NWT) based mining company that mines, processes, and markets Canadian diamonds from the Ekati Diamond Mine (Ekati Mine). Dominion Diamond also markets Canadian diamonds from its 40% ownership of the Diavik Diamond Mine. The existing Ekati Mine is located approximately 200 kilometres (km) south of the Arctic Circle and 300 km northeast of Yellowknife, NWT (Map 1.1-1).

Dominion Diamond is proposing to develop the Jay kimberlite pipe (Jay pipe) located beneath Lac du Sauvage. The proposed Jay Project (Project) will be an extension of the Ekati Mine, which is a large, stable, and successful mining operation that has been operating for 16 years. Most of the infrastructure required to support the development of the Jay pipe and to process the kimberlite currently exist at the Ekati Mine. The Project is located in the southeastern portion of the Ekati claim block approximately 25 km from the main facilities and approximately 7 km to the northeast of the Misery Pit, in the Lac de Gras watershed.

This 2014 Fish and Fish Habitat Supplemental Baseline Report builds on a comprehensive description of baseline conditions presented in the Developer's Assessment Report (DAR) for the Project (Dominion Diamond 2014). The supplemental baseline information in this report supports that presented in the Fish and Fish Habitat Baseline Report (Annex XIV) of the DAR.

1.2 Objectives

The main goal of this supplemental baseline report is to augment the existing baseline data on fish population characteristics and habitat in lakes and streams near the proposed Project, with a focus on populations and their habitat directly or indirectly affected by the proposed Sub-Basin B Diversion Channel. The diversion channel has the potential to impact fish populations both in Lac du Sauvage and in lakes in sub-basins B and Ac35 assuming fish from these population use the stream sections to be diverted (e.g., for spawning).

Thus, field studies were performed to collect data in sufficient detail to broaden the baseline areas of investigation, support Project design, and to reduce uncertainty and increase the level of confidence in effects predictions.

Specific program objectives in 2012 were the following:

- conduct fish and fish habitat baseline sampling at streams that may be fish-bearing and directly affected by the proposed Sub-Basin B Diversion Channel for the Project, and include detailed surveys for mapping habitat types for the affected streams;
- conduct fish and fish habitat baseline sampling of selected small lakes and streams above the Sub-Basin B Diversion Channel (within the Ac4, Ac35, and B sub-basins) and within sub-basins downstream of the proposed Jay Waste Rock Storage Area (within Ac4 and C sub-basins);
- collect additional information on the fish community near the proposed diked area in Lac du Sauvage; this information will be used to further understand effects from the proposed diked area, as well as

effects from the proposed diversion channel (given that fish using the proposed diverted streams are likely fish that also reside in Lac du Sauvage);

- perform watercourse crossing assessments at stream sites (within Ac4, Ac35, and B sub-basins) along the proposed road corridor for the Project; and,
- conduct fish sampling targeting Lake Trout and Lake Whitefish in Lac du Sauvage and Ursula Lake for fish tissue chemistry.

Note that the results of the fish tissue chemistry analysis are presented separately (Golder 2015). The effort and catch information for 2014 fish sampling in Lac du Sauvage are presented herein (main body of report and appendices), but the effort and catch information for Ursula Lake are only presented in the appendices.

1.3 Study Area

The fish and fish habitat baseline study area (BSA) is located within the headwaters of the Coppermine drainage, approximately 300 km northeast of Yellowknife, NWT, and 20 km northwest of the Diavik Diamond Mine (Diavik Mine) (Map 1.3-1). The BSA includes Lac du Sauvage and sub-basins that flow directly into Lac du Sauvage (e.g., Ac, B, C). A detailed description of the baseline study area is provided in the Annex XIV Fish and Fish Habitat Baseline Report of the DAR.

The 2014 supplemental field studies focused on Stream B1, B0, and Ac35, fish-bearing streams potentially affected by the proposed Sub-Basin B Diversion Channel for the Project (DAR Section 3; also see Section 9). Lac du Sauvage and selected waterbodies immediately upstream of the proposed Sub-Basin B Diversion Channel and downstream of the proposed Waste Rock Storage Area were also examined for further understanding of potential indirect and direct effects to fish populations.

In 2014, fish sampling was also conducted at Ursula Lake (for fish tissue). Ursula Lake is located in the Lac du Sauvage catchment north of the existing Ekati Mine site, and was sampled to augment areal data coverage.

LEGEND

- JAY PROJECT
- EXISTING MINE OR PROJECT
- TERRITORIAL CAPITAL
- POPULATED PLACE
- HIGHWAY
- TERRITORIAL/PROVINCIAL BOUNDARY
- TREELINE
- WATERCOURSE
- WATERBODY

150 0 150

SCALE 1:6,000,000 KILOMETRES

REFERENCE

WATER OBTAINED FROM ATLAS OF CANADA
NATURAL RESOURCES CANADA, CENTRE FOR TOPOGRAPHIC INFORMATION, 2012
PROJECTION: CANADA LAMBERT CONFORMAL CONIC

DOCUMENT

FISH AND FISH HABITAT SUPPLEMENTAL BASELINE REPORT

PROJECT

DOMINION DIAMOND

JAY PROJECT
NORTHWEST TERRITORIES, CANADA

TITLE

LOCATION OF THE JAY PROJECT

Golder Associates

PROJECT		1407256	FILE No. SB_Aqua_001_GIS	
DESIGN	BB	19/01/15	SCALE AS SHOWN	REV. 0
GIS	LS/AK	06/04/15	MAP 1.1-1	
CHECK	CS	06/04/15		
REVIEW	KM	06/04/15		

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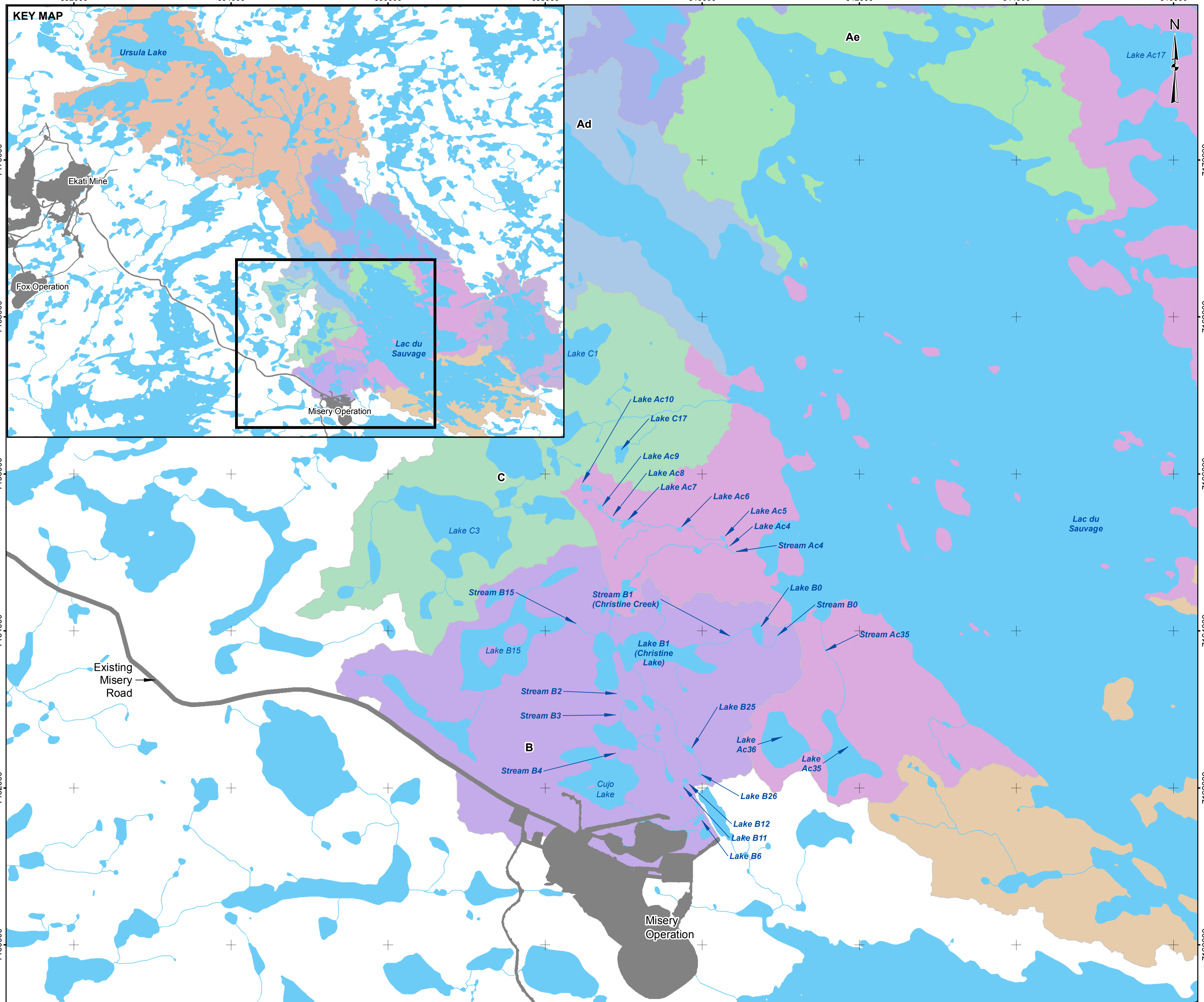

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LEGEND

- EKATI MINE FOOTPRINT
- WATERCOURSE
- WATERBODY

BASIN

- Ab
- Ac
- Ad
- Ae
- Af
- B
- C
- D

REFERENCE

CANVEC © NATURAL RESOURCES CANADA, 2012
NATURAL RESOURCES CANADA, CENTRE FOR TOPOGRAPHIC INFORMATION, 2012
DATUM: NAD83 PROJECTION: UTM ZONE 12N

DOCUMENT

FISH AND FISH HABITAT SUPPLEMENTAL BASELINE REPORT

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PROJECT
DOMINION DIAMOND
JAY PROJECT
NORTHWEST TERRITORIES, CANADA

TITLE
FISH AND FISH HABITAT SUPPLEMENTAL BASELINE STUDY AREA, 2014

Golder Associates

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GIS	LS/AK	06/04/15		
CHECK	CS	06/04/15		
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MAP 1.3-1

2 BASELINE FIELD PROGRAM

2.1 Methods

2.1.1 General Approach

In 2014, fish and fish habitat studies took place during three separate field programs in June and August. The main focus of the 2014 program was to better understand the potential effects from the Sub-Basin B Diversion Channel.

The three field programs were completed over the following dates in 2014:

- June 10 to 22: evaluation of fish and fish habitat in streams Ac4, Ac35, B0, B1, B2, B3, B4, B15, Lac du Sauvage, and Lakes Ac4, Ac35, B0, and B1.
- August 19 to 28: evaluation of fish and fish habitat in streams B0, B1, Ac35, and Lakes Ac4, Ac5, Ac6, Ac7, Ac8, Ac9, Ac10, Ac35, Ac36, B12, B25, B26, and C17.
- August 19 to 28: continued assessment of the fish community in Lac du Sauvage including the collection of fish health data (i.e., liver and muscle tissue samples) from Lake Trout in Lac du Sauvage and a reference population in Ursula Lake (Golder 2015a).

Methods followed standard protocols for sampling streams and lakes for fish (Bonar et al. 2009) and included two-way fish traps, minnow traps, backpack electrofishing, kick sampling for eggs (for Arctic Grayling eggs), short-duration gill net sets, angling, and visual observations. Captured fish were identified to species, and measured for length and weight. Ageing structures (e.g., scales, fin rays, otoliths from mortalities) were collected from a subsample of captured fish and were submitted to North-South Consultants Inc. (Winnipeg, Manitoba) for age determination. Life history data were used to describe the structure of the local populations by species. Habitat types were described following a modified classification system (Hawkins et al. 1993; O'Neil and Hildebrand 1986).

The permits under which the field program operated included:

- Animal Use Protocol (No. FWI-ACC-2014-000), Fisheries and Oceans Canada.
- Licence To Fish For Scientific Purposes (No. 5-15/15-3012-YK). Fisheries and Oceans Canada.
- Northwest Territories Scientific Research Licence (No. 15382), Aurora Research Institute, Northwest Territories.

Fish species expected to occur in the study area (based on Annex XIV Fish and Fish Habitat Baseline Report) and the codes used in this report are presented in Table 2.1-1.

Table 2.1-1 Common and Scientific Names of Fish Species Expected to Occur in the Baseline Study Area

Family	Common Name	Code[a]	Scientific Name
Salmonidae	Lake Trout	LKTR	*Salvelinus namaycush* (Walbaum)
	Arctic Grayling	ARGR	*Thymallus arcticus* (Pallas)
	Cisco	CISC	*Coregonus artedi* (Lesueur)
	Lake Whitefish	LKWH	*Coregonus clupeaformis* (Mitchill)
	Round Whitefish	RNWH	*Prosopium cylindraceum* (Pallas)
Esocidae	Northern Pike	NRPK	*Esox lucius* (Linnaeus)
Gadidae	Burbot	BURB	*Lota lota* (Linnaeus)
Catostomidae	Longnose Sucker	LNSC	*Catostomus catostomus* (Forster)
Gasterosteidae	Ninespine Stickleback	NNST	*Pungitius pungitius* (Linnaeus)
Cyprinidae	Lake Chub	LKCH	*Couesius plumbeus* (Agassiz)
Cottidae	Slimy Sculpin	SLSC	*Cottus cognatus* (Richardson)

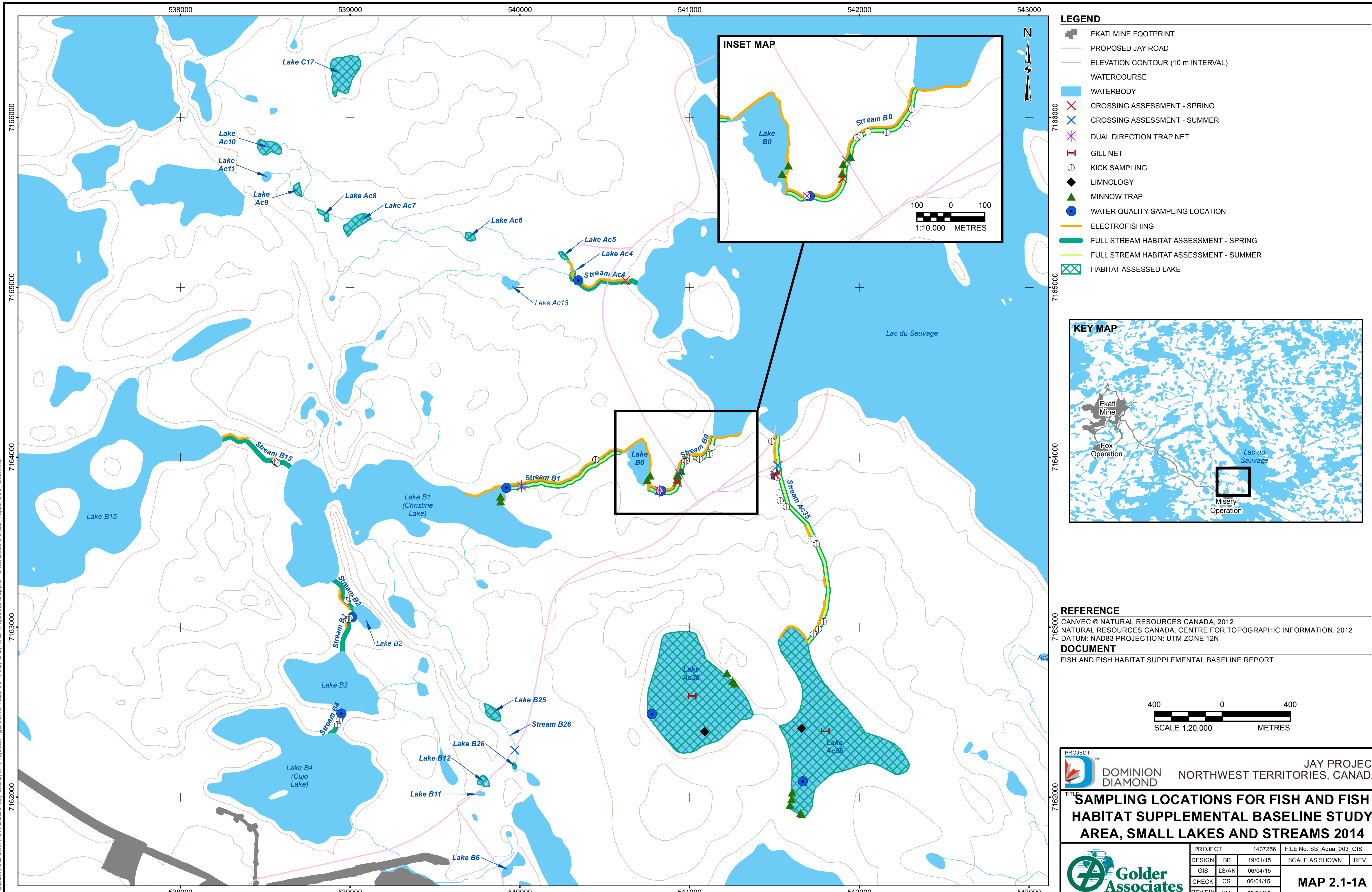
a) Source: Mackay et al. (1990).

2.1.2 Study Locations

During the field assessment, lake habitat was evaluated at 13 lakes and fish sampling occurred at 7 lakes including Lac du Sauvage and Ursula Lakes (Map 2.1-1A to 2.1-1C, Table 2.1-2). Stream habitats were evaluated at nine streams, and of these, additional habitat information was collected at four proposed road crossings in the BSA (Map 2.1-1A). Supplemental data were also collected, including photographs and surface water quality.

2.1.3 Habitat Surveys

The general approach per site was to photograph and visually characterize representative and unique habitat features using standard methods. Detailed information on habitat and substrate type, and depths were collected for habitats expected to be directly affected by the footprint of the Project. Spatial information was collected by marking habitat features on field maps and by marking Universal Transverse Mercator (UTM) coordinates at survey locations. Aerial photographs from a helicopter were used to provide supplemental descriptions of habitat where needed.



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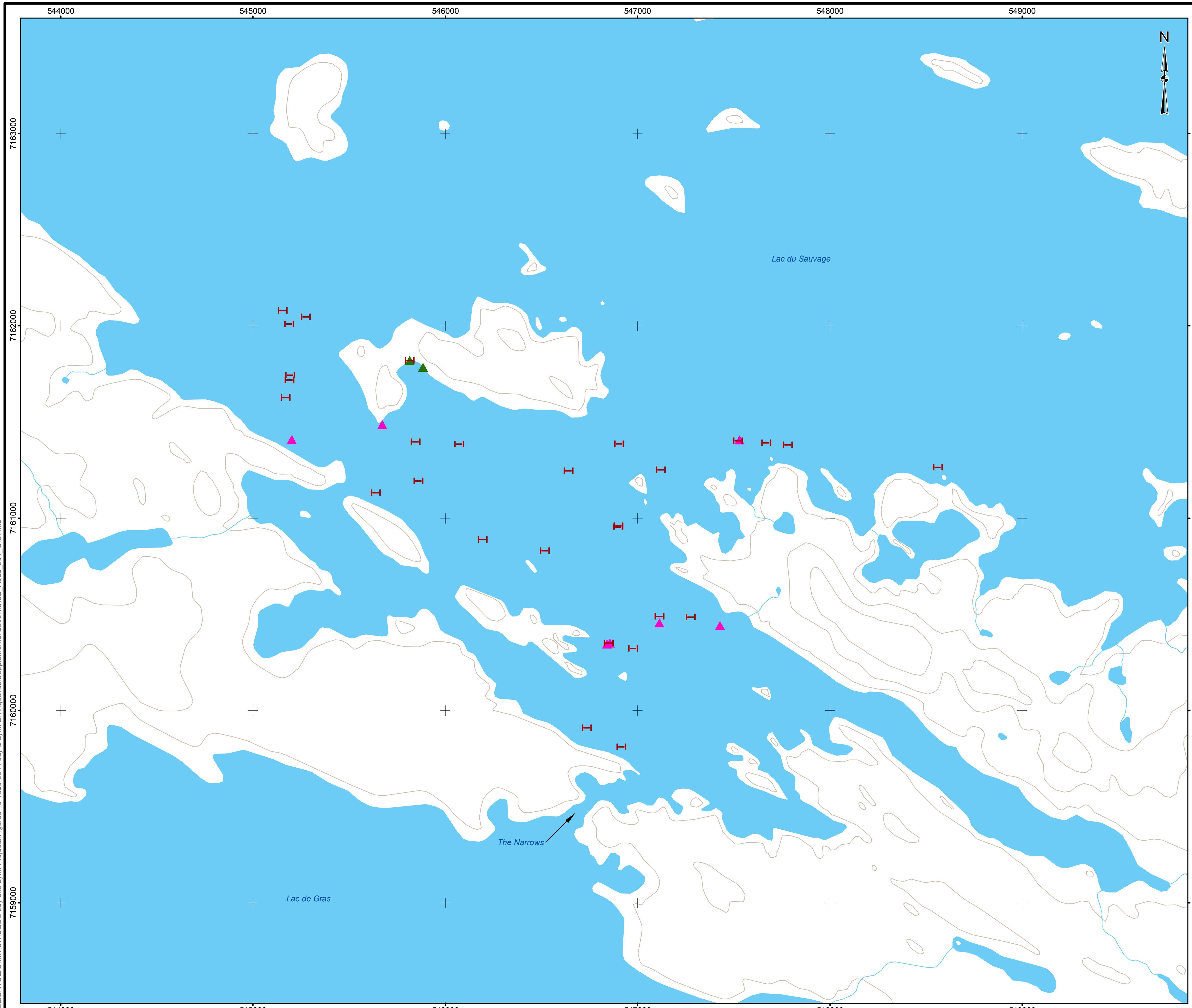
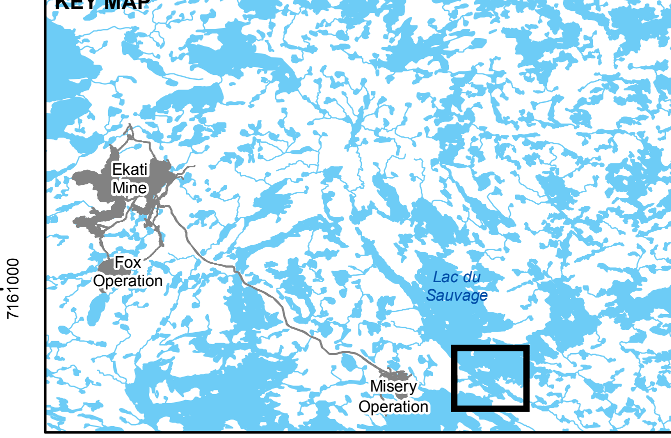


LEGEND

- ELEVATION CONTOUR (10 m INTERVAL)
- WATERCOURSE
- WATERBODY
- ANGLING
- GILL NET
- MINNOW TRAP

KEY MAP



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DOCUMENT

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400 0 400

SCALE 1:20,000 METRES

PROJECT

DOMINION DIAMOND

JAY PROJECT
NORTHWEST TERRITORIES, CANADA

TITLE

SAMPLING LOCATIONS FOR FISH AND FISH HABITAT SUPPLEMENTAL BASELINE STUDY AREA, LAC DU SAUVAGE 2014

Golder Associates

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REVIEW	KM	06/04/15		

MAP 2.1-1B

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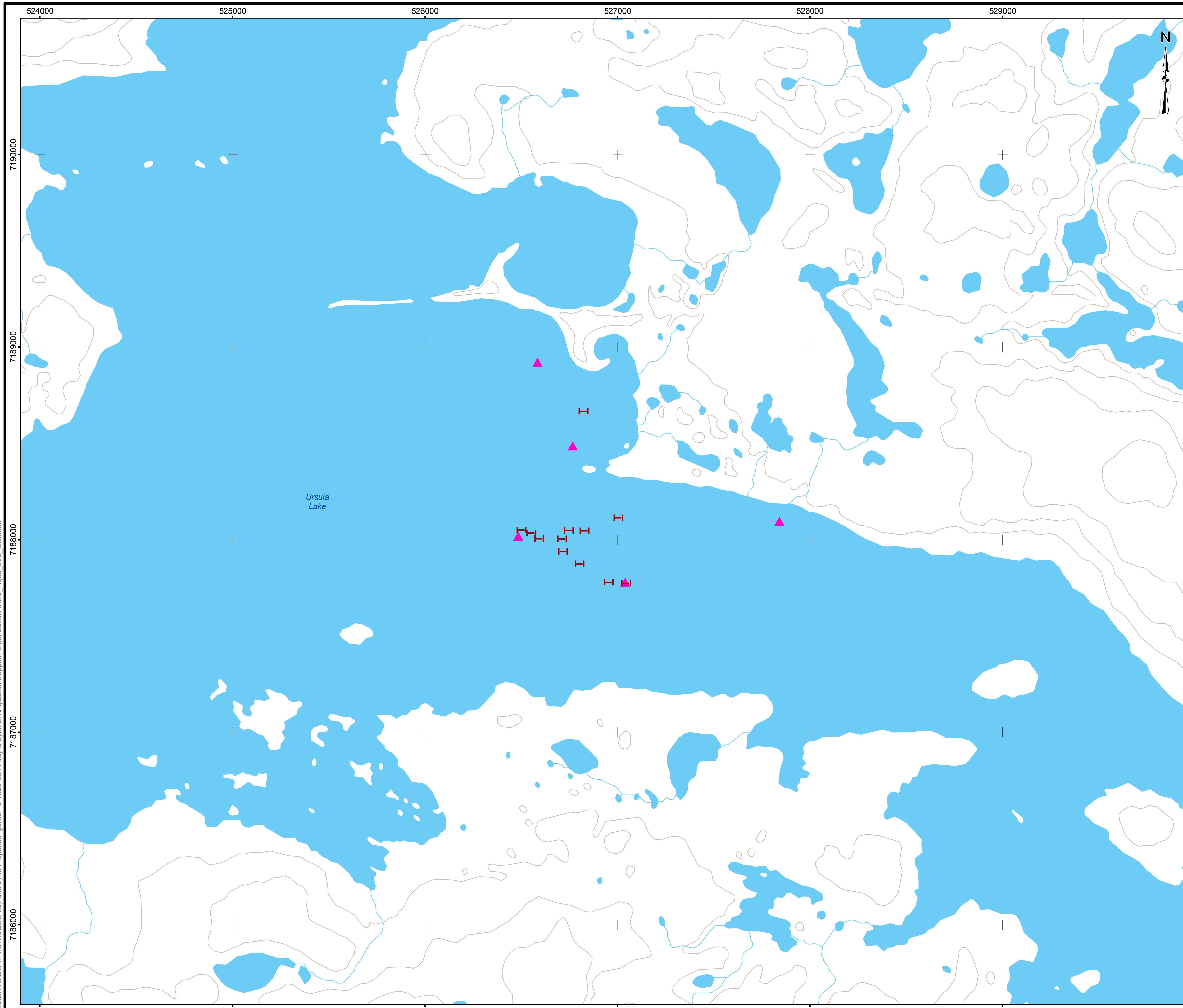
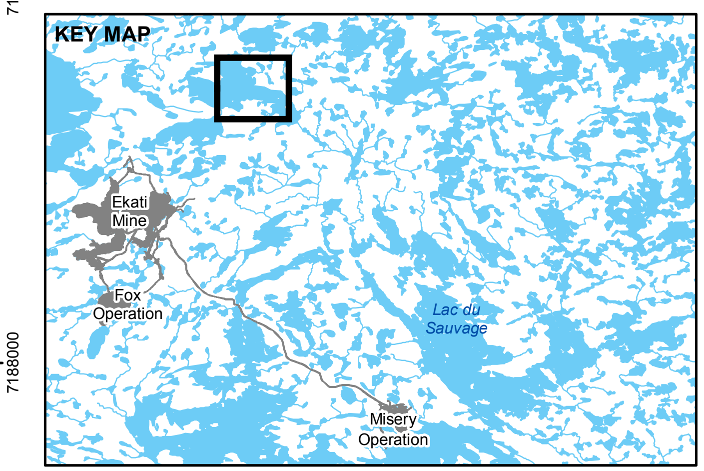


LEGEND

- ELEVATION CONTOUR (10 m INTERVAL)
- WATERCOURSE
- WATERBODY
- ANGLING
- GILL NET



REFERENCE

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NATURAL RESOURCES CANADA, CENTRE FOR TOPOGRAPHIC INFORMATION, 2012
DATUM: NAD83 PROJECTION: UTM ZONE 12N

DOCUMENT

FISH AND FISH HABITAT SUPPLEMENTAL BASELINE REPORT

400 0 400
SCALE 1:20,000 METRES

PROJECT
DOMINION DIAMOND
JAY PROJECT
NORTHWEST TERRITORIES, CANADA

TITLE
SAMPLING LOCATIONS FOR FISH AND FISH HABITAT SUPPLEMENTAL BASELINE STUDY AREA, URSULA LAKE 2014

Golder Associates

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REVIEW	KM	06/04/15	

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Table 2.1-2 Summary of Surveys and Sampling Methods Deployed per Waterbody, 2014

	Survey Type				Sampling Method					
Site	Fish Habitat	Photos	Surface Water Quality	Road Crossing Survey	Trap Net	Gill Net	Backpack Electro-fishing	Minnow Trap	Kick Sample	Angling
Stream Ac4	✓	✓	✓	✓	-	-	✓	-	✓	-
Stream Ac35	✓	✓	✓	✓	-	-	✓	-	✓	-
Stream B0	✓	✓	✓	✓	✓	-	✓	✓	✓	-
Stream B1	✓	✓	✓	-	✓	-	✓	✓	✓	-
Stream B2	✓	✓	-	-	-	-	✓	-	✓	-
Stream B3	✓	✓	✓	-	-	-	✓	-	✓	-
Stream B4	✓	✓	✓	-	-	-	✓	-	✓	-
Stream B15	✓	✓	-	-	-	-	✓	-	✓	-
Stream B26	-	✓	-	✓	-	-	-	-	-	-
Lake Ac4	✓	✓	-	-	-	-	✓	-	-	-
Lake Ac5	✓	✓	-	-	-	-	-	-	-	-
Lake Ac6	✓	✓	-	-	-	-	-	-	-	-
Lake Ac7	✓	✓	-	-	-	-	-	-	-	-
Lake Ac8	✓	✓	-	-	-	-	-	-	-	-
Lake Ac9	✓	✓	-	-	-	-	-	-	-	-
Lake Ac10	✓	✓	-	-	-	-	-	-	-	-
Lake Ac35	✓	✓	✓	-	-	✓	✓	✓	-	-
Lake Ac36	✓	✓	✓	-	-	✓	-	✓	-	-
Lake B0	-	✓	-	-	-	-	✓	✓	-	-
Lake B1 (Christine)	-	✓	-	-	-	-	✓	✓	-	-
Lake B12	✓	✓	-	-	-	-	-	-	-	-
Lake B25	✓	✓	-	-	-	-	-	-	-	-
Lake B26	✓	✓	-	-	-	-	-	-	-	-
Lake C17	✓	✓	-	-	-	-	-	-	-	-
Lac du Sauvage	-	✓	✓	-	-	✓	✓	✓	-	✓
Ursula Lake	-	✓	✓	-	-	✓	-	-	-	✓

✓= sampled; - = not sampled.

2.1.3.1 Streams

The entire length of streams Ac4, Ac35, B0, B2, B3, B4, and B15, were surveyed for spring conditions between June 11 and June 15, 2014, and streams Ac35, B0, and B1(Christine) were surveyed to document summer conditions from August 21 to August 26, 2014 (Map 2.1-1A). The length of stream that was surveyed was also tracked using the odometer function on a handheld GPS unit.

Potential barriers to fish movements were noted (e.g., boulder gardens, cascades) and marked in Global Positioning System (GPS). Potential barriers were described as potential impediments to fish passage during periods of high flow, such as an average or above-average spring freshet; in other words, the potential barriers may represent impediments for fish travel or only seasonal barriers during periods of low-flow. Permanent or confirmed barriers were also noted (e.g., waterfall), if present.

Information on stream flows were collected by the hydrology team at Stream Ac35 and Stream B0; related data are presented within the 2014 Supplemental Hydrology Baseline Report (Golder 2015b).

2.1.3.2 Habitat Type Characterization

Stream characteristics were considered at each surveyed site and involved measurements of mean bankfull channel and wetted width (m) and average depth (m). Habitat type identification followed a modified classification by Hawkins et al. (1993):

- **cascade –** shallow turbulent water that may be passable to fish at high flows; usually less than 0.5 m deep; may be associated with a chute or set of rapids;
- **riffle –** moderately high velocity water (0.5 to 1.0 metres per second [m/s]); surface broken due to submerged and/or exposed bed material; coarse substrate; usually less than 0.5 m deep;
- **run –** generally deep, typically slow flowing water (0.05 to 1.0 m/s); coarse substrate; irregular, rarely broken surface; deeper water has more in-stream cover and higher class rank (Classes 1 to 3);
- **pool –** a discrete section of increased depth and lower water velocities (0.05 to 0.3 m/s); substrate is variable; deeper water has more in-stream cover and higher class rank (Classes 1 to 3);
- **flat –** section characterized by low gradient, smooth water surface, reduced velocity relative to run habitats and differentiated from pool habitat by high channel uniformity; and,
- **boulder garden** – dominating occurrence of large boulders providing instream cover; in association with an overall channel unit such as riffle or run.

Other habitat variables involved standard measurements of cover for fish (e.g., instream vegetation, undercut banks, boulder garden), bank morphology, channel type (e.g., single, double, braided, dispersed), and the presence of movement barriers. Substrates were measured using a modified Wentworth scale:

- bedrock;
- boulder = greater than 256 millimetre (mm) diameter;
- cobble = 64 to 256 mm;

- gravel = 2 to 64 mm; and,
- fines = less than 2 mm.

2.1.3.3 Stream Crossings

Habitat assessments of sections of streams at proposed road crossings were performed at transects on streams Ac4, Ac35 (June 16, 2014), and Stream B0 (June 18, 2014). Summer road crossing assessments were performed on Streams Ac35 (August 26, 2014), B0 (August 25, 2014), and B26 (August 27, 2014). General characteristics of the watercourse were visually observed to determine the pattern, confinement, and channel form of each watercourse as well as the flow stage (low flow, moderate flow, or high flow) at the time of the assessment. Physical channel and bank measurements were recorded at one transect location as well as the bank composition, stability, and slope of each bank. The composition and density of the riparian vegetation on each bank for 50 m upstream and downstream of the transect location was documented.

2.1.3.4 Lakes

Detailed habitat surveys were performed at Lake Ac4, Lake Ac5, Lake Ac6, Lake Ac7, Lake Ac8, Lake Ac9, Lake Ac10, Lake Ac35, Lake Ac36, Lake B12, Lake B25, Lake B26, and Lake C17 (Map 2.1-1A). The detailed surveys provided descriptions of shoreline substrate, shoreline vegetation type, shoreline stability, littoral substrate, submerged vegetation, and maximum depth. At Lakes Ac35 and Ac36, representative habitat types were evaluated from a boat travelling approximately 10 metres (m) from shore where substrate composition, riparian area, and habitat type were recorded and photographed. For smaller waterbodies, such as lakes Ac4, Ac5, Ac6, Ac7, Ac8, Ac9, Ac10, B12, B25, B26, and C17, habitat and depth were confirmed by walking the shoreline and wading towards the centre of each lake.

2.1.3.5 In Situ Water Quality

In situ water quality parameters (temperature, pH, conductivity, and dissolved oxygen) were measured during the habitat surveys of streams Ac4, Ac 35, B1, B3, and B4 (Map 2.1-1A). In situ water quality parameters were also measured at the locations of the two-way traps in streams B0 and B1.

Water temperature was measured daily at the two-way traps because water temperature is an important cue for Arctic Grayling migrations and spawning. Migrations for spawning occur when water temperature reaches 4 to 9ºC and spawning can occur at temperatures with daily means of 6 to 10ºC (Stewart et al. 2007). During the summer program, Onset Hobo® water temperature data loggers were also used to record temperature every hour at the two-way traps in streams B0 and B1.

Profiles of in situ water quality parameters were measured in lakes Ac36 and Ac36 using an YSI Pro Plus multi-parameter meter with a 30-m cable. Water quality profiles were taken at the deepest location and in conjunction with gill netting (August 22 and 23, 2014) (Map 2.1-1A). Parameters measured were temperature (degrees Celsius [°C]), pH, conductivity (microSiemens per centimetre [µS/cm]), and dissolved oxygen (milligrams per litre [mg/L]). Water quality parameters were measured at the surface and at subsequent 0.5 m depth intervals until the bottom was reached (or the cable was fully extended). A Secchi depth reading was performed at same location in each lake.

2.1.4 Fish Sampling

The focus of the spring program (June 10 to 22, 2014) was to assess the presence of spawning Arctic Grayling and other fish species in streams Ac4, Ac35, B0, B1, B2, B3, B4, and B15. The focus of the summer program (August 19 to 28, 2014) was to characterize late summer use of fish in streams Ac35, B0, and B1 and to collect baseline information for summer conditions for lakes Ac4, Ac5, Ac6, Ac7, Ac8, Ac9, Ac10, Ac35, Ac36, B12, B25, B26, and C17.

Also during the summer program, a second field crew collected information on fish relative abundance and collected samples for tissue chemistry of Lake Trout and Lake Whitefish in Lac du Sauvage (emphasizing waters near the proposed diked area) and Ursula Lake. Fish tissue chemistry results are presented in the 2014 Fish Tissue Chemistry Memorandum (Golder 2015a).

Two-Way Net Traps

Two, two-way net traps (i.e., fyke and hoop styles) were installed to capture fish moving in upstream and downstream directions on streams B0 and B1. During the spring field program, the traps were installed on June 11, 2014, and monitored twice daily for 10 days. The traps were re-installed on August 19, 2014 and monitored daily for six days (hoop trap) and seven days (fyke trap) for the summer program. The traps were installed at the same locations in the summer as the spring program.

The hoop-style trap was installed near the outlet of Lake B1 (Christine Lake) (Map 2.1-1A, Photo 2.1-1) in Stream B1. The dimension of the hoop-style trap was 75 cm high, 4.8 m long and made with 12 mm (stretched) nylon weave mesh. The two-way hoop trap was created by separating two of the hoop traps with a 3 m long lead. The trap was installed between two T-bars and set diagonally in Stream B1. Leads were staked to shore to direct fish into either the upstream or downstream side of the trap. The water depth in the vicinity of the hoop-style trap was approximately 38 to 45 cm and substrate consisted of cobble and boulder, and silt.

The fyke-style trap was installed in Stream B0 just downstream of Lake B0 (Map 2.1-1A, Photo 2.1-2). The dimension of the fyke trap frame was 1 m square, 2.5 m long, and made with 12 mm (stretched mesh) nylon weave mesh. The two-way fyke trap was created by installing two fyke traps side-by-side, in opposing directions. Each trap was installed with two T-bars and zip-tied together. The traps were set perpendicular to Stream B0 and leads were tied to the bank to direct fish into either the upstream or downstream sides of the trap. The water depth was approximately 45 cm deep and substrate near the fyke-style trap was primarily silt.

Photo 2.1-1 Two-Way Net Trap Installed on Stream B1 Near the Christine Lake Outlet (12W, 0539920E, 7163819N), August 19, 2014

Photo 2.1-2 Two-Way Net Trap Installed on Stream B0 Near the Lake B0 Outlet (12W, 0540831E, 7163801), August 20, 2014

Kick Sampling

Kick sampling for eggs (as per methods in MacPherson et al. 2012) was performed on streams Ac4, Ac35, B0, B1, B2, B3, B4, and B15 to identify Arctic Grayling eggs present in substrates (Map 2.1-1A). Habitats identified as having shallow, riffle-run transitions and gravel-cobble substrates were sampled as likely spawning locations. Sampling involved the use a D-net placed downstream of 1 square metre (m^2) sampling plots that were disturbed for 1 minute. This process was performed at three to nine locations within each riffle-run transition area.

Minnow Traps

Gee-type minnow traps were used to confirm species presence and describe small fish populations in selected waterbodies. Typically, sets of three traps were baited with dry cat food and deployed. In the spring, Gee-type minnow traps were used in streams B0 and B1, as well as lakes Ac35, Ac36, B0, B1, and Lac du Sauvage (Map 2.1-1A). Minnow traps were set for 3 to 24 hours at these locations. In the summer, Gee-type minnow traps were used in Stream B1 and lakes B0, B1, Ac35, Ac36, and Lac du Sauvage (Map 2.1-1B). Minnow traps were set for 21 to 27 hours at these locations during the summer program.

Backpack Electrofishing

A Smith-Root Type-12 backpack electrofisher was also used to sample fish in streams Ac4, Ac35, B0, B1, B2, B3, B4, B15, and the shorelines of lakes B0, B1, Ac4, and Ac35, and Lac du Sauvage (Map 2.1-1A, Map 2.1-1B). The electrofisher was typically set between 900 and 1,000 Volts, 60 to 90 Hertz frequency, and a 15% duty cycle. The field crew fished sections of streams and lakeshores where suitable fish habitat was observed. The field crew fished multiple reaches that ranged 40 to 500 m in length depending on access and habitat types. The electrofisher sampling times in lakes ranged from 556 to 1,553 seconds per site. For streams, the sampling times ranged from 29 to 332 seconds.

Gill-Net Sets

Short duration (1 to 3 hour) multi-mesh gill nets were set in lakes Ac35 and Ac36, Lac du Sauvage, and Ursula Lake (Map 2.1-1A, Map 2.1-1B, Map 2.1-1C). Gill nets were standard Fall Walleye Index Nets (FWIN), consisting of eight panels of monofilament mesh that range from 25 to 152 mm (stretched measure). The nets are 61 m long by 1.8 m high with a total area of 110 m^2. Gill nets were equipped with a braided float line and a lead line. Anchors attached to the lead line secured gill net position on the bottom of the lake. Buoys were attached to the float line to mark the net location.

Angling

At Lac du Sauvage and Ursula Lake, angling was used to supplement the gill net sample. Fish were angled by casting from a boat, often in close proximity of the location of a gill net set (Map 2.1-1B, Map 2.1-1C). Spoons and plugs (e.g., five of diamonds, flat fish) and soft lures (e.g., jig head and rubber tail) were used.

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2.1.5 Life History Data Collection

All captured fish were identified using an appropriate key, enumerated, and sampled for length (mm) and weight (g). For non-lethal samples, a species appropriate ageing structure (e.g., scale or fin ray) was collected. If the fish was sacrificed or was or an incidental mortality, gender, life stage, state-of-maturity was confirmed, and a bony aging structure was collected (i.e., otolith). Tissue samples were collected from sacrificed fish from Lac du Sauvage and Ursula Lake.

Arctic Grayling were further classified into young-of-year (YOY) and yearling categories for the presentation of results based on life history data collected during the 2014 spring and summer programs. Based on a preliminary examination of size frequency distributions, the size thresholds for Arctic Grayling YOY were determined to be less than 100 mm in length for fish captured in August, and yearlings to be 100-150 mm in length.

The number of ageing structures that were collected and analyzed in the laboratory are presented in Table 2.1-3. Multiple structures were collected for most fish species. For example, a fin ray, and scales were collected from 100 Arctic Grayling (Table 2.1-3).

Table 2.1-3 Ageing Structures Submitted for Ageing Individual Fish, 2014

Species	Number of Individuals per Combination of Ageing Structures Analyzed					
	OT, FR, SC	OT, SC	OT	FR, SC	FR	SC
Arctic Grayling	2	2	-	100	100	127
Lake Trout	-	-	21	1	10	1
Lake Whitefish	-	-	-	-	-	20

OT = otolith; FR = fin ray; SC = scale; - = structure not collected for ageing analysis.

2.1.6 Data Analysis

Data collected during the 2014 field program were entered into a standardized excel spreadsheet for storing and summarizing catch and habitat data. Quality Assurance / Quality Control (QA/QC) procedures were conducted to minimize errors during the data entry process.

Relative abundance of fish was typically calculated in terms of catch-per-unit-effort (CPUE) based on the number of captured (and observed) fish per unit of effort that was dependent on the sampling method. The units of effort included:

- equivalent to 100 m^2 of net panel set for 1-hour duration (gill nets);
- seconds of effective sampling time (backpack electrofishing);
- hours of trap deployment between checks (fyke and hoop nets);
- 24 hours or 1 day of trap deployment (minnow traps); and,
- rod-hours (angling).

To better understand annual variance in the fish catch, comparisons to 2013 CPUE results were provided for electrofishing efforts on streams B1 and B15, Lake B1, and Lac du Sauvage. Gill net CPUEs for Lac du Sauvage were also compared for 2013 and 2014. For more information on 2013 results, see the Fish and Fish Habitat Baseline (Annex XIV of the DAR).

For life history data, scatterplots of age-length and weight-length were used as a QA/QC measure prior to reporting results. Individual data were used to develop age-length scatterplots (Arctic Grayling and Lake Trout) and length-frequency distributions (Arctic Grayling, Lake Trout, and Lake Whitefish) for better understanding of population structure. Due to small sample sizes, individual data from Burbot, Lake Chub, Northern Pike, Round Whitefish, and Slimy Sculpin were used for brief descriptions of the sample.

2.2 Results

2.2.1 Stream and Lake Habitat

2.2.1.1 Streams

A summary of fish habitat for small streams surveyed in 2014 is provided in Table 2.2-1. Photographs of the study streams are provided in Appendix A, with representative photographs of selected streams below. Detailed habitat maps for streams Ac4, Ac35, B0, and B1 are presented in Appendix B.

All streams with the exception of Stream B1 (Christine) were assessed in the spring, and Stream Ac35 and Stream B0 were assessed in both spring and summer. Large sections of Stream Ac35 were dry or had minimal flow during the summer habitat assessment, and Stream Ac4 was assumed dry by the time of the summer assessment given the marginal flow conditions observed earlier during the spring. Stream Ac4 was also visually confirmed as being dry in August during a fly-over of the study area.

Barriers or impediments to fish passage were identified on streams Ac4, Ac35, and B1. The barriers were potential barriers to fish passage (e.g., boulder garden habitats with dispersed flows, cascades), likely passable during periods of high flow, such as an above-average spring freshet; in other words, the potential barriers may represent impediments for fish travel throughout the season or may represent only seasonal barriers, blocking fish passage during periods of low-flow.

In general, the dominant substrate type was boulder and the sub-dominant substrate was clay/silt. The majority of instream cover was provided by boulder substrate and emergent vegetation provided the next highest amount of instream cover. The mean maximum water depth across all habitat units that were assessed ranged from 0.24 m to 0.61 m and the most commonly occurring habitat unit was run habitat (Table 2.2-1).

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2.2.1.1.1 Ac4 Sub-Basin

Stream Ac4

A spring habitat assessment of Stream Ac4 was completed on June 11, 2014, along 427 m of the watercourse as it flows from Lake Ac4 to Lac du Sauvage. The watercourse had a bankfull width ranging from 5.0 to 0.4 m, and a wetted width of 3.5 to 0.4 m, with a maximum water depth of 0.5 m. Shallow run habitat was dominant (63 percent [%]) throughout Stream Ac4, with secondary shallow flat habitat (37%) present midway through the assessed area as the watercourse opened into a relatively undefined channel for approximately 107 m. Stream Ac4 returned to shallow flat and run habitat for the remainder of the assessed stream as it enters into Lac du Sauvage.

Instream cover was provided entirely by emergent aquatic vegetation, with areas of overhanging grasses and woody vegetation providing overhanging cover (Photo 2.2-1). The substrate throughout Stream Ac4 was predominately clay/silt with small patches of organics, cobble, and boulder dispersed throughout (Photo 2.2-2). Potential barriers to upstream fish movement were noted approximately 25 m and 82 m upstream of Lac du Sauvage due to shallow water conditions in two habitat units. A detailed summary of habitat features is located in Table 2.2-1. A fish habitat map of spring habitat conditions in Stream Ac4 is presented in Appendix B (Map B-1).

Table 2.2-1 Fish Habitat Summary for Small Streams, 2014

Stream	Total Stream Length (m)[a]	Stream Length Assessed (m)	Survey Date	Mean Maximum Depth (m)[b]	Habitat Type		Substrate Type (%)[c]							In-Stream Cover (%) [c]					Potential Barrier Present[d]
					Primary or Dominant Habitat Type	Secondary Habitat Type	Organics	Clay/Silt	Sand	Gravel	Cobble	Boulder	Bedrock	Woody Debris	Substrate	Submergent Aquatic Vegetation	Emergent Aquatic Vegetation	Depth / Turbidity	
Ac4	440	427	June 11, 2014	0.33	Run	Flat	11	82	1	0	2	4	0	1	1	0	15	0	Yes
Ac35	1,335	499	June 13, 2014	0.28	Run	Boulder Garden	5	0	19	25	22	29	0	4	5	5	14	0	Yes
		1,313	August 26, 2014	0.24	Flat	Pool	72	5	5	6	4	10	0	1	9	7	25	0	Yes
B0	600	543	June 12, 2014	0.56	Run	Boulder Garden	0	4	1	6	8	78	3	2	40	3	0	33	No
		634	August 25, 2014	0.33	Flat	Riffle	9	52	4	9	6	20	0	4	20	1	27	26	No
B1	720	834	August 25, 2014	0.40	Boulder Garden	Flat	1	3	1	2	2	87	4	1	95	0	1	1	Yes
B2	230	189	June 10, 2014	0.51	Run	Pool	1	51	10	13	6	19	0	7	12	0	14	9	No
B3	245	186	June 10, 2014	0.50	Run	-	4	8	16	62	0	10	0	0	4	16	5	0	No
B4	165	50	June 10, 2014	0.45	Run	-	0	5	0	15	10	70	0	5	70	30	30	10	No
B15	470	485	June 15, 2014	0.61	Run	Flat	16	56	9	4	6	9	0	4	9	7	10	25	No

a) Stream length derived from 1:50,000 CanVec data in a GIS (Geographic Information System);

b) Mean of all maximum depths across habitat units;

c) he substrate type (%) and in-stream cover (%) are averages from all the habitat units that were present in the assessed section of stream and have been weighted by the length of each habitat unit; in-stream cover proportions may exceed 100% because more than one layer of cover may be provided in a stream (e.g., by both substrate and aquatic vegetation); and

d) barriers were identified as potential barriers to fish passage (except during periods of high flow, such as an above-average spring freshet); in other words, the potential barriers may represent impediments for fish travel throughout the season or may represent only seasonal barriers, blocking fish passage during periods of low-flow.

% = percent; m = metre; - = not applicable.

Photo 2.2-1 Upstream View of Overhanging Grasses and Woody Vegetation at Ac4 (12W 540554E 7165026N) June 11, 2014

Photo 2.2-2 Instream View of Substrate in Ac4 Comprised of Silt and Organics (12W 540554E 7165026N), June 11, 2014.

Stream Ac35

Spring and summer habitat assessments of Stream Ac35 were completed on June 13 and August 26, 2014. During the spring assessment, approximately 499 m of the watercourse was assessed near the confluence with Lac du Sauvage. At the upstream end of Stream Ac35 where Lake Ac35 flows into the stream, the bankfull width was 8 m, narrowing to approximately 0.5 m. The wetted width remained relatively uniform throughout the assessed area at 0.7 m, with a maximum water depth of 0.35 m. The watercourse was braided for approximately 35 m midway through the assessed area, eventually confining into a narrow run. Stream discharge measured 0.021 m^3/s on June 28, 2014 (Golder 2015b).

The lower section of Stream Ac35 consisted primarily of shallow run habitat (80%) with some boulder garden (20%) near the confluence with Lac du Sauvage (Photo 2.2-3). Substrate throughout the assessed area contained relatively equal portions of boulder, cobble, and gravel, with small amounts of organics. Instream cover consisted predominately of emergent vegetation with some cover attributed to substrate, submergent vegetation, and small woody debris. Undercut banks, overhead grasses, and woody vegetation provided overhead cover within the upstream portion of the assessed area.

Potential barriers or impediments to upstream fish movements were observed during the spring assessment, including a boulder garden approximately 134 m upstream of the inlet into Lac du Sauvage (Photo 2.2-3). Multiple juvenile Arctic Grayling were observed in run habitats upstream of the boulder garden (Photo 2.2-5) and several were observed at downstream locations where Stream Ac35 flowed into Lac du Sauvage.

The summer assessment evaluated 1,313 m of the stream as the watercourse flows from Lake Ac35 to Lac du Sauvage. The bankfull width ranged from 3.0 to 1.2 m, with a wetted width ranging from 3.0 to 0.3 m, and a maximum water depth of 0.5 m. The watercourse consisted predominately of slow moving flat habitat (86%) with sections of dry channel isolating shallow pools (10%), braiding as it flows into Lac du Sauvage. Substrate was predominately organics with small pockets of clay/silt, gravel, cobble, and boulder. Spawning gravel was present in pockets at the upstream end of the stream (Photo 2.2-4) Instream cover consisted of emergent vegetation, with small amounts of submergent vegetation and boulder. Overhanging riparian grasses and woody vegetation provided overhead cover throughout the assessed area.

Although YOY Arctic Grayling were observed in shallow flat and pool habitat approximately 100 m upstream of Lac du Sauvage, numerous naturally occurring drop structures were present in this downstream section of stream (Photo 2.2-5). In the upstream section of the stream, dry sections of the channel likely act as seasonal barriers to both upstream and downstream movement. Stream discharge measured 0.003 m^3/s on August 5, 2014 (Golder 2015b).

Fish habitat maps of the spring and summer habitat conditions are presented in Appendix B (Maps B-2 and B-3).

Photo 2.2-3 View of Shallow Run Habitat with Boulder Substrate at Stream Ac35 (12W 541712E 7163553N), June 13, 2014

Photo 2.2-4 Potential Spawning Sized Gravel at Upstream End of Stream Ac35 (12W 541732E 7162959N) June 13, 2014

Photo 2.2-5 View of Upstream Fish Barrier at Stream Ac35 (12W 541483E 7164101N), August 26, 2014

2.2.1.1.2 B Sub-Basin

Stream B0

A spring habitat assessment of Stream B0 was completed on June 12, 2014, along 543 m of the watercourse from Lake B0 to Lac du Sauvage. Stream B0 consisted predominately of shallow run habitat (89%), with some boulder garden (11%) midway through the assessed area. The bankfull width varied from 1 m to approximately 9 m at a pool habitat unit, with a wetted width of 1 to 3 m and maximum water depth of 0.7 m. Stream discharge during the spring program ranged from 0.255 m^3/s on June 11 to 0.108 m^3/s on June 20, 2014 (Golder 2015b).

Substrate of Stream B0 consisted primarily of boulder with some gravel, cobble, and bedrock. Substrate (boulders), and depth and turbulence accounted for most instream cover. Overhanging woody vegetation and undercut banks acted as overhead cover primarily within run habitat. No barriers to fish movement were observed during the spring survey.

A summer habitat assessment of Stream B0 was completed on August 25, 2014, along 634 m of the watercourse from Lake B0 to Lac du Sauvage. The bankfull width ranged from 0.9 to 5 m through most of the stream and the wetted width ranged from 0.7 to 5.0 m (Photo 2.2-6). The stream channel width widened to 75 m as the stream braids into Lac du Sauvage. The maximum water depth was 0.5 m. Stream discharge during the summer program ranged from 0.033 m^3/s on August 19 to 0.017 m^3/s on August 25, 2014 (Golder 2015b).

The watercourse consisted of alternating flat (66%) and riffle (21%) habitat, with small sections of shallow pool habitat during the summer assessment. A small pool (5 m wide, less than 0.75 m depth) was located along the right downstream bank approximately midway through the assessed area. The substrate consisted predominately of clay/silt and boulder, with organics, sand, gravel, and cobble dispersed throughout. Instream cover consisted of near equal proportions of substrate (boulder), emergent vegetation, and turbidity. Overhead cover consisted primarily of overhanging woody vegetation, with some sections of the watercourse with cover provided by overhanging vegetation (Photo 2.2-7). No potential barriers to fish movement were observed during the time of the assessment.

Habitat maps of the spring and summer habitat conditions are presented in Appendix B (Maps B-4 and B-5).

Photo 2.2-6 Aerial View of a Representative Section of Stream B0, August 24, 2014

Photo 2.2-7 Downstream View of Overhanging Woody Vegetation and Submergent Vegetation at Stream B0 (12W 541097E 7164000N), August 24, 2014

Stream B1

The summer habitat assessment of Stream B1 was completed on August 25, 2014. The summer assessment evaluated approximately 834 m of Stream B1. The watercourse consisted predominately of boulder garden (75%) and flat habitat (9%), with the remaining habitat split between riffle and pool. The bankfull width ranged from 20 m at the uppermost section, narrowing to approximately 2 m at the downstream end. The wetted width ranged from 10 m at the upstream end to 1.5 m as the stream narrowed. The maximum water depth was approximately 0.7 m. Substrate remained relatively consistent throughout and mainly consisted of boulders with areas of clay, silt, gravel, and cobble. Instream cover was provided by substrate (boulder), with small sections with emergent vegetation (Photo 2.2-9). Potential barriers to fish movement were observed at multiple locations throughout the assessed section, primarily due to large boulders, shallow water depth, and sections of dry channel. Potential barriers were likely only impediments to fish movement given that numerous juvenile Arctic Grayling were observed within upstream riffle habitat, with YOY Arctic Grayling observed within shallow flat and boulder garden habitat. A habitat map of Stream B1 is presented in Appendix B (Map B-6).

Photo 2.2-8 Downstream View of Shallow Run Habitat at Stream B1, 12W 539902E 7163800N, August 25, 2014

Photo 2.2-9 View of Substrate at Stream B1 Comprised of Boulder, Submergent Vegetation, and Cobble, 12W 539902E 7163800N, August 25, 2014

Stream B2

A spring habitat assessment of Stream B2 was completed on June 10, 2014, along 189 m of the watercourse as it flows into Lake B1 (Christine Lake) (Photo 2.2-10). Stream B2 consisted primarily of shallow run habitat (96%), alternating with deeper pool habitat (4%). The bankfull width varied from 0.5 to 6.5 m, with a varying wetted width of 0.5 to 5.0 m. The watercourse was at its widest when flowing through shallow run habitat. The maximum depth of Stream B2 was approximately 1 m within the deeper pool habitat. Substrate was predominately clay/silt with smaller amounts of sand, gravel, cobble, and boulder. Boulder and cobble substrates were observed within shallow run habitat while fine clay/silts, sand, and gravel were located within pool habitat. Instream cover consisted primarily of emergent vegetation and substrate (boulder) with areas of depth and turbidity within pool habitat. Overhead cover consisted of overhanging grasses and woody vegetation, and undercut banks primarily within run habitat (Photo 2.2-11). Areas of gravel substrate at the downstream end as Stream B2 flows into Lake B1 (Christine Lake) have potential to provide Arctic Grayling spawning habitat. No potential barriers to fish movement were observed during the spring assessment of Stream B2.

Photo 2.2-10 Looking Downstream where Stream B2 Flows into Lake B1 (Christine Lake, 12W 538958E 7164085N), June 10, 2014

Photo 2.2-11 Downstream View of Stream B2 Looking at Run Habitat with Boulder and Overhanging Woody Vegetation (12W 538958E 7164085N), June 10, 2014

Stream B3

A spring habitat assessment of Stream B3 was completed on June 10, 2014, along 186 m of the watercourse. The watercourse consisted entirely of shallow run habitat with a maximum depth of 0.5 m. The bankfull width widens from 2.0 to 8.3 m at its downstream end. The wetted width remained relatively constant at 1 m, widening at the downstream end to approximately 3.0 m (Photo 2.2-12). The substrate was primarily gravel (Photo 2.2-13), with areas of organics, clay/silt, and boulder throughout. Submergent vegetation throughout the watercourse provides the majority of instream cover, with small pockets of emergent vegetation and substrate (boulders). Overhead cover consisted predominately of undercut banks along the upstream section of the assessed area. No potential barriers to fish movement were observed during the time of the habitat assessment.

Photo 2.2-12 View of Downstream End of Stream B3 Looking at Run Habitat (12W 538963E 7162900N), June 10, 2014

Photo 2.2-13 View of Substrate at Stream B3 Comprised of Gravel (12W 538963E 7162900N), June 10, 2014

Stream B4

A spring habitat assessment of Stream B4 was completed on June 10, 2014, along 50 m of the watercourse. The watercourse consisted entirely of shallow run habitat with a maximum depth of 0.45 m (Photo 2.2-14). The bankfull and wetted widths were 1.0 m. Substrate within the assessed area consisted primarily of boulder with clay/silt, gravel, and cobble throughout (Photo 2.2-15). Instream cover was predominantly from substrate (boulder) with areas of small woody debris, and submergent and emergent vegetation. Overhead cover consisted primarily of overhanging woody vegetation, with small sections of undercut bank. No potential barriers to fish movement were observed at the time of the habitat assessment.

Photo 2.2-14 Downstream View of a Shallow Run Habitat at Stream B4 (12W 538913E 7162400N), June 10, 2014

Photo 2.2-15 View of Substrate at Stream B4 Comprised of Gravel, Cobble, and Submergent Vegetation (12W 538913E 7162400N), June 10, 2014

Stream B15

A spring habitat assessment of Stream B15 was completed on June 15, 2014, along 485 m of the watercourse as it flows into Lake B1 (Christine Lake). Stream B15 consisted of shallow run habitat (96%) with some flat habitat (3%) and deep pool habitat (1%). The bankfull width ranged from 1.3 m to 15 m as the watercourse flowed into Lake B1 (Christine Lake). The wetted width ranged from 0.4 to 2.5 m, with a maximum depth of 1 m within the pool habitat at the upstream end of the assessed section of stream. Substrate was primarily clay/silt (Photo 2.2-16) with areas of sand, gravel, cobble, and boulder in the upstream sections and organics in the downstream flat habitat as Stream B15 entered Lake B1 (Christine Lake). Instream cover consisted of depth and turbidity with pockets of substrate (boulders), and emergent and submergent vegetation. Overhanging woody vegetation and grasses accounted for the majority of overhead cover, with areas of undercut bank along run habitat. No potential barriers to fish movement were observed during the time of the assessment, with multiple Arctic Grayling observed within run habitat midway through the surveyed area.

Photo 2.2-16 View of Sand and Silt Substrate at Stream B15 (12W 538615E 7163940N), June 15, 2014

2.2.1.2 Small Lakes

A summary of the fish habitat in the small lakes is presented in Table 2.2-2. All photographs of the study lakes are presented in Appendix A. The small lakes surveyed in the summer of 2014 were generally shallow in depth and ranged from 0.3 to 2 m in depth, with the exception of Lake Ac36 that had a maximum depth of 58.7 m and Lake Ac35 that a maximum depth of 12.0 m. The substrate around the shoreline of the lakes was primarily organic or boulder substrate and substrate in the littoral zone of the lakes was predominantly organic material. All of the lakes except Ac35, Ac36, and B12 had emergent vegetation present and only Ac7 and Ac8 showed the presence of submergent vegetation. The dominant riparian vegetation type was either grasses, shrubs, or sedges.

Table 2.2-2 Fish Habitat Summary for Small Lakes, 2014

Lake	Survey Date	Lake Area (ha)	Maximum Depth (m)	Littoral Substrate Type	Shoreline Substrate Type	Emergent Vegetation Present	Submergent Vegetation Present	Dominant Riparian Vegetation Type
Ac4	August 27, 2014	0.11	0.5	Or/Si	Or/Si	Present	Absent	Grass
Ac5	August 27, 2014	0.15	0.5	Or/Si	Or/Si	Present	Absent	Grass/Shrub
Ac6	August 27, 2014	0.24	0.5	Or	Or	Present	Absent	Grass
Ac7	August 20, 2014	0.93	1.0	Or	Or	Present	Present	Sedge/Grass
Ac8	August 20, 2014	0.20	1.0	Or	Or/Bo	Present	Present	Sedge/Grass/Shrub
Ac9	August 20, 2014	0.25	1.0	Or/Si	Or/Si	Present	Absent	Grass
Ac10	August 20, 2014	0.91	2.0	Or	Or/Si/Bo	Present	Absent	Grass/Shrub
Ac35	August 22, 2014	30.88	12.0	Si/Bo	Si/Bo	Absent	Absent	Grass/Shrub
Ac36	August 23, 2014	28.12	58.7	Unknown[(a)]	Sa/Gr/Co/Bo	Absent	Absent	Grass
B12	August 27, 2014	0.32	1.0	Or/Bo	Or/Gr/Co/Bo	Absent	Absent	Grass/Shrub
B25	August 27, 2014	0.58	0.4	Bo	Si/Bo	Present	Absent	Sedge/Grass/Shrub
B26	August 27, 2014	0.06	0.3	Si/Bo	Bo	Present	Absent	Sedge/Grass
C17	August 27, 2014	2.83	0.5	Or/Si	Bo	Present	Absent	Sedge/Grass

a) Not able to assess littoral substrate due to the sharp drop in lake depth.

m = metres; m^2 = square metres; <= less than; Or = organics, Si = Silt, Sa = Sand, Gr = Gravel, Co = Cobble, Bo =Boulder.

2.2.1.2.1 Ac4 Sub-Basin

Lake Ac4 and Ac5

Lakes Ac4 and Ac5 were described as one lake with a narrowing in the middle of the lake during the field visit on August 27, 2014. Shoreline substrate consisted primarily of organics and silt; riparian vegetation consisted predominately of grasses. Littoral zone substrate was composed of organics and silt. The maximum depth of the lakes was approximately 0.5 m (Table 2.2-2). Shoreline area cover was limited to sparse emergent aquatic vegetation and overhanging grasses interspersed with small shrubs. Photos of lakes Ac 4 and Ac5 are presented in Appendix A.

Lake Ac6

Lake Ac6 shoreline substrate was predominately organic material with riparian vegetation consisting entirely of grasses. The littoral zone had a dense organic substrate with a maximum depth of approximately 0.5 m (Table 2.2-2). Organic substrates were the dominant along the west shoreline. Cover along the shoreline was limited to areas of emergent vegetation and overhanging grasses along the south and southwest shore. Photos of Lake Ac6 are presented in Appendix A.

Lake Ac7

Lake Ac7 shoreline consisted of dense organics with a small area of boulder substrate close to the lake outlet on the northeast shore. Riparian vegetation is predominately sedges and grasses, with a small area of shrubs along the northeast shore. The littoral zone substrate consists of organics with a maximum depth of approximately 1 m (Table 2.2-2). Widespread submergent vegetation provided cover throughout the littoral zone. Cover along the shoreline area was composed of overhanging grasses, and submergent and emergent vegetation. Limited cover from shrubs was present along a small section in the northeast corner of the lake. A photo of Lake Ac7 is presented in Appendix A.

Lake Ac8

Lake Ac8 consisted of two bays, a northern and southern bay, connected by a narrow channel. The area of shoreline along the northern section of the north bay and the south section of the south bay was composed predominately of sedges and grass. The inner shoreline between the two bays was composed of sedges, grasses, and shrubs. Shoreline substrate throughout the south bay was primarily organics with areas of boulders along the southern shore. Small patches of boulders were present along the north shore of the south bay. The shoreline of the north bay consisted of an organic substrate with boulders interspersed throughout. The littoral zone of both bays was predominately organics with boulders present within the north bay. The maximum depth of the lake was approximately 1 m (Table 2.2-2), with the deepest areas limited to the south bay. The shoreline substrate, emergent vegetation, and overhanging riparian vegetation provide cover throughout the shoreline of both bays. A small section of submergent vegetation was present in a small cove in the northern shore of the south bay. Photos of Lake Ac8 are presented in Appendix A.

Lake Ac9

Lake Ac9 shoreline consisted entirely of organics and silt, with riparian vegetation consisting of sedges and grasses. The littoral zone had an organic/silt substrate and the lake had a maximum depth of approximately 1 m (Table 2.2-2). Cover was present along the shoreline, and consisted of emergent vegetation and overhanging grass. Photos of Lake Ac9 are presented in Appendix A.

Lake Ac10

Lake Ac10 shoreline consisted of organics and silt with scattered boulders along the north shore. Riparian vegetation consisted of grasses with areas of shrubs primarily along the west and south shores. The littoral zone was composed entirely of organics with a maximum depth of approximately 2 m (Table 2.2-2). Emergent vegetation, overhanging grass, and shrubs provided cover along the shoreline area. Photos of Lake Ac10 are presented in Appendix A.

Lake Ac35

Lake Ac35 shoreline was composed predominately of boulders with patches of silt throughout. Exposed boulder and riparian grasses and shrubs were present along the entire shoreline. The littoral zone was dominated by boulder substrate with silt interspersed. The maximum depth of the lake was approximately 12 m (Table 2.2-2). Cover was provided by large boulders, and overhanging grasses and shrubs present along the entirety of the shoreline. Within the littoral area and centre of the lake, depth and substrate (boulder) act as cover. Photos of Lake Ac35 are presented in Appendix A.

Lake Ac36

Lake Ac36 shoreline varied throughout the lake; substrate was composed primarily of cobble/boulder with areas of sand/boulder and gravel/boulder. A boulder garden was present at the outlet along the east shoreline. Riparian vegetation consisted primarily of grasses with small areas of shrubs. The lake bottom drops rapidly from the shoreline to a maximum depth of 58.7 m (Table 2.2-2). Cover consisted of depth, boulders, and overhanging grasses along the shoreline. Deeper locations visible from the shoreline on the ground and in the helicopter above the lake were primarily of silt substrates. Photos of Lake Ac36 are presented in Appendix A.

2.2.1.2.2 B Sub-Basin (Christine)

Lake B12

Lake B12 shoreline consisted of boulders with cobble and organics interspersed. Areas of organics and gravel were present along the north shore. Two large areas with boulders extended along the entirety of the west and east shore. Riparian vegetation consisted of grasses with shrubs along the north and south shores. The littoral zone is predominantly boulder with organics interspersed throughout. The maximum depth is approximately 1 m (Table 2.2-2). Aquatic vegetation was absent within Lake B12; cover was limited to boulders and overhanging riparian vegetation along the shoreline. Photos of Lake B12 are presented in Appendix A.

Lake B25

Lake B25 shoreline was primarily boulders with areas of silt and gravel. Riparian vegetation was primarily grasses, with the inlet and outlet areas of the lake containing grasses and shrubs. The littoral zone is primarily boulder with silt interspersed throughout. The maximum depth is approximately 0.4 m (Table 2.2-2). Large boulder gardens and extensive emergent and riparian vegetation provided cover at both the southeast inlet and northwest outlet. Photos of Lake B25 are presented in Appendix A.

Lake B26

Lake B26 shoreline was composed predominately of boulders with riparian grasses. Small shrubs were present along the south inlet and north outlet. The littoral zone consisted of boulder and silt and the lake had an approximate maximum depth of 0.3 m (Table 2.2-2). Cover was present mainly along the shoreline and consisted of emergent vegetation and overhanging grasses and shrubs. Photos of Lake B26 are presented in Appendix A.

2.2.1.2.3 C Sub-Basin

Lake C17

Lake C17 shoreline consisted of boulder substrate with sedges, grasses, and shrubs along its entirety. The littoral zone consisted mainly of organics and silt with boulders dispersed throughout. The maximum depth was approximately 0.5 m (Table 2.2-2). Cover was present along the shoreline and consisted of emergent vegetation, and overhanging grasses and shrubs. Photos of Lake C17 are presented in Appendix A.

2.2.1.3 In Situ Water Quality

In situ water quality data for the small lakes and streams sampled are presented in Table 2.2-3. The water quality data for Lac du Sauvage (including profile data for Lac du Sauvage) and Ursula Lake are presented in Appendix C, Surface Water Quality Data.

Table 2.2-3 In Situ Surface Water Quality of Small Streams and Lakes in the Baseline Study Area, 2014

Location	Date	UTM (Zone 12W)		Temp. (°C)	Dissolved Oxygen (mg/L)	pH	Conductivity (µS/cm)
		Easting	Northing				
Stream Ac4	June 16, 2014	540344	7165040	17.0	-	7.02	9.0
Stream Ac35	June 16, 2014	541506	7163896	12.0	-	7.80	12.0
Stream B0	August 20, 2014	540831	7163801	7.8	11.4	6.50	41.0
Stream B1	August 20, 2014	539920	7163819	12.4	11.2	6.90	42.0
Stream B3	June 14, 2014	539011	7163057	7.0	-	7.86	10.5
Stream B4	June 14, 2014	538949	7162490	7.0	-	7.67	14.2
Lake Ac35	August 22, 2014	541667	7162090	11.1	10.3	7.04	15.0
Lake Ac36	August 23, 2014	540778	7162486	11.1	10.7	6.88	17.0

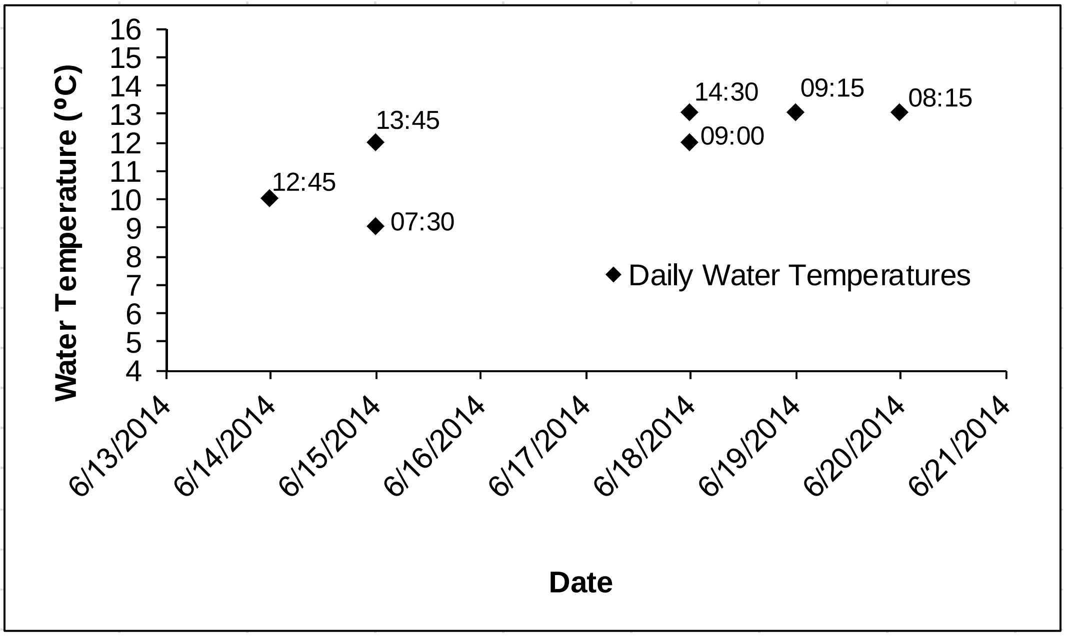
UTM = Universal Transverse Mercator; Temp = Temperature; mg/L = milligrams per litre; µS/cm = microSiemens per centimetre; m = metre; - = parameter not measured; °C = degrees Celsius.

During the spring program, water temperatures were measured at the location of the two-way trap in Stream B0 (Figure 2.2-1) from June 14 to June 20, 2014. The mean water temperature was 11.7ºC (n = 7, SD ± 1.6) and ranged from a low of 9ºC on June 15 at 07:30 to a high of 13ºC on June 18 at 14:30. As the spring sampling program progressed, water temperature increased, resulting in water temperatures of 13ºC on the mornings of June 19 and 20, 2014. The water temperatures measured during the spring program are near to, or exceed the temperatures, when spawning migrations of Arctic Grayling are typically initiated (Stewart et al. 2009).

During the summer program, water temperatures were measured at the locations of the two-way traps in Streams B0 and B1 (Figure 2.2-2). Temperatures were measured in Stream B0 from August 21 to 26, where the mean hourly temperature was 10.9ºC (n = 241, SD ± 1.8), and ranged from 7.0 to 14.0ºC. The daily high water temperature did not increase with time; the daily trend was constant.

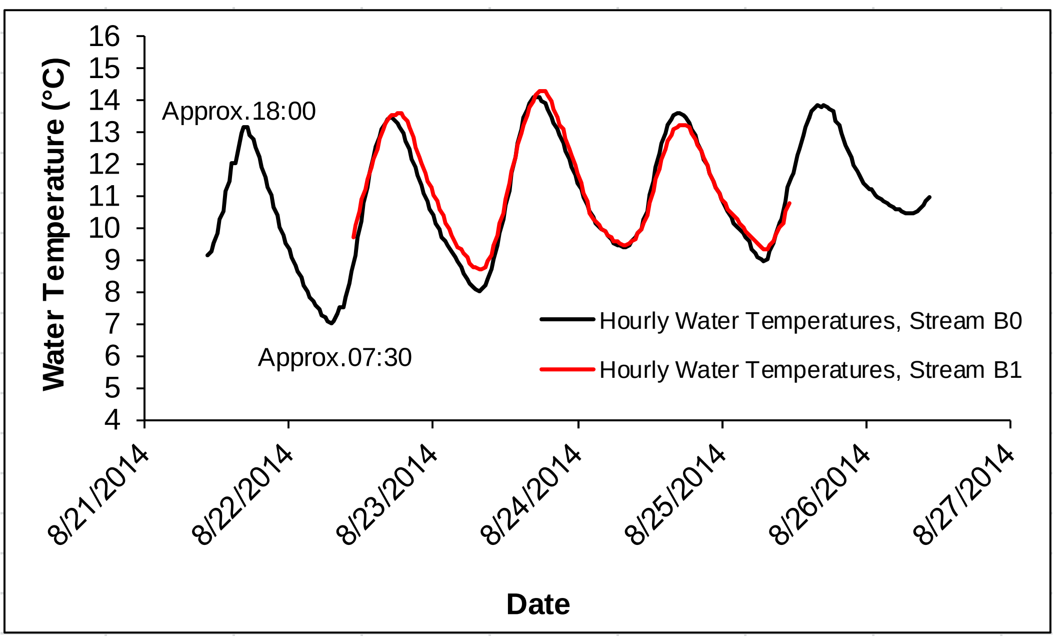
Temperatures were measured from Stream B1 from August 22 to 25, where the mean hourly temperature was 11.2ºC (n = 146, SD ± 1.6) and ranged from 8.7 to 14.3ºC. The daily high water temperature at Stream B1 two-way trap followed the same pattern as the water temperatures at Stream B0 two-way trap (Figure 2.2-2).

Figure 2.2-1 Water Temperature of Stream B0 at the Two-Way Trap during the Spring Program, 2014



Note: Time of day is labelled per sampling event and is represented in 24 hour clock.
°C = degrees Celsius.

Figure 2.2-2 Water Temperature of Streams B0 and B1 at the Two-way Traps during the Summer Program, 2014



°C = degrees Celsius.

DOMINION DIAMOND

2.2.2 Fish Community

A detailed summary of catch data per sampling method is provided in Appendix D. In total, 993 fish were captured in Lac du Sauvage, and in small streams and lakes in sub-basins B and Ac35 during the June (i.e., spring) and August (i.e., summer) 2014 program (Table 2.2-4). The sampling methods included backpack electrofishing, two-way traps (fyke and hoop style), minnow traps, gill nets, and angling. The catch consisted of nine fish species. The majority of the catch was Arctic Grayling (78%), followed by Lake Chub (7%), Lake Trout (5%), Burbot (5%), Lake Whitefish (3%), and Slimy Sculpin (1%). Northern Pike, Ninespine Stickleback, and Round Whitefish contributed less than 1% per species. Fish were captured at all sites sampled for fish except Lake B0 and Stream Ac4.

Of the fish captured, 73% were captured in the two-way traps in Streams B0 and B1. Of the fish captured in the two-way traps (n = 865) Arctic Grayling were the most common (73%), with Lake Chub (7%), Burbot (5%) being less common, and Northern Pike, Lake Trout, Round Whitefish, and Slimy Sculpin contributing less than1% per species. Lake Whitefish and Ninespine Stickleback were not captured in the two-way traps.

Backpack electrofishing captured 7% (n = 69) of the fish. Of the fish captured, Arctic Grayling were the most common (72%) with Slimy Sculpin (9%), Ninespine Stickleback (4%), Burbot (1%), and Lake Trout (1%) being less common. Northern Pike, Lake Chub, Lake Whitefish, and Round Whitefish were not captured by electrofishing. Electrofishing captured fish at all sites that were electrofished except Stream Ac4.

Lake Trout were captured in Lac du Sauvage (n = 44), Lakes Ac35 (n = 1) and Ac36 (n = 3), and Stream B0 (n = 2). Of the Lake Trout captured, angling and gill nets captured 54% and 38%, respectively. Backpack electrofishing and the two-way traps captured three Lake Trout.

Table 2.2-4 Summary of Fish Sampling Effort and Catch during the Spring and Summer Program, 2014

Location	Method	Effort	ARGR	BURB	NRPK	LKCH	LKTR	LKWH	NNST	RNWH	SLSC	Total	Total CPUE	Unit
Spring Program														
Stream Ac4	EF	229	-	-	-	-	-	-	-	-	-	0	0.00	fish/100 s
Stream Ac35	EF	1,468	9	-	-	-	-	-	-	-	-	9	0.61	fish/100 s
Stream B0	EF	802	4	-	-	-	-	-	-	-	-	4	0.50	fish/100 s
Stream B0	FN	240.1	430	-	1	-	1	-	-	-	-	432	1.80	fish/trap-h
Stream B1	EF	439	10	-	-	-	-	-	-	-	-	10	2.28	fish/100 s
Stream B1	HN	208.8	7	-	-	1	-	-	-	1	4	13	0.06	fish/trap-h
Stream B1	MT	4.2	-	-	-	-	-	-	-	-	-	0	0.00	fish/trap-d
Stream B2	EF	198	6	-	-	-	-	-	-	-	-	6	3.03	fish/100 s
Stream B3	EF	113	4	-	-	-	-	-	-	-	1	5	4.42	fish/100 s
Stream B4	EF	162	1	-	-	-	-	-	-	-	-	1	0.62	fish/100 s

Table 2.2-4 Summary of Fish Sampling Effort and Catch during the Spring and Summer Program, 2014

Location	Method	Effort	ARGR	BURB	NRPK	LKCH	LKTR	LKWH	NNST	RNWH	SLSC	Total	Total CPUE	Unit
Stream B15	EF	408	18	-	-	-	-	-	-	-	-	18	4.41	fish/100 s
Lake Ac35	EF	1,001	3	-	-	-	-	-	-	-	3	6	0.60	fish/100 s
Lake B1 (Christine)	EF	556	-	1	-	-	-	-	-	-	2	3	0.54	fish/100 s
Lac du Sauvage	EF	1,553	3	-	-	-	1	-	3	-	-	7	0.45	fish/100 s
Summer Program														
Stream B0	FN	166.5	282	38	-	-	1	-	-	-	-	321	1.93	fish/trap-h
Stream B0	MT	5.3	-	-	-	-	-	-	-	-	-	0	0.00	fish/trap-d
Stream B1	HN	140.6	2	9	-	70	-	-	-	1	3	85	0.60	fish/trap-h
Lake Ac35	GN	1.8	-	-	-	-	1	-	-	-	-	1	0.55	fish/net-unit
Lake Ac35	MT	10.3	-	-	-	-	-	-	-	-	-	0	0.00	fish/trap-d
Lake Ac36	GN	3.1	-	-	-	-	3	-	-	-	-	3	0.98	fish/net-unit
Lake Ac36	MT	6.4	-	-	-	-	-	-	-	-	-	0	0.00	fish/trap-d
Lake B0	MT	3.7	-	-	-	-	-	-	-	-	-	0	0.00	fish/trap-d
Lake B1 (Christine)	MT	4.5	-	-	-	3	-	-	-	-	-	3	0.67	fish/trap-d
Lac du Sauvage	ANG	8.4	-	-	-	-	24	-	-	-	-	24	2.86	fish/rod-h
Lac du Sauvage	GN	49.4	-	-	-	-	13	29	-	-	-	42	0.85	fish/net-unit
Lac du Sauvage	MT	2.0	-	-	-	-	-	-	-	-	-	0	0.00	fish/trap-d
Total			779	48	1	74	46	29	3	2	13	993	-	-

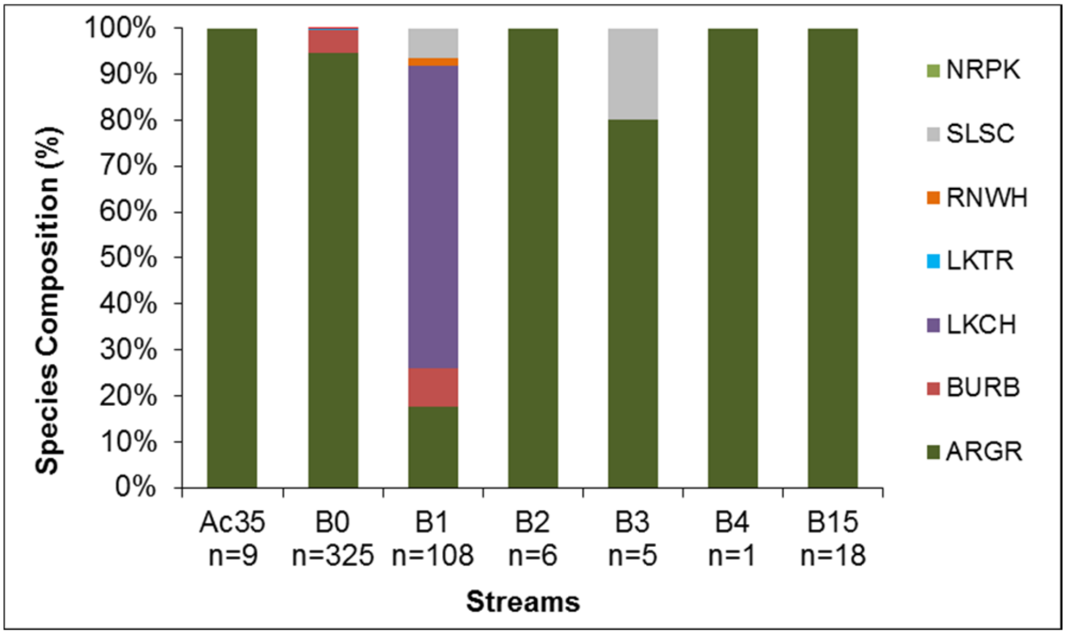
- = none caught; CPUE = catch-per-unit-effort; AN = angling; EF = backpack electrofishing; FN = fyke style trap net; GN = gill net; HN = hoop style trap net; MT = minnow trapping; 1 net-unit = 100 square metres (m^2) of net set for 1 hour; s = seconds; 1 trap-d = 1 minnow trap set for 24 hours; rod-h = angling-h x # rods being used; fish/100 s = #fish/(EF seconds/100); ARGR = Arctic Grayling; BURB = Burbot; NRPK = Northern Pike; NNST = Ninespine Stickleback; LKCH = Lake Chub; LKTR = Lake Trout; LKWH = Lake Whitefish; RNWH = Round Whitefish; SLSC = Slimy Sculpin.

Note that fishing effort and catch for Ursula Lake are presented in Appendix D; results are not discussed in the main body of the 2014 baseline report (8 Lake Trout captured in total).

2.2.2.1 Streams

Arctic Grayling (n = 773) was the most common species captured overall in the streams surveyed during the spring and summer programs. After Arctic Grayling, the next most common species were Lake Chub (n = 71), Burbot (n = 47), and Slimy Sculpin (n = 8). Lake Trout (n = 2), Round Whitefish (n = 2), and Northern Pike (n = 1) were less common. Other than Lake Chub in Stream B1, Arctic Grayling were the most common species in the streams that were surveyed during the spring and summer programs. Fish species composition for the assessed streams is presented in Figure 2.2-3.

Figure 2.2-3 Fish Species Composition in Streams Ac35, B0, B1, B2, B3, B4, and B15, 2014



ARGR = Arctic Grayling; BURB = Burbot; LKCH = Lake Chub; LKTR = Lake Trout; RNWH = Round Whitefish; SLSC = Slimy Sculpin. Fish were captured using during the spring and summer programs using electrofishing, two-way traps, and minnow traps.

Twenty-eight sites along streams B0, B1, B2, B3, B15, and Stream Ac35 were kick sampled for Arctic Grayling eggs. Eggs were recorded at all study streams with the exception of Stream B0 (Appendix D4). Arctic Grayling egg sites were characterized by depths of 0.25 to 0.40 m, gravel and cobble substrates, and by no aquatic vegetation.

2.2.2.1.1 Stream Ac4

During the spring program, Stream Ac4 was backpack electrofished for 229 seconds and no fish were captured in the stream.

2.2.2.1.2 Stream Ac35

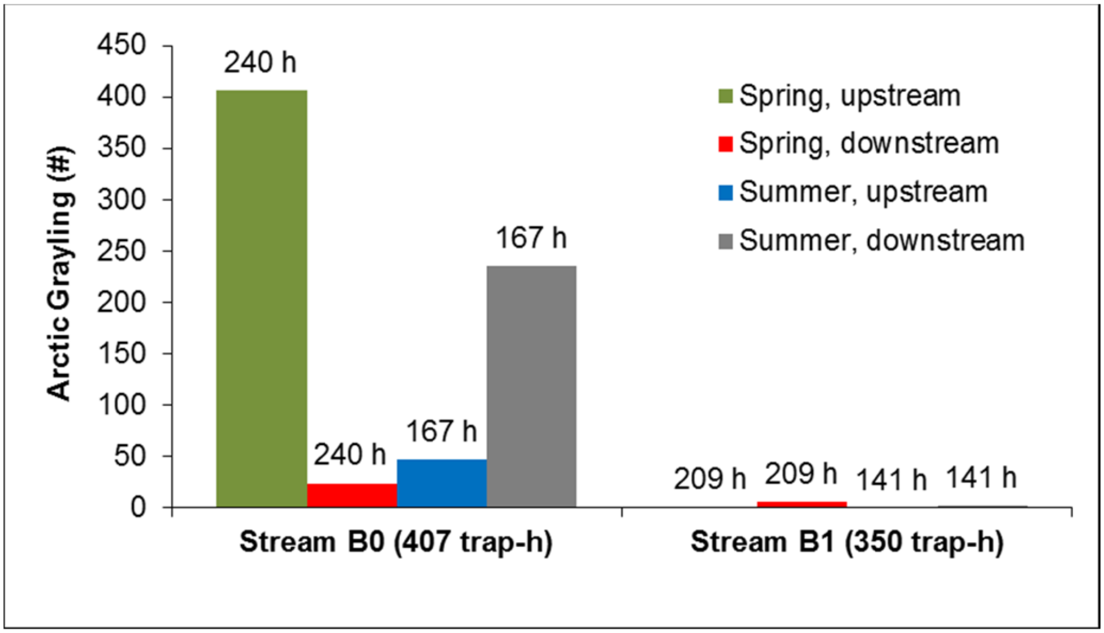
During the spring program, Stream Ac35 was backpack electrofished for 1,468 seconds and nine Arctic Grayling were captured. Arctic Grayling CPUE for Stream Ac35 was 0.619 fish/100 s. Incidental observations of YOY were made at multiple stream locations in Stream Ac35 during habitat mapping for the summer program.

2.2.2.1.3 Streams B0 and B1

Two-way traps were installed on streams B0 and B1 during the spring and summer programs. Overall, 851 fish were captured in 757 hours of effort; most fish were captured in Stream B0 (88% of the total catch). The most numerous fish were Arctic Grayling (n = 721), Lake Chub (n = 71), and Burbot (n = 47).

Catch rates of Arctic Grayling moving upstream and downstream during the spring program were 0.9 fish/trap-h and 0.07 fish/trap-h, respectively. The catch rates of Arctic Grayling moving upstream and downstream during the summer program were 0.15 fish/trap-h and 0.8 fish/trap-h, respectively.

Figure 2.2-4 Movement of Arctic Grayling in Streams B0 and B1, 2014



= number; h = hours.

Stream B0

Spring

Overall, 432 fish were captured in 240 hours of effort (1.8 fish/trap-h) using the two-way trap in Stream B0 during the spring. The most common fish caught was Arctic Grayling (n = 430) with a CPUE of 1.8 fish/trap-h. One Lake Trout and one Northern Pike were also captured. Of the Arctic Grayling captured at Stream B0 during the spring program, approximately 50% were identified as yearlings (based on their length).

Arctic Grayling were captured moving upstream and downstream in the two-way trap (Figure 2.2-4). Of the Arctic Grayling captured, 406 (1.7 fish/trap-h) fish were captured moving upstream and 24 (0.1 fish/trap-h) were captured moving downstream. The Lake Trout and Northern Pike were captured moving upstream.

Overall, the daily CPUE for Arctic Grayling ranged from 0.0 to 5.1 fish/trap-h. The daily CPUE for Arctic Grayling moving upstream ranged from 0.2 to 5.1 fish/trap-h. The daily CPUE for Arctic Grayling moving downstream ranged from 0.0 to 0.7 fish/trap-h.

Stream B0 was electrofished during the spring program. Overall, four Arctic Grayling were captured in 802 seconds of electrofishing (0.5 fish/100 s). No other fish species were captured during electrofishing.

Summer

Overall, 321 fish were captured in 167 hours of effort (1.9 fish/trap-h) using the two-way trap in Stream B0 during the summer program. The most common fish caught was Arctic Grayling (n = 282) followed by Burbot (n = 38) and Lake Trout (n = 1). The CPUE for Arctic Grayling was 1.7 fish/trap-h. Catch rates for Burbot and Lake Trout were 0.2 and 0.01 fish/trap-h, respectively. Of the Arctic Grayling captured at Stream B0 during the summer program, approximately 82% were identified as yearlings and YOY fish (based on their length).

Arctic Grayling were captured moving upstream and downstream in the two-way trap (Figure 2.2-4). Of the Arctic Grayling captured, 47 (0.3 fish/trap-h) were captured moving upstream and 235 (1.4 fish/trap-h) were captured moving downstream. Of the Burbot that were captured, 2 were moving upstream (0.01 fish/trap-h) and 36 were moving downstream (0.2 fish/trap-h). The one Lake Trout was captured moving downstream.

Overall, the daily CPUE for Arctic Grayling ranged from 0.04 to 6.1 fish/trap-h. The daily CPUE for Arctic Grayling moving upstream ranged from 0.04 to 0.7 fish/trap-h. The daily CPUE for Arctic Grayling moving downstream ranged from 0.04 to 6.1 fish/trap-h.

Six minnow traps were deployed in Stream B0 during the summer program. No fish were captured in 5.3 trap-d.

Stream B1

Spring

Overall, 13 fish were captured in 209 hours of effort (0.06 fish/trap-h) using the two-way hoop trap installed in Stream B1 during the spring. The most common fish caught was Arctic Grayling (n = 7) at a CPUE of 0.03 fish/trap-h. Four Slimy Sculpin (0.02 fish/trap-h), one Round Whitefish (0.005 fish/trap-h), and one Lake Chub were also captured.

Fish were captured moving upstream and downstream in the two-way trap. Of the fish captured, 3 fish (0.01 fish/trap-h) were captured moving upstream and 10 fish (0.05 fish/trap-h) were captured moving downstream. Arctic Grayling (n = 1), Lake Chub (n = 1), and Slimy Sculpin (n = 1) were moving upstream and Arctic Grayling (n = 6), Round Whitefish (n = 1), and Slimy Sculpin (n = 3) were moving downstream.

Overall, the daily CPUE for the two-way trap ranged from 0.0 to 0.8 fish/trap-h. The daily CPUE for fish moving upstream ranged from 0.0 to 0.8 fish/trap-h. The daily CPUE for fish moving downstream ranged from 0.0 to 0.3 fish/trap-h.

Stream B1 was electrofished during the spring program. Overall, 10 Arctic Grayling were captured in 439 seconds of electrofishing (2.3 fish/100 s). No other fish species were captured during electrofishing.

Six minnow traps were deployed in Stream B1 during the spring program. No fish were captured in 4.2 trap-d.

Summer

Overall, 85 fish were captured in 140.6 hours of effort (0.6 fish/trap-h) using the two-way trap in Stream B1 during the summer program. The most common fish caught were Lake Chub (n = 70), Burbot (n = 9), Slimy Sculpin (n = 3), Arctic Grayling (n = 2), and Round Whitefish (n = 1). The CPUE for Lake Chub was 0.5 fish/trap-h. The catch rates for the other species were less than 0.1 fish/trap-h.

Fish were captured moving upstream and downstream in the two-way trap. Of the fish captured, 31 fish (0.2 fish/trap-h) were captured moving upstream and 54 fish (0.4 fish/trap-h) were captured moving downstream. Of the fish moving upstream, Lake Chub (n = 23) and Burbot (n = 6) were the most numerous. The most numerous fish moving downstream were Lake Chub (n = 47) and Burbot (n = 3). Two Arctic Grayling and two Slimy Sculpin were captured moving downstream.

Overall, the daily CPUE for the two-way trap ranged from 0.0 to 0.8 fish/trap-h. The daily CPUE for fish moving upstream ranged from 0.1 to 0.3 fish/trap-h. The daily CPUE for fish moving downstream ranged from 0.0 to 0.8 fish/trap-h.

2.2.2.1.4 Other Streams in Sub-Basin B

Stream B2

Stream B2 was electrofished during the spring program. Six Arctic Grayling were captured in 198 seconds of electrofishing (3.0 fish/100 s).

Stream B3

Stream B3 was electrofished during the spring program. Four Arctic Grayling and one Slimy Sculpin were captured in 113 seconds of electrofishing. The catch rates for Arctic Grayling and Slimy Sculpin were 3.3 and 1.1 fish/100 s, respectively.

Stream B4

Stream B4 was electrofished during the spring program. One Arctic Grayling was captured in 162 seconds of electrofishing (0.6 fish/100 s).

Stream B15

Stream B15 was electrofished during the spring program. In total, 18 Arctic Grayling were captured in 408 seconds of electrofishing (4.4 fish/100 s).

2.2.2.2 Lakes

Lakes were sampled for fish using backpack electrofishing, minnow traps, gill nets, and angling. Overall, 89 fish were captured, with Lake Trout (n = 42) and Lake Whitefish (n = 29) representing the majority of the catch. Six Arctic Grayling, five Slimy Sculpin, three Ninespine Stickleback, three Lake Chub, and one Burbot were also captured.

Lake Trout were typically captured from gill netting and angling. Gill netting was also effective for capturing Lake Whitefish. Arctic Grayling, Burbot, Ninespine Stickleback, Slimy Sculpin, and Lake Trout were captured while electrofishing lake shorelines during the spring program. Minnow traps captured Lake Chub in the sampled lakes.

2.2.2.2.1 Lake Ac35

The shoreline of Lake Ac35 was backpack electrofished during the spring program. Overall, three Arctic Grayling and three Slimy Sculpin were captured in 1,001 seconds of electrofishing (0.6 fish/100 s).

Ten minnow traps were deployed in Lake Ac35 during the summer program. No fish were captured in 10.3 trap-d.

One gill net was set in Lake Ac35 during the summer program. The gill net was soaked for 1.7 hours. One Lake Trout was captured (0.55 fish/net-unit).

2.2.2.2.2 Lake Ac36

Six minnow traps were deployed in Lake Ac35 during the summer program. No fish were captured in 6.4 trap-d.

One gill net was set in Lake Ac36 during the summer program. The gill net was soaked for 2.8 hours. Three Lake Trout were captured (0.98 fish/net-unit).

2.2.2.2.3 Lake B0

Four minnow traps were deployed in Lake B0 during the summer program. No fish were captured in 3.7 trap-d.

2.2.2.2.4 Lake B1 (Christine Lake)

The shoreline of Lake B1 was backpack electrofished during the spring program. Overall, one Burbot and two Slimy Sculpin were captured in 556 seconds of electrofishing (0.5 fish/100 s).

Four minnow traps were deployed in Lake B1 during the summer program. Three Lake Chub were captured in 4.5 trap-d (0.7 fish/trap-d).

2.2.2.2.5 Lac du Sauvage

Backpack electrofishing, minnow traps, gill nets, and angling were used in Lac du Sauvage. Sampling using gill nets and angling focused on the western and southern areas of the lake. The shoreline between streams B0 and Ac35 was sampled with backpack electrofishing.

The shoreline of Lac du Sauvage between streams Ac35 and B0 was backpack electrofished during the spring program. Overall, three Arctic Grayling, one Lake Trout, and three Ninespine Stickleback were captured in 1,553 seconds of electrofishing (0.45 fish/100 s). The catch rates for the Arctic Grayling, Lake Trout, and Ninespine Stickleback, respectively, were 0.19, 0.06, and 0.19 fish/100 s.

Two minnow traps were deployed in Lac du Sauvage during the summer program. No fish were captured in 2.0 trap-d.

Gill nets were used in Lac du Sauvage during the summer program. The gill nets were soaked for short durations, and in total, 27 gill net sets were soaked for 49.4 hours. Overall, 13 Lake Trout and 29 Lake Whitefish were captured. The catch rates for Lake Trout ranged from 0.0 to 0.9 fish/net-unit with an overall catch rate of 0.24 fish/net-unit. The catch rates for Lake Whitefish ranged from 0.0 to 2.0 fish/net-unit with an overall catch rate of 0.5 fish/net-unit.

Angling was used in Lac du Sauvage and targeted Lake Trout. In total, 24 Lake Trout were caught in 8.4 rod-h. The trip catch rates ranged from 0.9 to 12.0 fish/rod-h, and the overall catch rate was 2.8 fish/rod-h.

2.2.2.3 Temporal Trends in Abundance

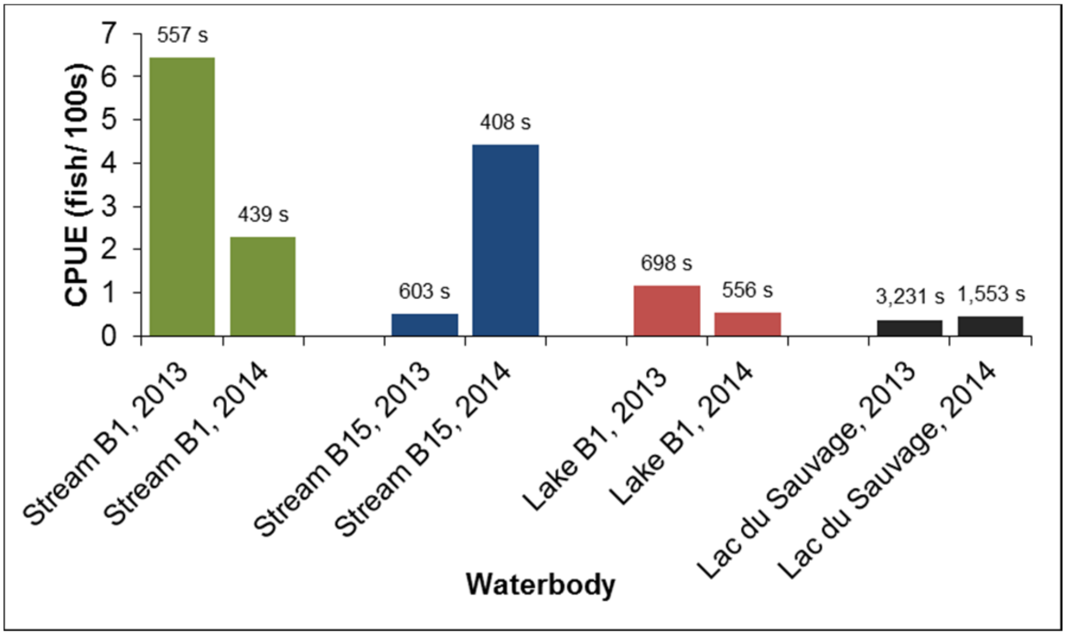
Electrofishing was used to capture fish in streams B1 and B15, and along the shorelines of Lake B1 and Lac du Sauvage during the 2013 and 2014 field programs. The CPUE (fish/100 s) for Stream B1 was higher in 2013 than 2014; whereas the CPUE from Stream B15 was lower in 2013 versus 2014 (Figure 2.2-5).

The differences in the catch rates from one year to the next may be due to natural variations in population dynamics or to differences in sampling. For Stream B1 and B15, seasonal differences related to the timing of sampling may explain the annual variability. Streams B1 and B15 were sampled during late August to early September in 2013, whereas in 2014, Streams B1 and B15 were sampled during mid-June.

The electrofishing CPUEs for Lake B1 and Lac du Sauvage were lower than those recorded for the streams (likely because of differences in species detectability between lake and stream habitats) but were relatively consistent between years (Figure 2.2-5).

Gill net catch rates from Lac du Sauvage were variable between years. The 2013 CPUE was 1.3 fish/net-unit, almost 1.6 times higher than the catch rate from the 2014 program (0.8 fish/net-unit). The difference in the gill netting catch rates are likely due to the difference in gill net locations between the 2013 and 2014 program and the underlying distribution of fish populations in Lac du Sauvage. During the 2013 program, gill net locations were in the western section of Lac du Sauvage near the B and C sub-basins, whereas the gill net locations during the 2014 program were further south than the 2013 locations and closer to the Narrows.

Figure 2.2-5 Relative Abundance of Fish Captured by Electrofishing in Streams B1 and B15, Lake B1 (Christine), and Lac du Sauvage, 2013 and 2014



CPUE = catch per unit effort; fish/100 s = #fish/(EF seconds/100).

2.2.3 Species Life History

In total, 1,001 fish were captured in streams and lakes during the 2014 program. Length, weights, and ages of individual fish are summarized below per species. Detailed life history information are presented in tables in Appendix E, Fish Life History Data. Fish life history data for Ursula Lake are not reported herein, but are included in Appendix E (8 Lake Trout captured in total).

2.2.3.1 Arctic Grayling

Most Arctic Grayling were captured in streams B0 and B1 (Table 2.2-4) with fewer fish caught in streams Ac35, B2, B3, B4, B15, and Lake Ac35 and Lac du Sauvage. Arctic Grayling captured in June and August from streams B0 and B1 combined, ranged from 54 to 383 mm in fork length (n = 596, mean = 155 mm, SD ± 68; Figure 2.2-6). Arctic Grayling captured in June ranged from 72 to 383 mm (n = 434, mean = 174 mm) and fish captured in August ranged from 54 to 210 mm (n = 161, mean = 105 mm). The largest Arctic Grayling was captured in June from Stream B0 and had a fork length of 383 mm.

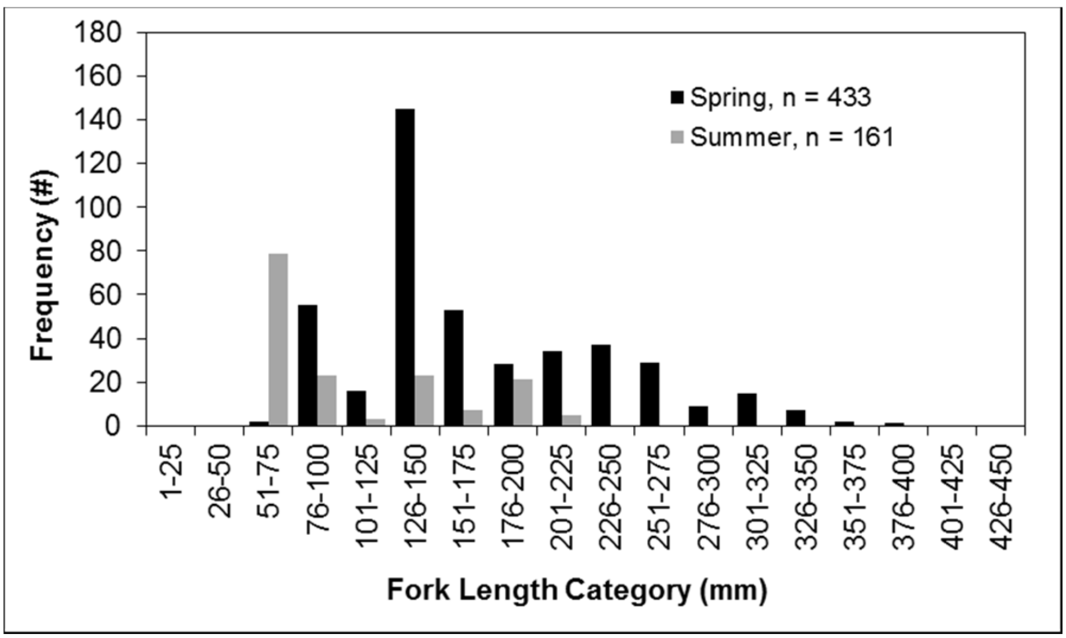
Arctic Grayling captured in Stream B0 ranged from 54 to 383 mm (n = 586, mean = 155 mm; Figure 2.2-7). Arctic Grayling captured during the spring program from Stream B0 ranged in size from 72 to 383 mm (n = 427, mean = 174 mm), and most of the captured Arctic Grayling were moving upstream (94%). The Arctic Grayling captured in Stream B0 during the summer program ranged in size from 54 to 210 (n = 159, mean = 105 mm), and most of these fish were moving downstream (83%).

Arctic Grayling captured in Stream B1 ranged from 77 to 217 mm (n = 9, mean = 154 mm; Figure 2.2-7). Arctic Grayling captured during the spring program from Stream B1 ranged in size from 138 to 217 mm (n = 7, mean = 169 mm). There were two Arctic Grayling captured in Stream B1 during the summer program; their lengths were 77 and 130 mm.

Overall, Arctic Grayling ages ranged from 1 to 7 years (n = 127, mean = 4 y, SD ± 1.2; Figure 2.2-8). Arctic Grayling captured during the spring program ranged from 2 to 7 years (n = 105, mean = 4 y, SD ± 1.0), while the Arctic Grayling captured during the summer program ranged from 1 to 3 years (n = 22, mean = 2 y, SD ± 0.4).

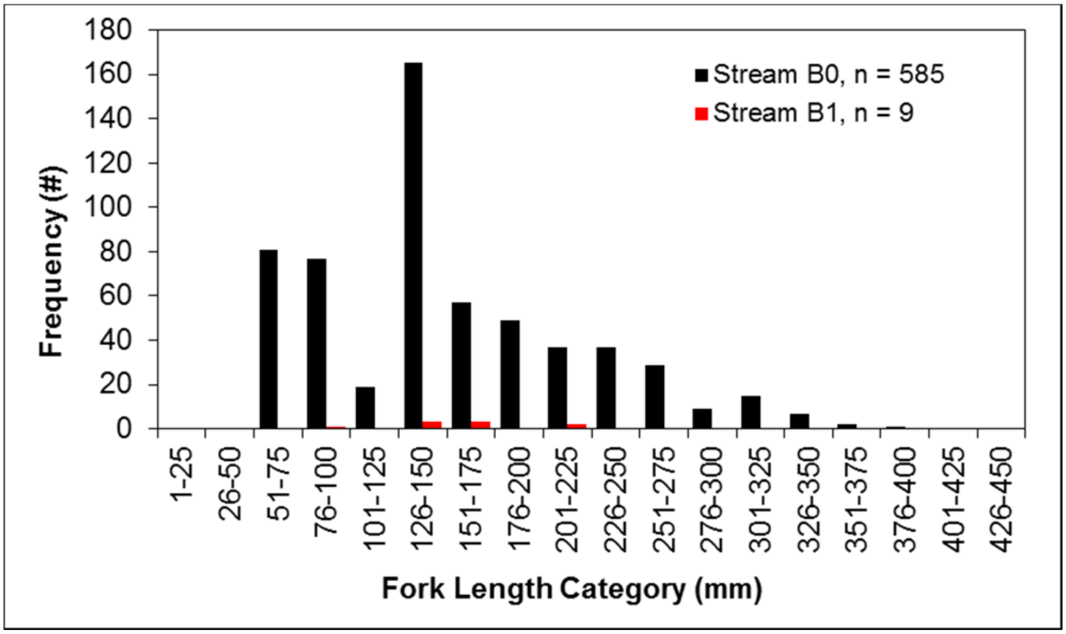
Arctic Grayling captured during the summer program that ranged in length from 54 to 90 mm (n = 102) potentially represent the YOY age class. Arctic Grayling captured in during the spring program that were less than 100 mm (n = 56) potentially represent the yearling age class. Arctic Grayling captured during the spring and summer programs that ranged from 100 to 150 mm represent yearling fish.

Figure 2.2-6 Overall Length-Class Distribution of Arctic Grayling Caught in Streams Surveyed in the B Sub-basin, 2014



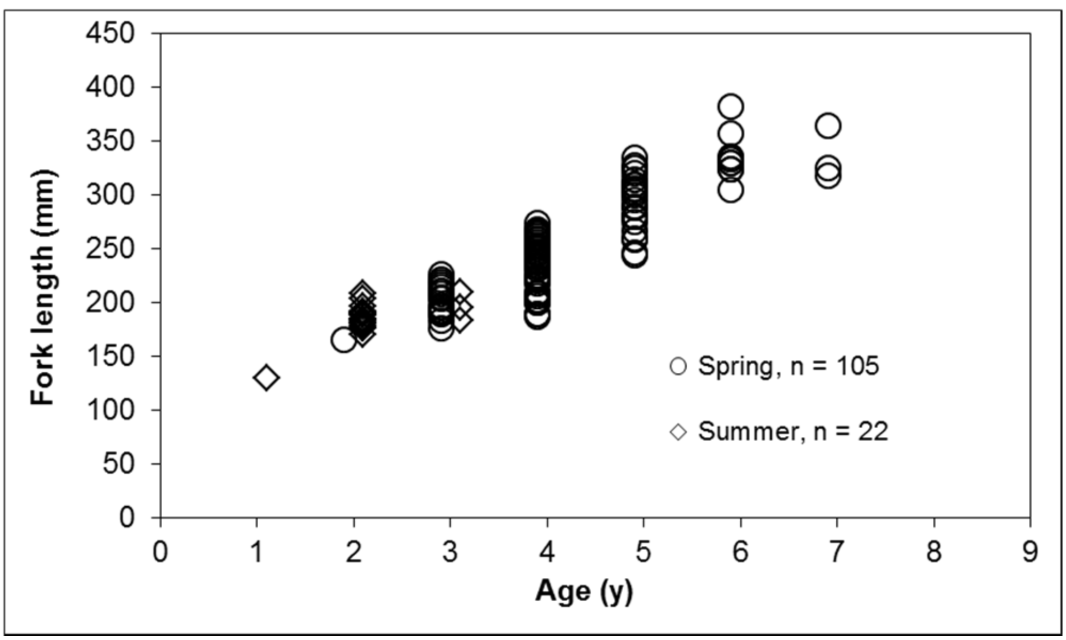
- number; mm = millimetre.

Figure 2.2-7 Overall Length-Class Distribution of Arctic Grayling Caught in Streams B0 and B1, 2014



- number; mm = millimetre.

Figure 2.2-8 Overall Age-Length Relationship for Arctic Grayling Caught in Streams Surveyed in the B Sub-Basin, 2014



mm = millimetre; y = years.

2.2.3.2 Burbot

Burbot were captured in streams B0 and B1, and Lake B1 (Christine). Captured fish ranged from 70 to 490 mm in length (n = 48, mean = 141 mm, SD ± 109). Only one Burbot (395 mm) was captured Lake B1 (Christine) while electrofishing during the spring program. Most fish were captured during the summer program (n = 47) using the two-way traps in streams B1 and B0; overall lengths ranged from 70 to 490 mm (mean = 135 mm, SD ± 104).

Burbot captured in Stream B1 ranged in length from 188 to 490 mm (mean = 321 mm, n = 9); three Burbot were moving downstream and six Burbot were moving upstream during the summer program.

The Burbot captured in Stream B0 ranged in length from 70 to 305 mm (mean = 91 mm, n = 38); two Burbot captured in Stream B0 were moving upstream and 36 Burbot were moving downstream.

2.2.3.3 Lake Chub

During the 2014 program, Lake Chub were captured in Stream B1 and Lake B1 (Christine Lake). Captured fish ranged in length from 21 to 130 mm (n = 74, mean = 38 mm, SD ± 27).

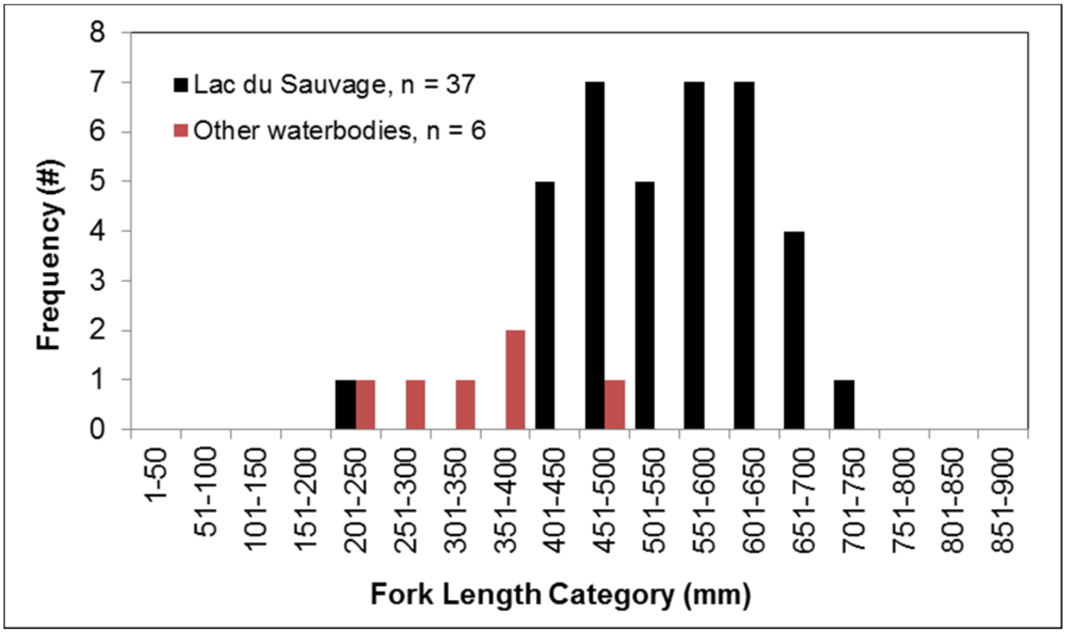
Most Lake Chub were captured in Stream B1 during the summer program (n = 70), 23 were captured moving upstream and 47 were captured moving downstream.

2.2.3.4 Lake Trout

Lake Trout were captured in streams B1 and B0, Lac du Sauvage, and Lakes Ac35 and Ac36. Lake Trout ranged in length from 206 to 731 mm (n = 43, mean = 516 mm, SD ± 125; Figure 2.2-9). The size of fish captured during the 2014 field program in Lac du Sauvage ranged from 206 to 732 mm (n = 37, mean = 545 mm). Twenty-four individuals (65%) of the 2014 sample from Lac du Sauvage were between 401 and 600 mm. Twelve individuals (32%) of the 2014 sample from Lac du Sauvage were between 601-800 mm.

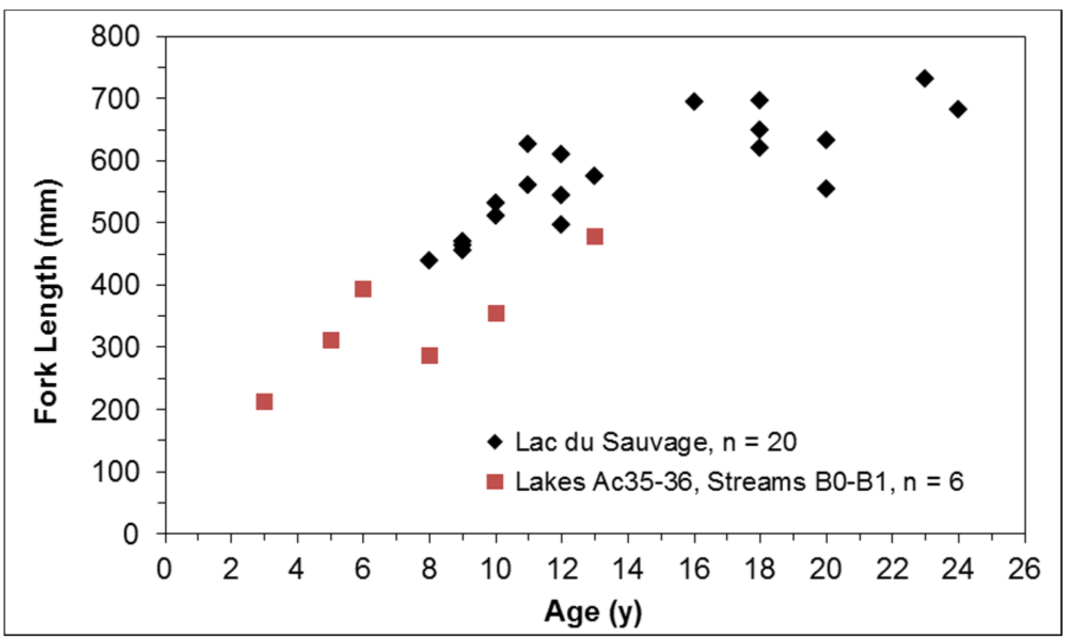
The age of all Lake Trout combined ranged from 3 to 24 years (n = 26, mean = 13 y, SD ± 5; Figure 2.2-10). Lake Trout in Lac du Sauvage ranged from 8 to 24 years (n = 20). The Lake Trout captured in Lakes Ac35 and Ac36 ranged from 5 to 13 years (n = 4). The two Lake Trout caught in Stream B0 were the youngest fish at 3 and 6 years of age of all the lake trout aged during 2014.

Figure 2.2-9 Overall Length-Class Distribution of Lake Trout Caught during the Summer Program, 2014



Note: Other waterbodies include Lakes Ac35 and Ac36, and Streams B0 and B1.
= number; mm = millimetre.

Figure 2.2-10 Overall Age-length relationship of Lake Trout Caught during the Summer Program, 2014

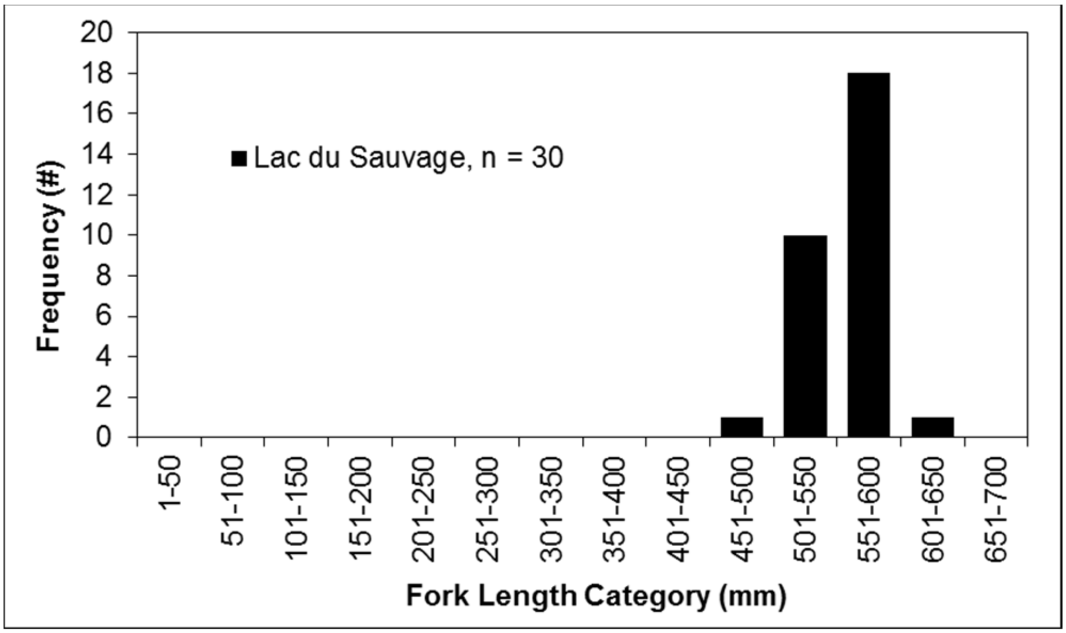


mm = millimetre; y = years.

2.2.3.5 Lake Whitefish

Lake Whitefish were captured in Lac du Sauvage during the 2014 program. Lake Whitefish ranged from 408 to 556 mm in length (n = 30, mean = 507 mm, SD ± 27; Figure 2.2-11). The age of Lake Whitefish ranged from 9 to 15 years (n = 20, mean = 12 y, SD ± 1).

Figure 2.2-11 Length-class Distribution of Lake Whitefish Caught from Lac du Sauvage during the Summer Program, 2014



= number; mm = millimetre.

2.2.3.6 Slimy Sculpin

Slimy Sculpin were captured in the hoop trap in Stream B1 and backpack electrofishing in Stream B3, Lake Ac35, and Lake B1 (Christine) during the 2014 program (n = 13). Measured fish ranged from 23 to 98 mm (n = 8, mean = 59 mm, SD ± 27). Ten Slimy Sculpin were captured during the June program and three were captured during the August program.

During the spring program in Stream B1, Slimy Sculpin were captured moving upstream (n = 1) and downstream (n = 3). During the summer program, Slimy Sculpin were also found moving upstream (n = 1) and downstream (n = 2).

2.2.3.7 Other Species

One Northern Pike and two Round Whitefish were also captured in the two-way traps set in streams B0 and B1. The Northern Pike was captured during the spring program moving upstream in the two-way trap in Stream B0 (325 mm in length). Both Round Whitefish were captured in the two-way trap in Stream B1; one Round Whitefish was captured during the June program (120 mm in length and 2 years old) and the other was captured during the August program (196 mm in length and 3 years old). The Round Whitefish captured during the spring program was moving upstream, and during the summer program, the captured fish was moving upstream.

2.2.4 Stream Crossings

Detailed stream crossing surveys were performed at Stream Ac35 and B0 in the spring and summer of 2014, at Stream Ac4 in the spring, and at Stream B26 in the summer of 2014. Stream Ac4 was not assessed during the summer because of dry conditions observed during spring sampling (and because dry conditions were also observed during a fly-over by helicopter during the summer program). Generally, the bank composition of the streams was primary fines, with riparian vegetation consisting of shrubs and grasses (Table 2.2-5).

Stream Ac4

The spring Stream Ac4 watercourse crossing assessment was completed on June 16, 2014. The section of stream surrounding the proposed watercourse crossing was characterized as an incised, unconfined channel, with an irregular meander pattern. A summary of habitat features is presented in Table 2.2-5. Stream habitat within the right-of-way of the proposed crossing consisted of shallow, slow flowing flat habitat, organic substrate, with a maximum depth of 0.4 m. Bankfull and wetted width were approximately 0.4 m. The banks were approximately 0.5 m in height, consisting entirely of fines. Bank stability was moderate-to-high, due to extensive riparian grass and woody vegetation (Photo 2.2-17). Fish habitat throughout the assessed area of Stream Ac4 and the right-of-way of the proposed crossing was extremely limited due to the low water level resulting in isolated pools and the lack of instream cover. There were no incidental observations of Arctic Grayling at the time of the assessment.

Photo 2.2-17 Looking Downstream from Proposed Road Crossing on Stream Ac4 (12W 540621E 7165040N), June 16, 2014

Table 2.2-5 Fish Habitat Summary for Stream Crossing Surveys, 2014

Stream	Survey Date	Bankfull Width (m)	Wetted Width (m)	Maximum Water Depth (m)	Mean Water Depth (m)	Left D/S Bank Height (m)	Right D/S Bank Height (m)	Bank Composition (%)				Riparian Vegetation (%)						Fish Observed (Yes/No)
												Left Downstream Bank			Right Downstream Bank			
								Fines	Gravel	Cobble	Boulder	Bare	Grass/ Forbs	Shrubs	Bare	Grass/ Forbs	Shrubs	
Ac4	June16, 2014	0.40	0.40	0.45	0.30	0.45	0.35	100	0	0	0	0	50	50	0	50	50	No
Ac35	June16, 2014	0.40	0.40	0.20	0.15	0.20	0.30	100	0	0	0	0	50	50	0	50	50	No
B0[(a)]	June 18, 2014	3.50	3.00	1.05	1.00	1.10	1.10	95	0	0	5	0	20	80	0	20	80	Yes
	August 25, 2014	5.30	4.60	0.80	0.30	0.40	0.30	100	0	0	0	0	30	70	0	40	60	Yes
B26	August 27, 2014	1.30	1.00	0.10	0.10	0.10	0.10	90	0	0	10	0	95	5	0	90	10	No

a) The survey location shifted approximately 50 m to the northeast for the summer (versus spring) to reflect an updated alignment.

% =Percent, m = metre, D/S = downstream.

Stream Ac35

Spring and summer stream crossing surveys for Stream Ac35 were completed on June 16 and August 26, 2014 respectively. A summary of habitat features is presented in Table 2.2-5.

The spring assessment was conducted under high flow conditions, with the assessed section of Stream Ac35 characterized as a neutral, unconfined channel, with an irregular meander pattern. Stream habitat at the right-of-way of the proposed crossing consisted of moderate flowing run habitat, with gravel/cobble and boulder substrate, and a maximum depth of 0.2 m. The banks had moderate-to-high stability, approximately 0.3 m in height, consisting entirely of fines, with extensive riparian grass and woody vegetation. The bankfull and wetted width were approximately 0.4 m. Cover within the area of the proposed crossing consisted predominately of overhanging grass and woody vegetation; instream cover was limited (Photo 2.2-18). There were no incidental observations of fish at the time of the assessment, and it is unlikely that Stream Ac35 is utilized by fish during lower flows due to potential barriers to upstream movement that were observed downstream of the proposed crossing. Approximately 100 m downstream of the proposed crossing, the stream was braided as it flows through a boulder garden, effectively dispersing the water creating a barrier to upstream fish movement.

The summer watercourse crossing assessment was conducted during dry conditions; no water was present during the time of the assessment. Approximately 100 m downstream of the proposed crossing, within a low-laying boulder garden, the channel showed signs of sub-surface flows with sporadic small, shallow pools, but did not have visible signs of flowing water. Small woody vegetation dominated the area surrounding the dry stream channel.

Photo 2.2-18 Looking Upstream at Stream Segment with Low Flow and Silt and Organic Substrate at Proposed Road Crossing Location on Stream Ac35 (12W 541506E 7163896N), August 26, 2014

Stream B0

Spring and summer watercourse crossing assessments for Stream B0 were completed on June 18 and August 25, 2014 respectively. A summary of habitat features is presented in Table 2.2-5.

The spring assessment was conducted under high flow conditions, with the assessed section of Stream B0 characterized as an incised, unconfined channel, with an irregular meander pattern. Stream habitat within the right-of-way of the proposed crossing (12W 540928 E, 7163853 N) consisted of slow-flowing run habitat with fine substrate consisting predominately of gravel with some cobble and boulder. The maximum depth was 1.1 m. Bankfull width was approximately 3.5 m with a wetted width of 3 m. The banks on either side of the proposed crossing were well defined, composed predominately of fines with some boulder. Bank stability was high due to extensive riparian grasses and woody vegetation. Cover consisted of instream boulder and emergent vegetation along the left downstream bank. Adult Arctic Grayling were observed throughout the assessed area.

The summer watercourse crossing assessment was conducted during low-flow conditions in approximately the same area of the spring assessment, although the location shifted approximately 50 m to the northeast to reflect an updated alignment (12W 540939E, 7163906N). The assessed section of Stream B0 was characterized as an irregular, unconfined channel, with a winding pattern. Stream habitat within the right-of-way of the proposed crossing consisted of pool habitat, clay/silt and organic substrate with a maximum depth of 0.8 m. Bankfull width was approximately 5.3 m with a wetted width of 4.6 m. The banks on either side of the proposed crossing were well defined, consisting entirely of fines and were approximately 0.4 m in height. Bank stability was moderate-to-high due to extensive riparian grass and woody vegetation (Photo 2.2-19). Cover consisted of emergent vegetation and depth, with overhanging woody vegetation and grasses. Multiple YOY and juvenile Arctic Grayling were incidentally observed at the time of the assessment, with Arctic Grayling likely utilizing Stream B0 as rearing and migration habitat between Lake B0 and Lac du Sauvage.

Photo 2.2-19 View of Vegetation Cover at Proposed Road Crossing Location on Stream B0 (12W 540939E 7163906N), August 25, 2014

Stream B26

The summer Stream B26 watercourse crossing assessment was completed on August 27, 2014, under low flow conditions. The section of stream surrounding the proposed watercourse crossing was characterized as a braided, unconfined channel with a meandering pattern (Photo 2.2-20). A summary of habitat features is presented in Table 2.2-5. Stream habitat within the right-of-way of the proposed crossing consisted of slow flowing flat habitat, clay/silt and organic substrate, with a maximum depth of 0.1 m. Bankfull width was approximately 1.3 m, with a wetted width of 1.0 m. The banks consisted primarily of fines with some boulder throughout, approximately 0.2 m in height, and were moderately stable. Riparian vegetation was predominantly grasses with some woody shrubs. Fish habitat at the site of the proposed watercourse crossing was limited due to the lack of instream cover (e.g., shallow water depths), and the clay/silt and organic substrate. Cover consisted of sparse emergent vegetation and overhanging grass.

Photo 2.2-20 Looking Downstream at Proposed Road Crossing Location on Stream B26 (12W 539969E 7162275N), August 27, 2014

3 SUMMARY

Standard field investigations collected information on fish populations and habitat at 26 stream and lakes during the open-water season in 2014. At nine streams, fish sampling and habitat information was collected and summarized, and at four of those streams (Ac4, Ac35, B0, and B26), road crossing assessments were completed. Detailed habitat maps of streams that may be directly affected by the Project footprint were also created (streams Ac4, Ac35, B0, and B1). At 7 of the 17 lakes, fish inventory information was collected and summarized.

For Streams Ac4, Ac35, B0, and B1, the dominant substrates were boulder, silt, and organics. Cover was provided by boulders and emergent vegetation. The most common habitat types were run and flat habitats. The maximum water depth across all habitat types during the surveys ranged from 0.24 m to 0.61 m. Potential barriers or impediments to to fish movement were identified in streams Ac4, Ac35, and B1. Of the streams examined, only streams B0 and B1 had flows for maintaining fish passage through spring and summer.

Seven species of fish were recorded in streams B0 and B1: Lake Trout, Arctic Grayling, Northern Pike, Round Whitefish, Burbot, Lake Chub, and Slimy Sculpin. Only one species (Arctic Grayling) was captured in Stream Ac35. No fish were captured in Stream Ac4. Of the 28 locations identified as potential spawning habitat for Arctic Grayling within streams B0, B1, B2, B3, B15, and Ac35, 20 sites were confirmed with eggs collected in all of these streams except Stream B0.

The two-way traps installed on streams B0 and B1 captured 851 fish in 757 hours of effort; most fish were captured in Stream B0 (88% of the total catch). The most numerous fish were Arctic Grayling (n = 721), Lake Chub (n = 71), and Burbot (n = 47). Most of the YOY and juvenile fish captured in the study area were Arctic Grayling captured in Stream B0. Arctic Grayling captured during the spring program from Stream B0 ranged in size from 72 to 383 mm (n = 427, mean = 174 mm), and most of the captured Arctic Grayling were moving upstream (94%). The Arctic Grayling captured in Stream B0 during the summer program ranged in size from 54 to 210 (n = 159, mean = 105 mm), and most of these fish were moving downstream (83%).

The small lakes assessed in the Ac4 and C sub-basins typically ranged in maximum depth from 0.3 m to 2.0 m, and therefore, they would be unlikely to provide habitat for fish year-round. Emergent vegetation was present at most lakes surveyed and submergent vegetation was observed at lakes Ac7 and Ac8. The dominant riparian vegetation types were grasses, sedges, or shrubs. .

In Lac du Sauvage, the catch rates for Lake Trout ranged from 0.0 to 0.9 fish/net-unit based on all short-duration sets combined with an overall catch rate of 0.24 fish/net-unit. The catch rates for Lake Whitefish ranged from 0.0 to 2.0 fish/net-unit based on all short-duration sets combined with an overall catch rate of 0.5 fish/net-unit. The total gill netting CPUE for fish in Lac du Sauvage in 2014 was lower than that recorded in 2013, possibly because of differences in the spatial distribution of gill net sets (and distribution of Lake Trout and Lake Whitefish in the lake).

The size of Lake Trout captured during the 2014 field program in Lac du Sauvage ranged from 206 to 732 mm (n = 37, mean = 545 mm). Lake Whitefish captured in Lac du Sauvage during the 2014 program ranged from 408 to 556 mm in length (n = 30, mean = 507 mm).

DOMINION DIAMOND

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APPENDIX A

PHOTOS

Photos

Photo A-1 Aerial View of Lakes Ac4 and Ac5 Facing Northwest at 12W 540256E 7165040N, August 20, 2014 1
Photo A-2 Lake Ac4 Facing Southeast Looking at Substrate Comprised of Silt, Organics, and Submerged and Emergent Vegetation at 12W 540278E 7165055N, August 27, 2014 1
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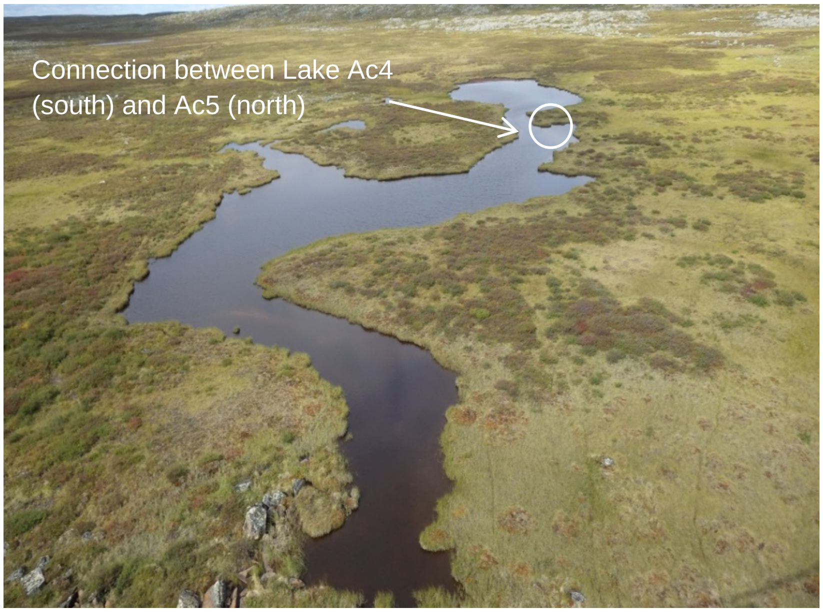

Photo A-2 Lake Ac4 Facing Southeast Looking at Substrate Comprised of Silt, Organics, and Submerged and Emergent Vegetation at 12W 540278E 7165055N, August 27, 2014

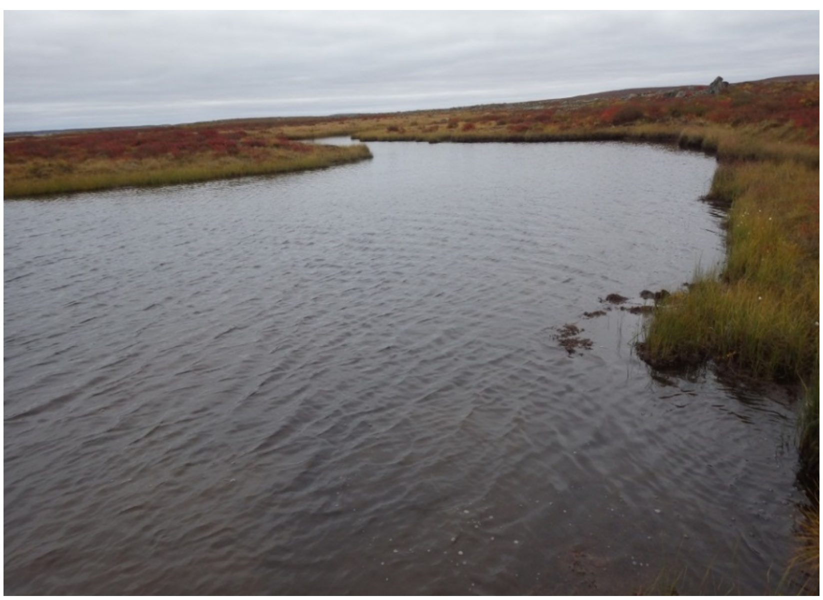

Photo A-3 Lake Ac5 Facing North Looking at Shoreline Comprised of Grasses and Shrubs, at 12W 540278E 7165055N, August 27, 2014

Photo A-4 Aerial View of Lake Ac6 Facing Southwest at 12W 539627E 7165283N, August 20, 2014

Photo A-5 Lake Ac6 Facing North Looking at Shoreline Comprised of Organics, Grasses, and Shrubs at 12W 539670E 7165291N, August 27, 2014

Photo A-6 Lake Ac6 Facing Southeast at 12W 539670E 7165291N, August 27, 2014

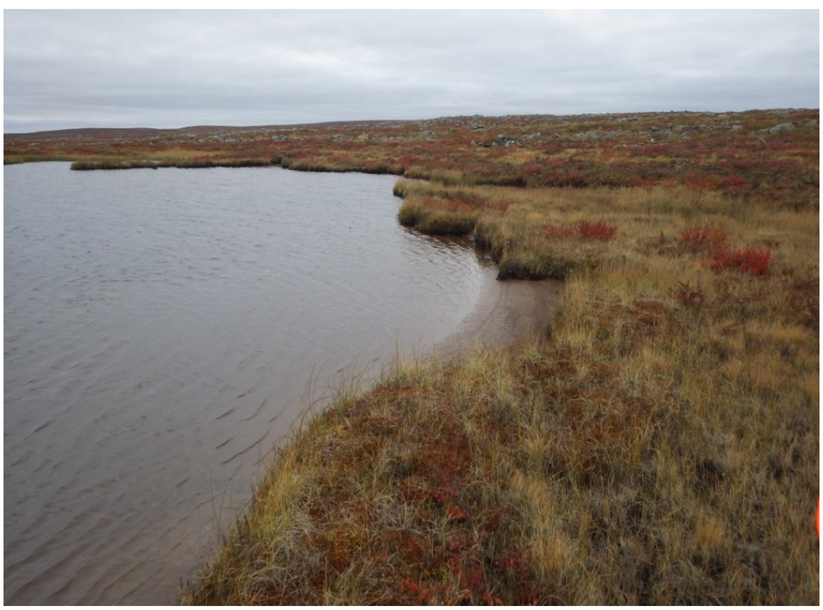

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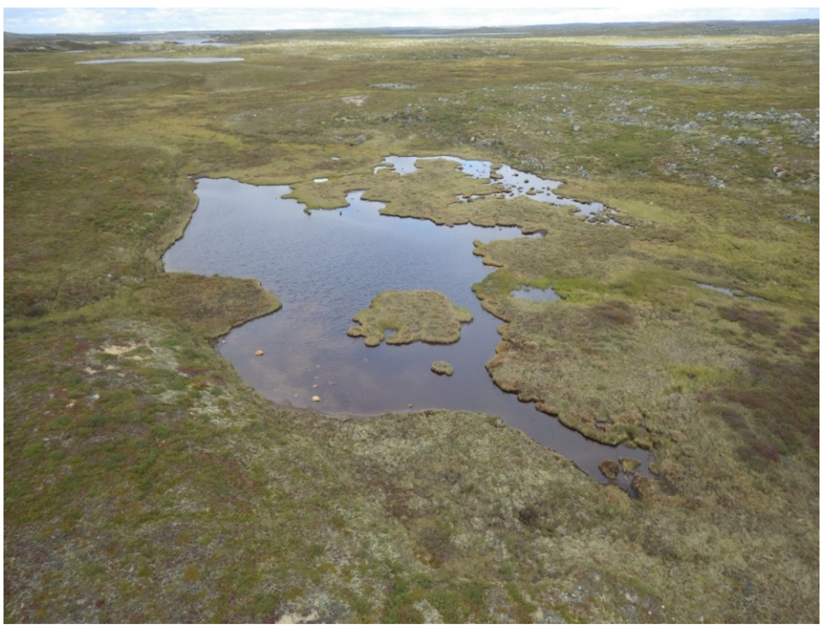
Photo A-8 Aerial View of Lake Ac8 Facing Northwest, August 20, 2014



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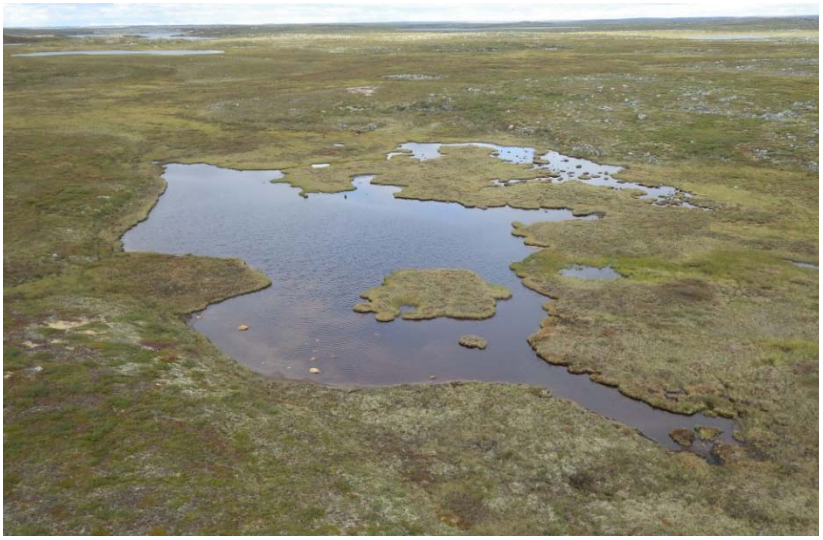


Photo A-10 Aerial View of Lake Ac9 Facing Northwest, August 20, 2014

Photo A-11 Aerial View of Lake Ac9 Facing North, August 20, 2014

Photo A-12 Aerial View of Lake Ac10 Facing East, August 20, 2014

Photo A-13 Aerial View of Lake Ac10 Facing North, August 20, 2014

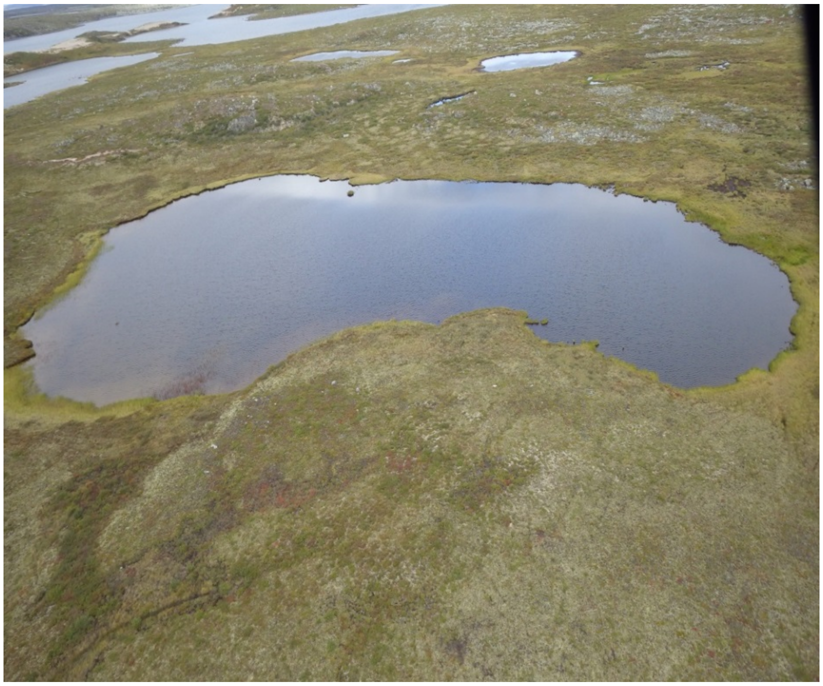


Photo A-14 Lake Ac35 Facing Northeast Toward Centre of the Lake; Substrate Comprised of Boulder and Cobble at 12W 540792E 7162423N, August 22, 2014

Photo A-15 Lake Ac35 Facing West; Shoreline Comprised of Grasses and Boulder at 12W 540899E 7162287N, August 22, 2014

Photo A-16 Lake Ac35 Facing Downstream toward Lake Outflow at 12W 541633E 7162835N, August 22, 2014

Photo A-17 Aerial View of Lake Ac36, August 27, 2014

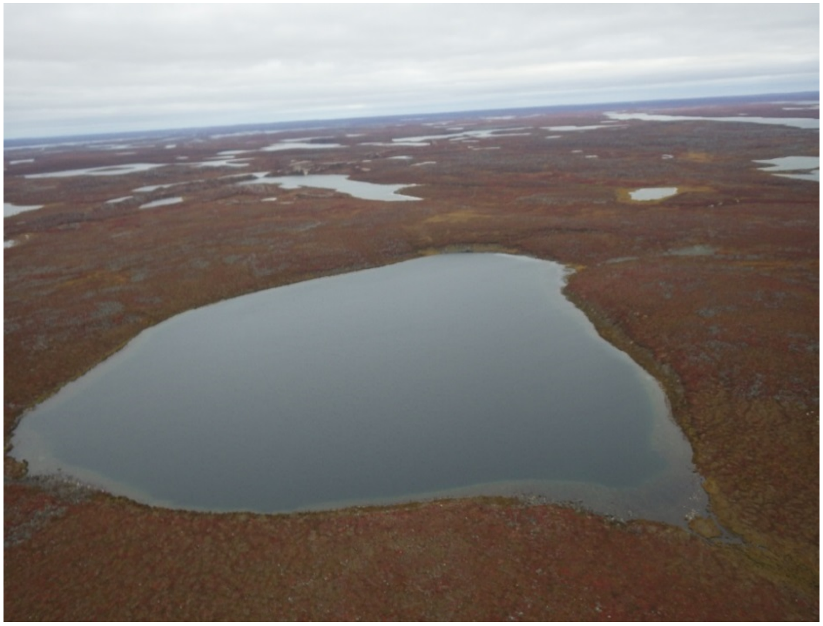


Photo A-18 Lake Ac36 Facing North; Shoreline Comprised of Grasses and Shrubs at 12W 540777E 7162660N, August 23, 2014

Photo A-19 Lake Ac36 Facing South Looking at Boulder Shoreline at 12W 541052E 7162298N, August 23, 2014

Photo A-20 View of Cobble and Gravel Substrate in Lake Ac36 at 12W 541052E 7162298N, August 23, 2014

Photo A-21 Lake B0 Facing Northwest; Shoreline Comprised of Sedges and Shrubs at 12W 541368E 7162484N, August 23, 2014

Photo A-22 Lake B0 Facing Southwest at 12W 541368E 7162484N, August 23, 2014

Photo A-23 View of Boulder and Cobble Substrate in Lake B0 at 12W 541197E 7162365N, August 23, 2014

Photo A-24 Lake B1 (Christine) Facing West Toward Shoreline Comprised of Boulder and Grasses at 12W 539920E 7163819N, August 25, 2014

Photo A-25 Lake B1 (Christine) Facing West Looking at Substrate Comprised of Boulder and Emergent Vegetation at 12W E 539920 N 7163819, August 25, 2014

Photo A-26 Aerial View of Lake B12, August 27, 2014

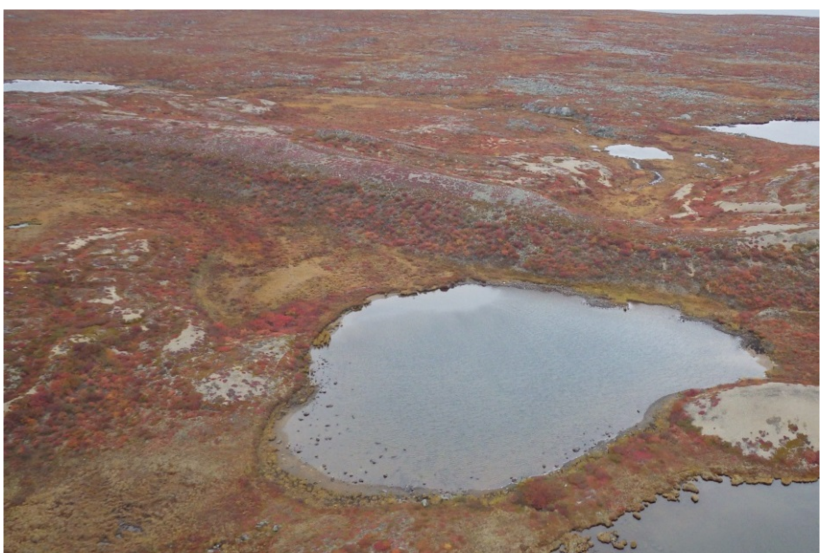


Photo A-27 Lake B12 Facing East Looking at Shoreline Comprised of Gravel, Boulder, Grasses, and Shrubs at 12W 539733E 7162065N, August 27, 2014

Photo A-28 View of Substrate Comprised of Shale, Gravel, Boulder, and Silt in Lake B12 at 12W 539733E 7162065N, August 27, 2014

Photo A-29 Aerial View of Lake B25, August 27, 2014

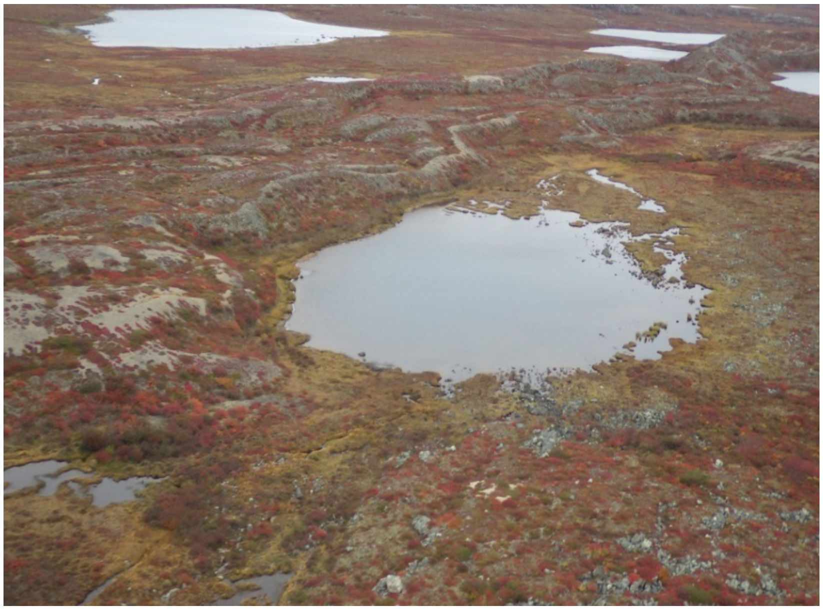


Photo A-30 Lake B25, Facing Southeast; Boulder Substrate, Emergent Vegetation, and Shoreline with Sedges at 12W 539857E 7162518N, August 27, 2014

Photo A-31 Lake B25 Looking at Substrate Comprised of Boulder, Gravel, and Organics at 12W 539857E 7162518N, August 27, 2014

Photo A-32 Aerial View of Lake B26, August 27, 2014

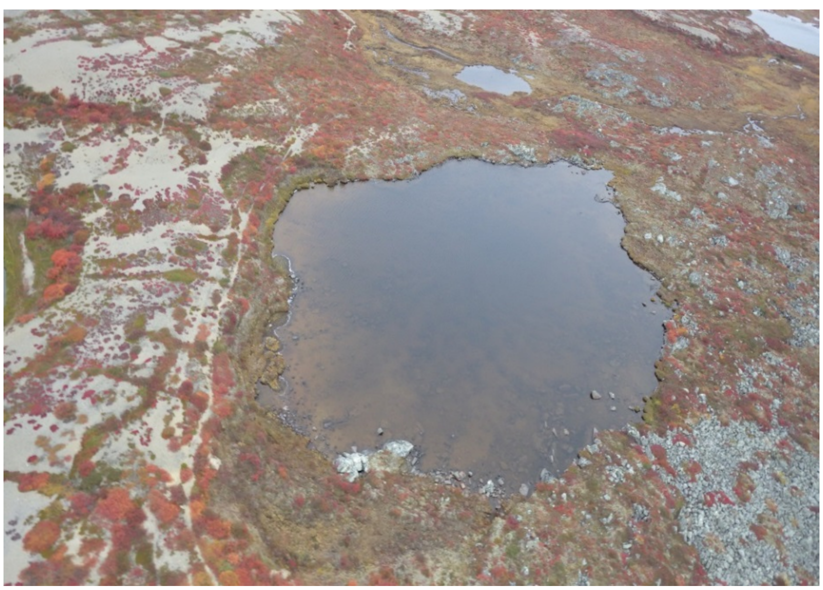


Photo A-33 Lake B26 Facing Southeast Looking at Shoreline Comprised of Sedges and Shrubs at 12W 539966E 7162150N, August 27, 2014

Photo A-34 View of Substrate Comprised of Silt in Lake B26 at 12W 539966E 7162150N, August 27, 2014

Photo A-35 Aerial View of Lake C17, August 27, 2014

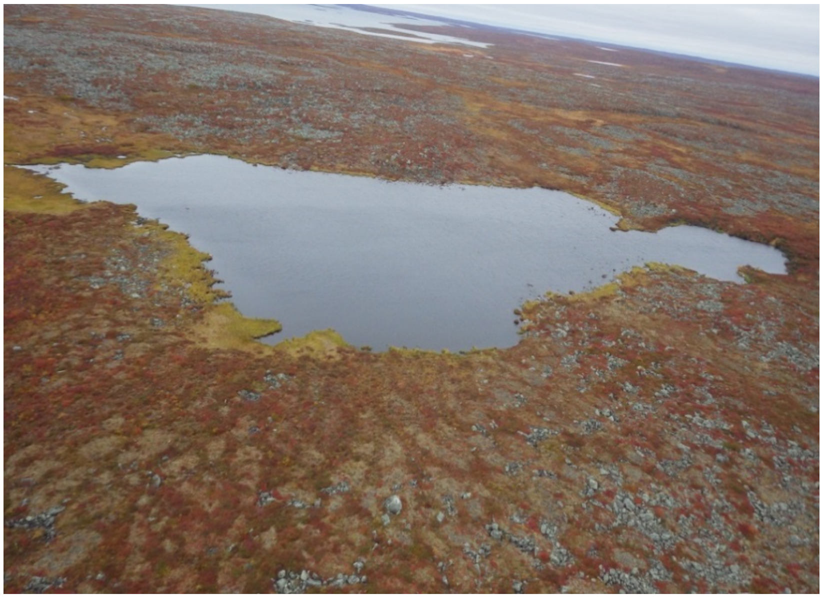


Photo A-36 Lake C17 Facing Northeast Looking at Shoreline Comprised of Grasses and Shrubs at 12W 539003E 7166363N August 27, 2014

Photo A-37 Lake C17 Facing Southeast Looking at Shoreline with Exposed Boulder at 12W 539003E 7166363N, August 27, 2014

Photo A-38 Stream Ac4 Looking at the Mouth at 12W 540554E 7165026N, June 11, 2014

Photo A-39 View of Substrate Comprised of Organics in Stream Ac4 at 12W 540554E 7165026N, June 11, 2014

Photo A-40 Stream Ac4 Looking Upstream from Crossing Location, at 12W 540613E 7165032N, June 16, 2014

Photo A-41 Stream Ac4 Looking Downstream From Crossing Location at 12W 540613 E 7165032N, June 16, 2014

Photo A-42 Aerial View of Stream Ac35 Looking at Left Downstream Bank at Crossing Location, August 27, 2014

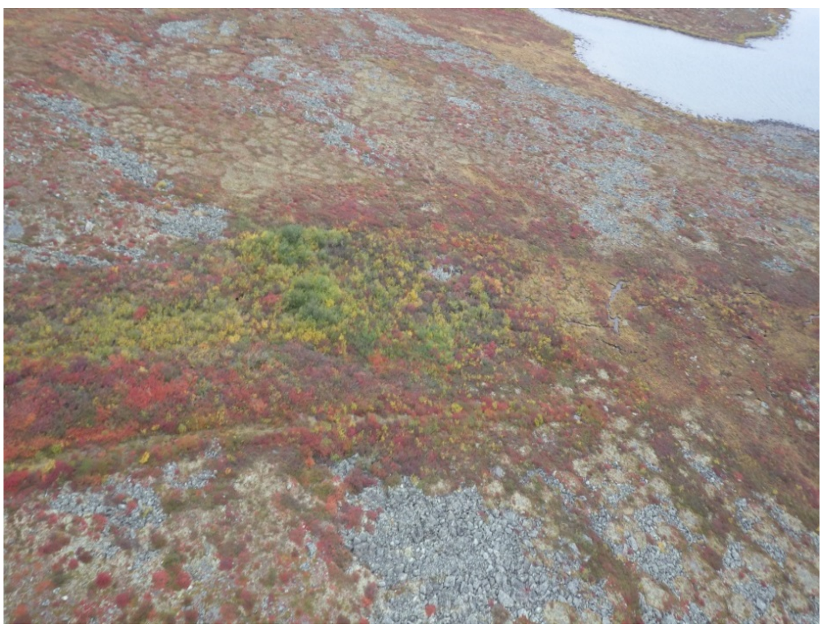


Photo A-43 Stream Ac35 Looking Upstream Through Shrubs at 12W 541712E 7163553N, August 26, 2014

Photo A-44 Stream Ac35 Looking Downstream at a Pool Habitat at 12W 541712E 7163553N, August 26, 2014

DOMINION DIAMOND

Photo A-45 Stream Ac35 Looking at Potential Fish Barrier approximately 30 m Upstream of Lac du Sauvage at 12W 541483E 7164101N, August 26, 2014

Photo A-46 Aerial View of Stream B0 Looking at Right Downstream Bank, August 24, 2014

Photo A-47 Stream B0, Looking Upstream at Run Habitat with Overhanging Woody Vegetation and Grasses Along Shoreline, at 12W 541097E 7164000N, August 24, 2014

Photo A-48 Aerial View of the Mouth of Stream B1 (Christine), Facing Upstream, August 25, 2014

DOMINION DIAMOND

Photo A-49 Vegetation at upstream end of Stream B1 (Christine) where Lake B1 (Christine) flows into Stream B1 (Christine) at 12W 539902E 7163800N, August 25, 2014

Photo A-50 Stream B1 (Christine) Looking Downstream at 12W 539902E 7163800N, August 25, 2014

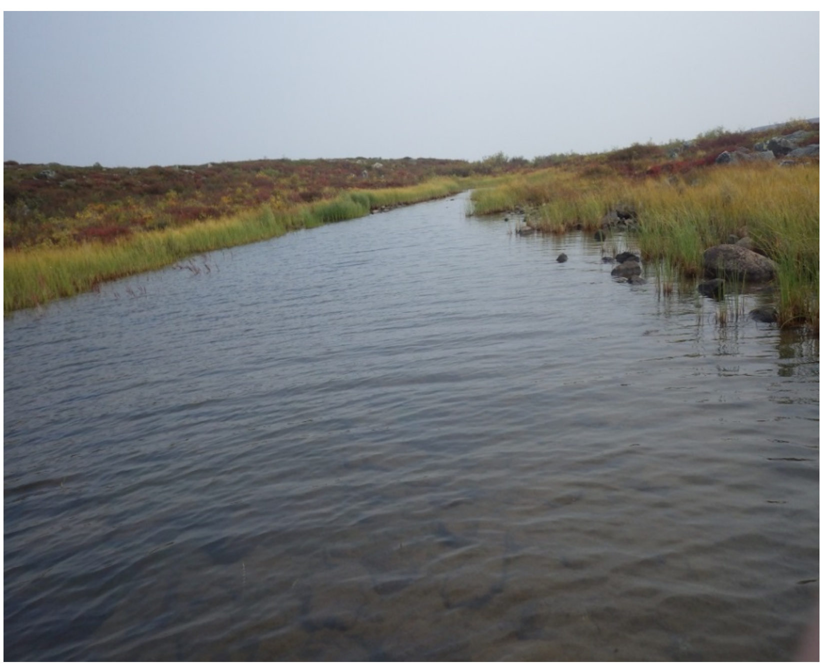


Photo A-51 View of Substrate Comprised of Submerged Vegetation, Boulder, and Cobble in Stream B1 (Christine) at 12W 539902E 7163800N, August 25, 2014

Photo A-52 Stream B2 Facing Downstream Toward the Mouth at 12W 538958E 7164085N, June 10, 2014

Photo A-53 Stream B2 Facing Upstream from the Mouth at 12W 538958E 7164085N, June 10, 2014

Photo A-54 Stream B2 Facing Downstream Looking at Run Habitat with Boulder and Overhanging Woody Vegetation at 12W 538958E 7164085N, June 10, 2014

Photo A-55 Upstream View of Undercut Banks at Stream B3 (12W 538963E 7162900N), June 10, 2014

Photo A-56 Stream B3 Facing Upstream Looking at a Run Habitat at 12W 538963E 7162900N, June 10, 2014

Photo A-57 Stream B3 Facing Downstream Looking at Run Habitat at 12W 538963E 7162900N, June 10, 2014

Photo A-58 Stream B3 Looking at Substrate Comprised of Gravel and Sand at 12W 538963E 7162900N, June 10, 2014

Photo A-59 Stream B4 Facing Upstream Looking at Run Habitat and a Small Cascade at 12W 538913E 7162400N, June 10, 2014

Photo A-60 Stream B4 Facing Downstream Looking at a Run Habitat, 12W 538913E 7162400N, June 10, 2014

DOMINION DIAMOND

Photo A-61 Stream B4 Looking at Substrate Comprised of Gravel and Sand, at 12W 538913E 7162400N, June 10, 2014

Photo A-62 Aerial View of Stream B15 Looking at Run and Pool Habitat, June 15, 2014

Photo A-63 Aerial View of Stream B15 Looking at Shallow Run Habitat, June 15, 2014

Photo A-64 Stream B15 Facing Downstream Looking at Braided Channel, at 12W 538615E 7163940N, June 15, 2014

Photo A-65 Stream B15 Looking at Substrate Comprised of Sand and Silt, at 12W 538615E 7163940N, June 15, 2014

Photo A-66 Aerial View of Stream B26 Looking Upstream, August 27, 2014

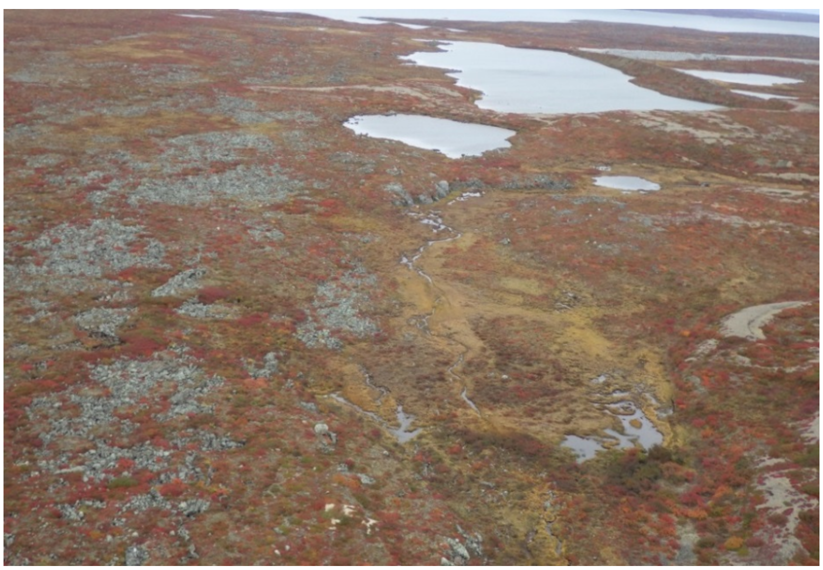
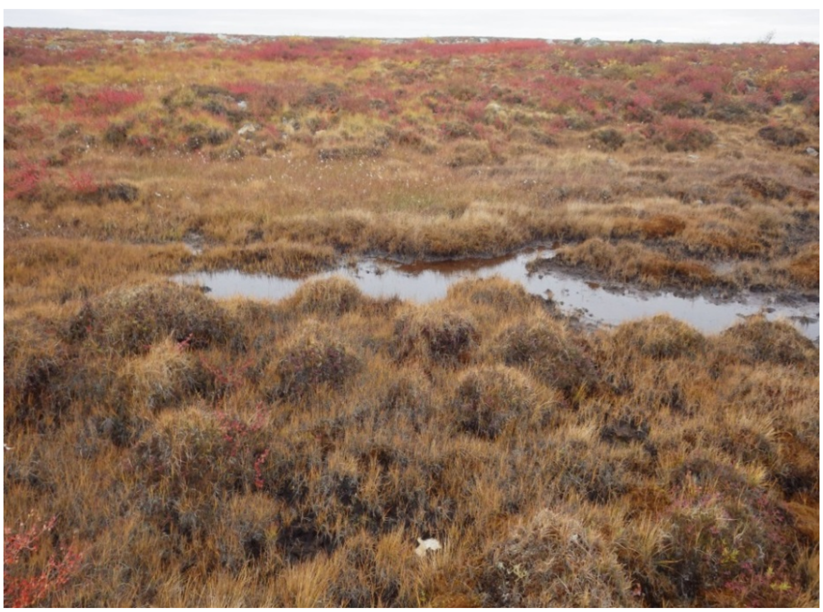


Photo A-67 Stream B26 Looking Downstream at 12W 539968E 7162274N, August 27, 2014

Photo A-68 Stream B26 Looking at Right Downstream Bank at 12W 539968E 7162274N, August 27, 2014

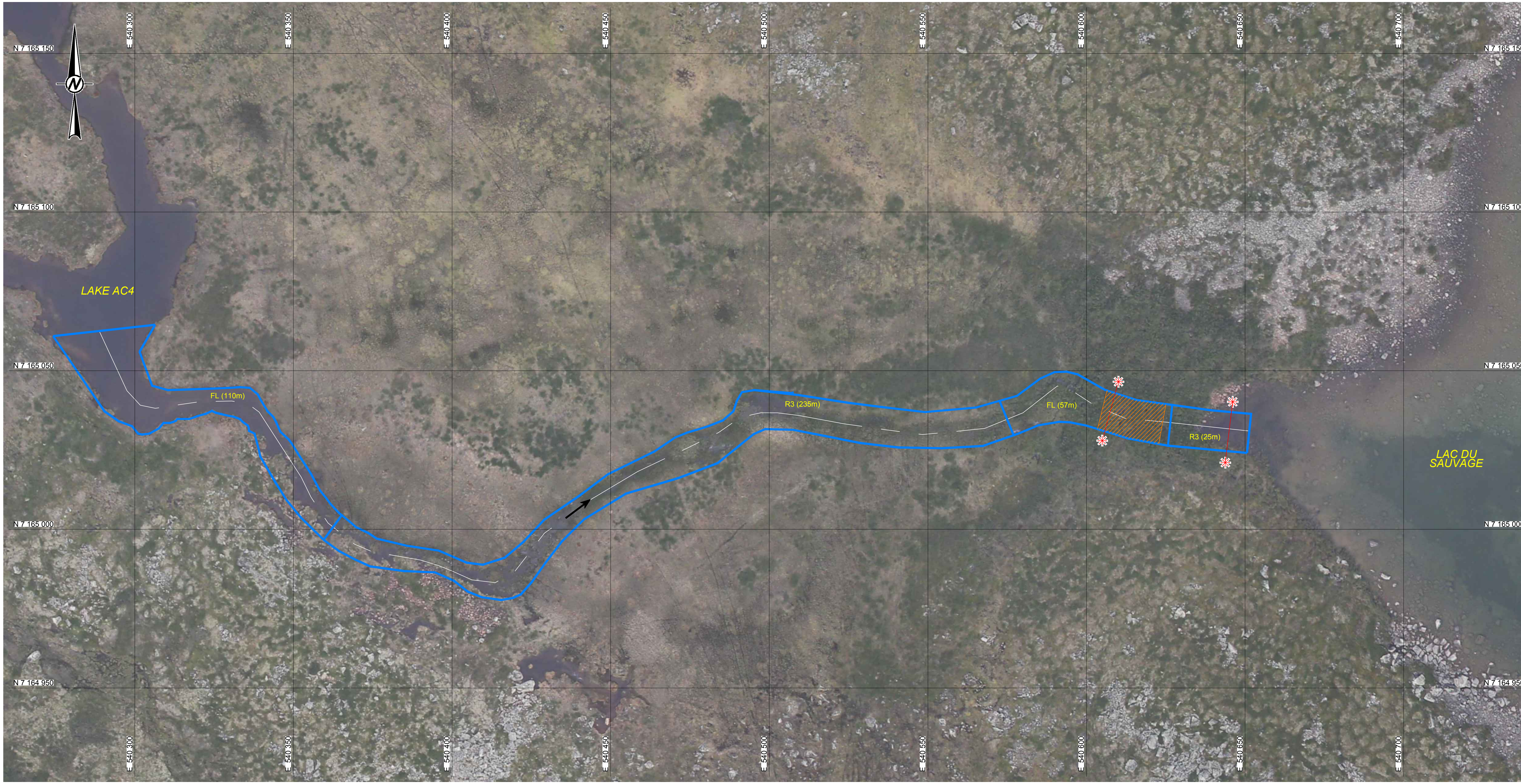


APPENDIX B

HABITAT MAPPING

Maps

Map B-1 Stream AC4 Spring Fish Habitat Map 1
Map B-2 Stream AC35 Spring Fish Habitat Map 2
Map B-3 Stream AC35 Summer Fish Habitat Map 3
Map B-4 Stream B0 Spring Fish Habitat Map 4
Map B-5 Stream B0 Summer Fish Habitat Map 5
Map B-6 Stream B1 Summer Fish Habitat Map 6



CHANNEL TYPE LEGEND

RIFFLE (RF) = MODERATELY HIGH VELOCITY WATER (0.5 TO 1.0 m/s); SURFACE BROKEN DUE TO SUBMERGED AND/OR EXPOSED BED MATERIAL; COARSE SUBSTRATE; USUALLY LESS THAN 0.5 m DEEP;

RUN (R)= GENERALLY DEEP, TYPICALLY SLOW FLOWING WATER (0.05 TO 1.0 m/s); COARSE SUBSTRATE; IRREGULAR, RARELY BROKEN SURFACE; DEEPER WATER HAS MORE IN-STREAM COVER AND HIGHER CLASS RANK (CLASSES 1 TO 3);

POOL (P) = INCREASED DEPTH AND LOWER WATER VELOCITIES (0.05 TO 0.3 m/s); SUBSTRATE IS VARIABLE; DEEPER WATER HAS MORE IN-STREAM COVER AND HIGHER CLASS RANK (CLASSES 1 TO 3);

FLAT (FL) = LOW GRADIENT, SMOOTH WATER SURFACE, REDUCED VELOCITY RELATIVE TO RUN HABITATS AND DIFFERENTIATED FROM POOL HABITAT BY HIGH CHANNEL UNIFORMITY; AND,

BOULDER GARDEN (BG)= DOMINATING OCCURRENCE OF LARGE BOULDERS PROVIDING INSTREAM COVER; IN ASSOCIATION WITH AN OVERALL CHANNEL UNIT SUCH AS RIFFLE OR RUN.

MISC. LEGEND

FISH BARRIER - SEASONAL BARRIER DUE TO LOW FLOW

DIRECTION OF FLOW

STREAM CROSSING SURVEY (JUNE 16, 2014)

RIFFLE RUN AND POOL CLASSES

CLASS 1 - DEEP WITH COVER (GREATER THAN 1.0 m DEPTH)

CLASS 2 - MEDIUM DEPTH AND COVER (0.75 TO 1.0 m DEPTH)

CLASS 3 - SHALLOW WITH LIMITED COVER (LESS THAN 0.75 m DEPTH)

MATERIAL LEGEND

ASSESSMENT PERFORMED ON JUNE 11, 2014.

REFERENCE

ORTHOPHOTO PROVIDED BY AURORA GEOSCIENCES LTD. DATED: AUGUST 21, 2013

0 20 40
SCALE METRES

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
⚠	2015-04-07	ISSUED FOR FINAL	BB	MR	CS	KM

PROJECT

DOMINION DIAMOND

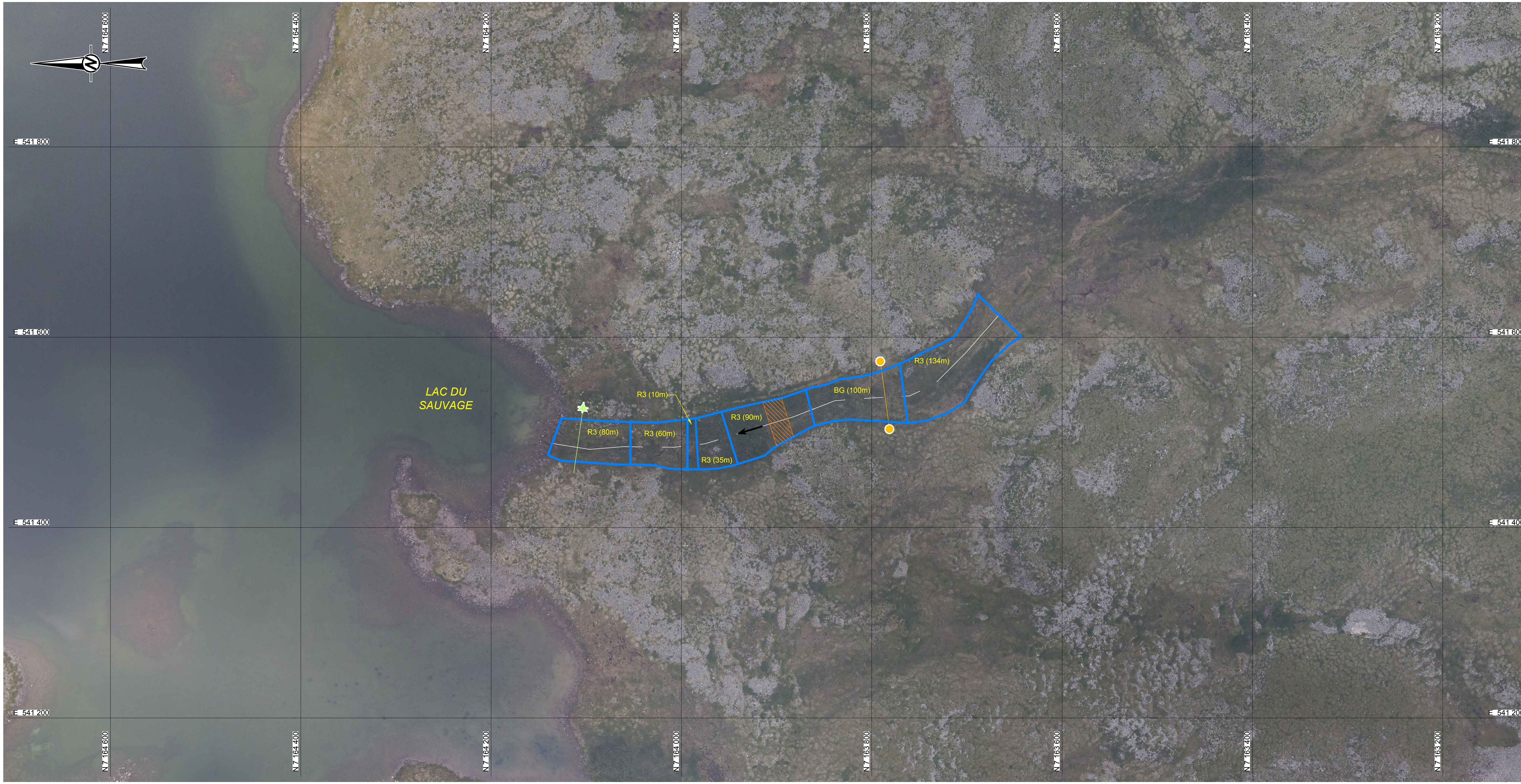
JAY PROJECT
NORTHWEST TERRITORIES, CANADA

TITLE

STREAM AC4 SPRING FISH HABITAT MAP

Golder Associates

PROJECT No.	1407256.7050.40	FILE No.	SB_Aqua_006_CAD
DESIGN	BB	2015-01-21	SCALE AS SHOWN
CADD	MR	2015-01-21	
CHECK	CS	2015-04-07	MAP B-1
REVIEW	KM	2015-04-07	



CHANNEL TYPE LEGEND

RIFFLE (RF) = MODERATELY HIGH VELOCITY WATER (0.5 TO 1.0 m/s); SURFACE BROKEN DUE TO SUBMERGED AND/OR EXPOSED BED MATERIAL; COARSE SUBSTRATE; USUALLY LESS THAN 0.5 m DEEP;

RUN (R)= GENERALLY DEEP, TYPICALLY SLOW FLOWING WATER (0.05 TO 1.0 m/s); COARSE SUBSTRATE; IRREGULAR, RARELY BROKEN SURFACE; DEEPER WATER HAS MORE IN-STREAM COVER AND HIGHER CLASS RANK (CLASSES 1 TO 3);

POOL (P) = INCREASED DEPTH AND LOWER WATER VELOCITIES (0.05 TO 0.3 m/s); SUBSTRATE IS VARIABLE; DEEPER WATER HAS MORE IN-STREAM COVER AND HIGHER CLASS RANK (CLASSES 1 TO 3);

FLAT (FL) = LOW GRADIENT, SMOOTH WATER SURFACE, REDUCED VELOCITY RELATIVE TO RUN HABITATS AND DIFFERENTIATED FROM POOL HABITAT BY HIGH CHANNEL UNIFORMITY; AND,

BOULDER GARDEN (BG)= DOMINATING OCCURRENCE OF LARGE BOULDERS PROVIDING INSTREAM COVER; IN ASSOCIATION WITH AN OVERALL CHANNEL UNIT SUCH AS RIFFLE OR RUN.

MISC. LEGEND

- FISH BARRIER DUE TO DIFFUSE FLOW IN BOULDER GARDEN
- FISH BARRIER DUE TO NATURAL DROP STRUCTURE
- STREAM CROSSING SURVEY (JUNE 16, 2014)
- DIRECTION OF FLOW

RIFFLE RUN AND POOL CLASSES

CLASS 1 - DEEP WITH COVER (GREATER THAN 1.0 m DEPTH)

CLASS 2 - MEDIUM DEPTH AND COVER (0.75 TO 1.0 m DEPTH)

CLASS 3 - SHALLOW WITH LIMITED COVER (LESS THAN 0.75 m DEPTH)

MATERIAL LEGEND

ASSESSMENT PERFORMED ON JUNE 13, 2014.

REFERENCE

ORTHOPHOTO PROVIDED BY AURORA GEOSCIENCES LTD. DATED: AUGUST 21, 2013

0 100 200

SCALE METRES

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
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PROJECT

DOMINION DIAMOND

JAY PROJECT
NORTHWEST TERRITORIES, CANADA

TITLE

STREAM AC35 SPRING FISH HABITAT MAP

Golder Associates

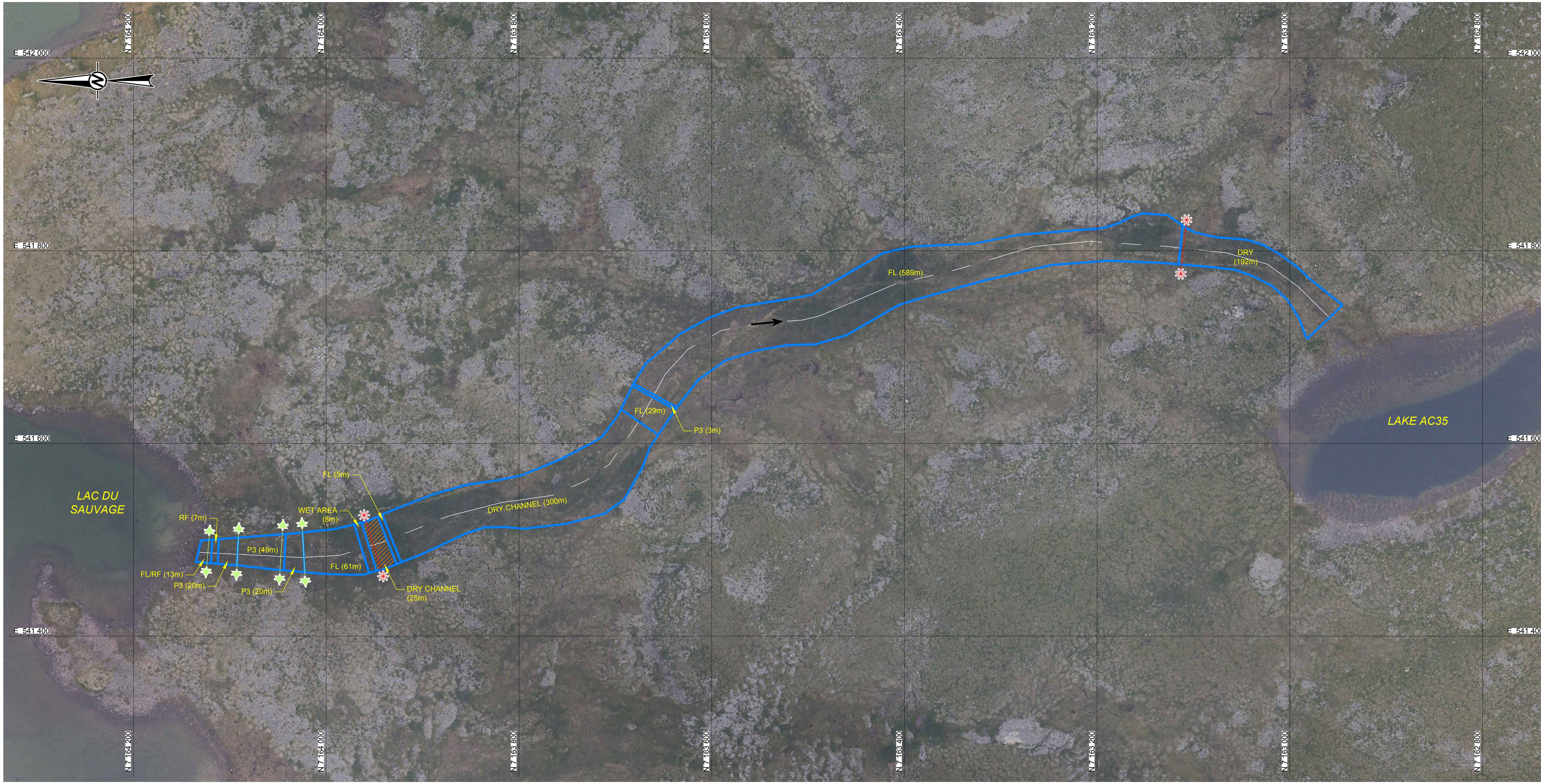
PROJECT No.	1407256.7050.40	
DESIGN	BB	2015-01-21
CADD	MR	2015-01-21
CHECK	CS	2015-04-07
REVIEW	KM	2015-04-07

FILE No. SB_Aqua_007_CAD

SCALE AS SHOWN

MAP B-2

N:\Client\dominion Diamond\jay-cardinal Project\99_projects\1407256\02_PRODUCTION\7050\20\SB_Aqua_007_CAD.dwg | Layout: Stream AC35 | Modified: matrobertson 03/02/2015 3:41 PM | Plotted: jdeol 04/07/2015



CHANNEL TYPE LEGEND

RIFFLE (RF) = MODERATELY HIGH VELOCITY WATER (0.5 TO 1.0 m/s); SURFACE BROKEN DUE TO SUBMERGED AND/OR EXPOSED BED MATERIAL; COARSE SUBSTRATE; USUALLY LESS THAN 0.5 m DEEP;

RUN (R)= GENERALLY DEEP, TYPICALLY SLOW FLOWING WATER (0.05 TO 1.0 m/s); COARSE SUBSTRATE; IRREGULAR, RARELY BROKEN SURFACE; DEEPER WATER HAS MORE IN-STREAM COVER AND HIGHER CLASS RANK (CLASSES 1 TO 3);

POOL (P) = INCREASED DEPTH AND LOWER WATER VELOCITIES (0.05 TO 0.3 m/s); SUBSTRATE IS VARIABLE; DEEPER WATER HAS MORE IN-STREAM COVER AND HIGHER CLASS RANK (CLASSES 1 TO 3);

FLAT (FL) = LOW GRADIENT, SMOOTH WATER SURFACE, REDUCED VELOCITY RELATIVE TO RUN HABITATS AND DIFFERENTIATED FROM POOL HABITAT BY HIGH CHANNEL UNIFORMITY; AND,

BOULDER GARDEN (BG)= DOMINATING OCCURRENCE OF LARGE BOULDERS PROVIDING INSTREAM COVER; IN ASSOCIATION WITH AN OVERALL CHANNEL UNIT SUCH AS RIFFLE OR RUN.

MISC. LEGEND

FISH BARRIER - SEASONAL BARRIER DUE TO LOW FLOW

FISH BARRIER DUE TO NATURAL DROP STRUCTURE

STREAM CROSSING SURVEY (AUGUST 26, 2014)

DIRECTION OF FLOW

RIFFLE RUN AND POOL CLASSES

CLASS 1 - DEEP WITH COVER (GREATER THAN 1.0 m DEPTH)

CLASS 2 - MEDIUM DEPTH AND COVER (0.75 TO 1.0 m DEPTH)

CLASS 3 - SHALLOW WITH LIMITED COVER (LESS THAN 0.75 m DEPTH)

MATERIAL LEGEND

ASSESSMENT PERFORMED ON AUGUST 26, 2014.

REFERENCE

ORTHOPHOTO PROVIDED BY AURORA GEOSCIENCES LTD. DATED: AUGUST 21, 2013

0 100 200

SCALE METRES

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
A	2015-04-07	ISSUED FOR FINAL	BB	MR	CS	KM

PROJECT

DOMINION DIAMOND

JAY PROJECT
NORTHWEST TERRITORIES, CANADA

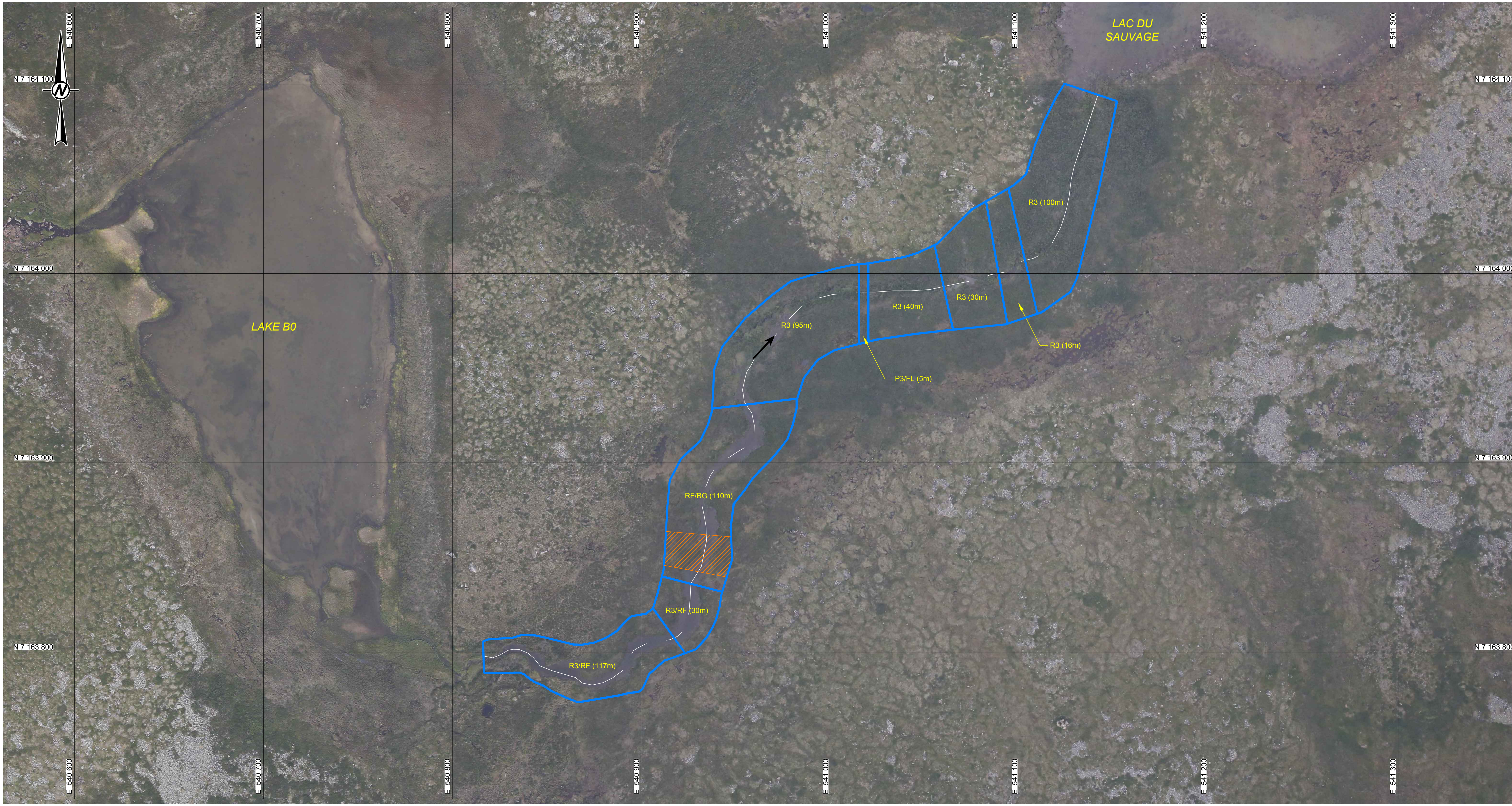
TITLE

STREAM AC35 SUMMER FISH HABITAT MAP

Golder Associates

PROJECT No.		1407256.7050.40	FILE No.	SB_Aqua_008_CAD
DESIGN	BB	2015-01-21	SCALE	AS SHOWN
CADD	MR	2015-01-21		
CHECK	CS	2015-04-07		
REVIEW	KM	2015-04-07		

MAP B-3



CHANNEL TYPE LEGEND

RIFFLE (RF) = MODERATELY HIGH VELOCITY WATER (0.5 TO 1.0 m/s); SURFACE BROKEN DUE TO SUBMERGED AND/OR EXPOSED BED MATERIAL; COARSE SUBSTRATE; USUALLY LESS THAN 0.5 m DEEP;

RUN (R)= GENERALLY DEEP, TYPICALLY SLOW FLOWING WATER (0.05 TO 1.0 m/s); COARSE SUBSTRATE; IRREGULAR, RARELY BROKEN SURFACE; DEEPER WATER HAS MORE IN-STREAM COVER AND HIGHER CLASS RANK (CLASSES 1 TO 3);

POOL (P) = INCREASED DEPTH AND LOWER WATER VELOCITIES (0.05 TO 0.3 m/s); SUBSTRATE IS VARIABLE; DEEPER WATER HAS MORE IN-STREAM COVER AND HIGHER CLASS RANK (CLASSES 1 TO 3);

FLAT (FL) = LOW GRADIENT, SMOOTH WATER SURFACE, REDUCED VELOCITY RELATIVE TO RUN HABITATS AND DIFFERENTIATED FROM POOL HABITAT BY HIGH CHANNEL UNIFORMITY; AND,

BOULDER GARDEN (BG)= DOMINATING OCCURRENCE OF LARGE BOULDERS PROVIDING INSTREAM COVER; IN ASSOCIATION WITH AN OVERALL CHANNEL UNIT SUCH AS RIFFLE OR RUN.

MISC. LEGEND

STREAM CROSSING SURVEY (AUGUST 25, 2014)

DIRECTION OF FLOW

RIFFLE RUN AND POOL CLASSES

CLASS 1 - DEEP WITH COVER (GREATER THAN 1.0 m DEPTH)

CLASS 2 - MEDIUM DEPTH AND COVER (0.75 TO 1.0 m DEPTH)

CLASS 3 - SHALLOW WITH LIMITED COVER (LESS THAN 0.75 m DEPTH)

MATERIAL LEGEND

ASSESSMENT PERFORMED ON JUNE 12, 2014.

REFERENCE

ORTHOPHOTO PROVIDED BY AURORA GEOSCIENCES LTD. DATED: AUGUST 21, 2013

0 50 100
SCALE METRES

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
A	2015-04-07	ISSUED FOR FINAL	BB	MR	CS	KM

PROJECT

DOMINION DIAMOND

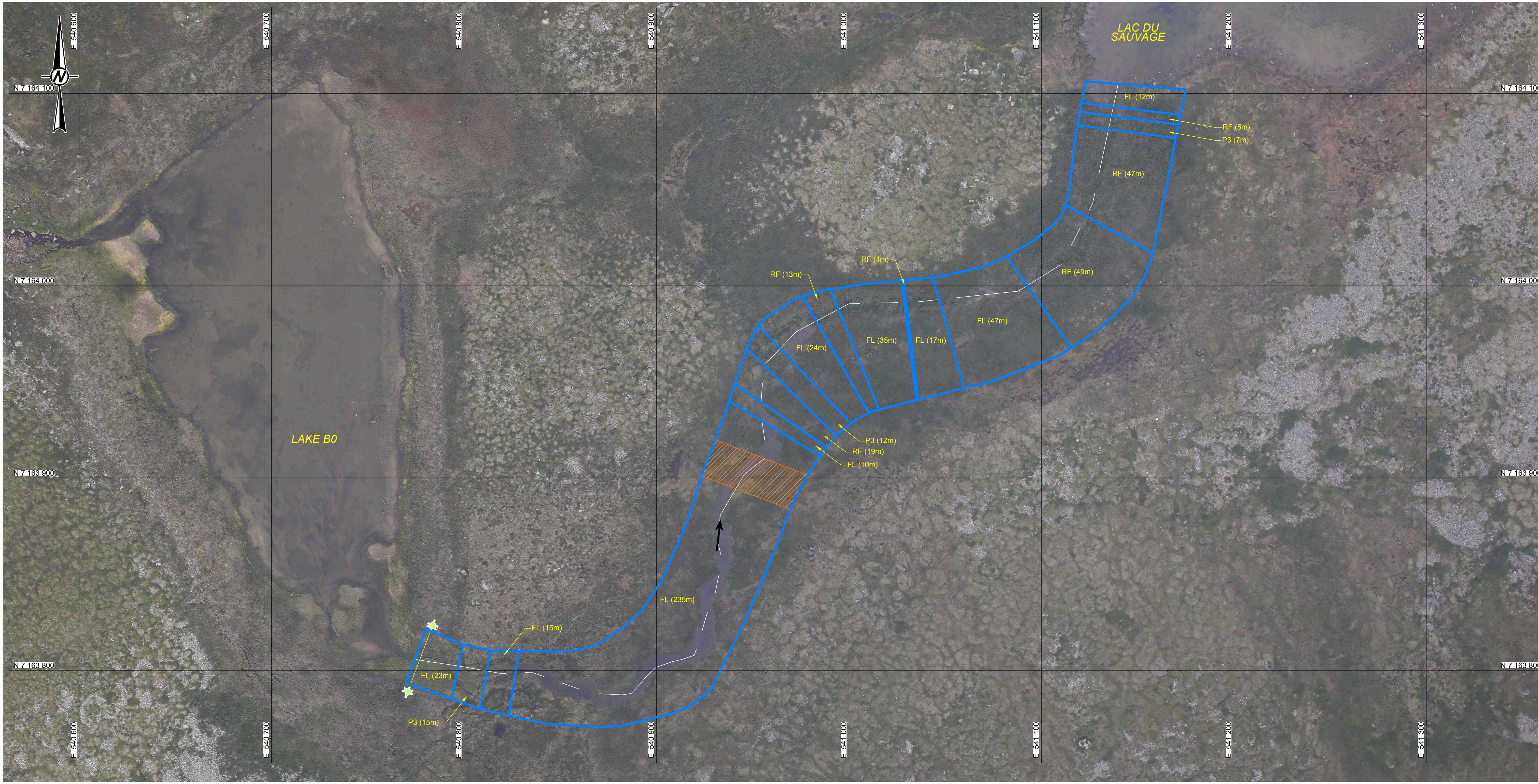
JAY PROJECT
NORTHWEST TERRITORIES, CANADA

TITLE

STREAM B0 SPRING FISH HABITAT MAP

Golder Associates

PROJECT No.	1407256.7050.40	FILE No.	SB_Aqua_009_CAD
DESIGN	BB	2015-01-21	SCALE AS SHOWN
CADD	MR	2015-01-21	
CHECK	CS	2015-04-07	MAP B-4
REVIEW	KM	2015-04-07	



CHANNEL TYPE LEGEND

RIFFLE (RF) = MODERATELY HIGH VELOCITY WATER (0.5 TO 1.0 m/s); SURFACE BROKEN DUE TO SUBMERGED AND/OR EXPOSED BED MATERIAL; COARSE SUBSTRATE; USUALLY LESS THAN 0.5 m DEEP;

RUN (R)= GENERALLY DEEP, TYPICALLY SLOW FLOWING WATER (0.05 TO 1.0 m/s); COARSE SUBSTRATE; IRREGULAR, RARELY BROKEN SURFACE; DEEPER WATER HAS MORE IN-STREAM COVER AND HIGHER CLASS RANK (CLASSES 1 TO 3);

POOL (P) = INCREASED DEPTH AND LOWER WATER VELOCITIES (0.05 TO 0.3 m/s); SUBSTRATE IS VARIABLE; DEEPER WATER HAS MORE IN-STREAM COVER AND HIGHER CLASS RANK (CLASSES 1 TO 3);

FLAT (FL) = LOW GRADIENT, SMOOTH WATER SURFACE, REDUCED VELOCITY RELATIVE TO RUN HABITATS AND DIFFERENTIATED FROM POOL HABITAT BY HIGH CHANNEL UNIFORMITY; AND,

BOULDER GARDEN (BG)= DOMINATING OCCURRENCE OF LARGE BOULDERS PROVIDING INSTREAM COVER; IN ASSOCIATION WITH AN OVERALL CHANNEL UNIT SUCH AS RIFFLE OR RUN.

MISC. LEGEND

FISH BARRIER DUE TO NATURAL DROP STRUCTURE

STREAM CROSSING SURVEY (AUGUST 25, 2014)

DIRECTION OF FLOW

RIFFLE RUN AND POOL CLASSES

CLASS 1 - DEEP WITH COVER (GREATER THAN 1.0 m DEPTH)

CLASS 2 - MEDIUM DEPTH AND COVER (0.75 TO 1.0 m DEPTH)

CLASS 3 - SHALLOW WITH LIMITED COVER (LESS THAN 0.75 m DEPTH)

MATERIAL LEGEND

ASSESSMENT PERFORMED ON AUGUST 25, 2014.

REFERENCE

ORTHOPHOTO PROVIDED BY AURORA GEOSCIENCES LTD. DATED: AUGUST 21, 2013

0 50 100
SCALE METRES

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
⚠	2015-04-07	ISSUED FOR FINAL	BB	MR	CS	KM

PROJECT

DOMINION DIAMOND

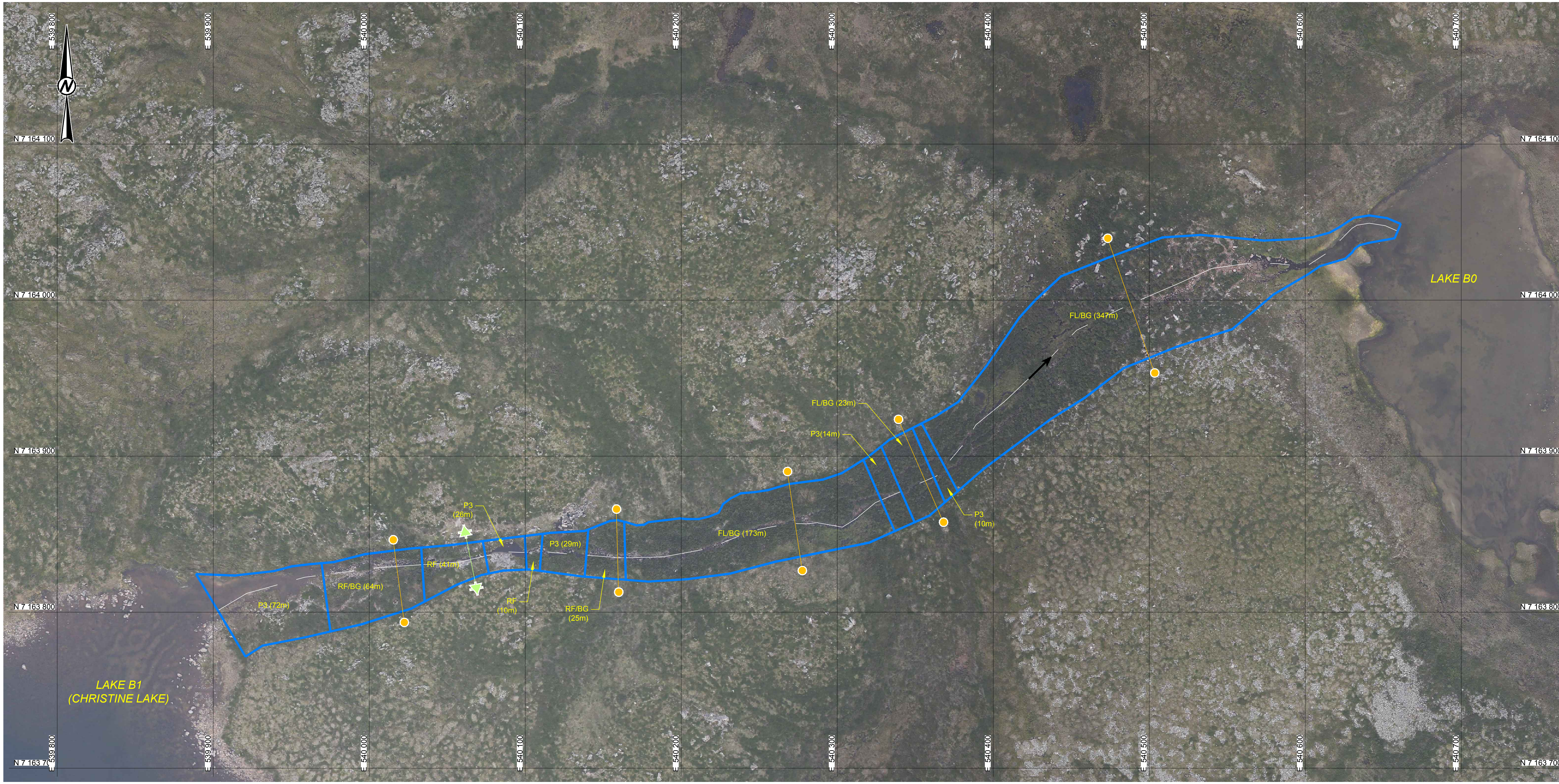
JAY PROJECT
NORTHWEST TERRITORIES, CANADA

TITLE

STREAM B0 SUMMER FISH HABITAT MAP

Golder Associates

PROJECT No.		1407256.7050.40	FILE No.	SB_Aqua_011_CAD
DESIGN	BB	2015-01-21	SCALE	AS SHOWN
CADD	MR	2015-01-21	FIGURE	
CHECK	CS	2015-04-07		MAP B-5
REVIEW	KM	2015-04-07		



CHANNEL TYPE LEGEND

RIFFLE (RF) = MODERATELY HIGH VELOCITY WATER (0.5 TO 1.0 m/s); SURFACE BROKEN DUE TO SUBMERGED AND/OR EXPOSED BED MATERIAL; COARSE SUBSTRATE; USUALLY LESS THAN 0.5 m DEEP;

RUN (R)= GENERALLY DEEP, TYPICALLY SLOW FLOWING WATER (0.05 TO 1.0 m/s); COARSE SUBSTRATE; IRREGULAR, RARELY BROKEN SURFACE; DEEPER WATER HAS MORE IN-STREAM COVER AND HIGHER CLASS RANK (CLASSES 1 TO 3);

POOL (P) = INCREASED DEPTH AND LOWER WATER VELOCITIES (0.05 TO 0.3 m/s); SUBSTRATE IS VARIABLE; DEEPER WATER HAS MORE IN-STREAM COVER AND HIGHER CLASS RANK (CLASSES 1 TO 3);

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BOULDER GARDEN (BG)= DOMINATING OCCURRENCE OF LARGE BOULDERS PROVIDING INSTREAM COVER; IN ASSOCIATION WITH AN OVERALL CHANNEL UNIT SUCH AS RIFFLE OR RUN.

MISC. LEGEND

- FISH BARRIER DUE TO NATURAL DROP STRUCTURE
- FISH BARRIER DUE TO DIFFUSE FLOW IN BOULDER GARDEN
- DIRECTION OF FLOW

RIFFLE RUN AND POOL CLASSES

CLASS 1 - DEEP WITH COVER (GREATER THAN 1.0 m DEPTH)

CLASS 2 - MEDIUM DEPTH AND COVER (0.75 TO 1.0 m DEPTH)

CLASS 3 - SHALLOW WITH LIMITED COVER (LESS THAN 0.75 m DEPTH)

MATERIAL LEGEND

ASSESSMENT PERFORMED ON AUGUST 25, 2014.

REFERENCE

ORTHOPHOTO PROVIDED BY AURORA GEOSCIENCES LTD. DATED: AUGUST 21, 2013

0 50 100

SCALE METRES

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW
A	2015-04-07	ISSUED FOR FINAL	BB	MR	CS	KM

PROJECT

DOMINION DIAMOND

JAY PROJECT
NORTHWEST TERRITORIES, CANADA

TITLE

STREAM B1 SUMMER FISH HABITAT MAP

Golder Associates

PROJECT No.		1407256.7050.40	FILE No. SB_Aqua_010_CAD
DESIGN	BB	2015-01-21	SCALE AS SHOWN
CADD	MR	2015-01-21	
CHECK	CS	2015-04-07	MAP B-6
REVIEW	KM	2015-04-07	

APPENDIX C

LIMNOLOGY PROFILES AND LAC DU SAUVAGE AND URSULA LAKE SURFACE WATER QUALITY DATA

Tables

Table C-1 Limnology Profile for Lake Ac35, 2014 1
Table C-2 Limnology Profile for Lake Ac36, 2014 1
Table C-3 Surface Water Quality Data for Lac du Sauvage, 2014 3
Table C-4 Surface Water Quality Data for Ursula Lake, 2014 3

Table C-1 Limnology Profile for Lake Ac35, 2014

Date	Start time	End time	UTM, E, Zone 12W	541660
August 22, 2014	13:55	14:16	UTM, N, Zone 12W	7162403
Depth, m	**Temperature, °C**	**Dissolved oxygen, mg/L**	**Conductivity, µS/cm**	**pH**
0.3	11.08	10.33	15	7.04
1.0	11.08	10.32	15	7.05
2.0	11.07	10.32	15	7.06
3.0	11.04	10.32	15	7.08
4.0	11.04	10.32	15	7.09
5.0	10.99	10.30	15	7.10
6.0	11.02	10.30	15	7.11
7.0	10.99	10.30	15	7.11
8.0	10.93	10.26	15	7.13
9.0	10.96	10.26	15	7.14
9.5	10.96	10.25	15	7.13
10.0	10.96	10.25	15	7.14
10.5	10.96	10.24	15	7.14
11.0	10.96	10.25	15	7.14
11.5	10.97	10.97	15	7.10

Table C-2 Limnology Profile for Lake Ac36, 2014

Date	Start time	End time	UTM, E, Zone 12W	541090
August 23, 2014	13:35	15:00	UTM, N, Zone 12W	7162383
Depth, m	**Temperature, °C**	**Dissolved oxygen, mg/L**	**Conductivity, µS/cm**	**pH**
0.3	11.40	10.69	17	6.88
1.0	11.12	10.69	17	6.90
2.0	11.12	10.68	17	6.97
3.0	11.10	10.71	17	7.07
4.0	11.05	10.71	17	7.10
5.0	11.05	10.7	17	7.11
6.0	11.04	10.71	17	7.13
7.0	11.03	10.71	17	7.15
8.0	11.03	10.70	17	7.16
9.0	11.03	10.69	17	7.18
10.0	11.03	10.69	17	7.18
11.0	11.03	10.69	17	7.19
11.5	10.94	10.75	17	7.20
12.0	10.40	10.80	17	7.21

DOMINION DIAMOND

Table C-2 Limnology Profile for Lake Ac36, 2014

Date	Start time	End time	UTM, E, Zone 12W	541090
August 23, 2014	13:35	15:00	UTM, N, Zone 12W	7162383
Depth, m	**Temperature, °C**	**Dissolved oxygen, mg/L**	**Conductivity, µS/cm**	**pH**
12.5	9.87	10.99	17	7.26
13.0	9.08	11.42	16	7.27
13.5	7.52	11.96	16	7.26
14.0	6.11	12.96	15	7.28
14.5	5.88	13.16	15	7.28
15.0	5.61	13.43	15	7.27
15.5	5.45	13.56	15	7.26
16.0	5.30	13.52	15	7.25
16.5	5.20	13.49	15	7.24
17.0	5.11	13.48	15	7.24
17.5	5.02	13.52	15	7.23
18.0	4.90	13.48	15	7.21
18.5	4.80	13.48	15	7.20
19.0	4.74	13.40	15	7.18
19.5	4.66	13.35	15	7.17
20.0	4.60	13.31	15	7.15
20.5	4.54	13.33	15	7.14
21.0	4.49	13.27	15	7.13
21.5	4.47	13.24	15	7.12
22.0	4.45	13.23	15	7.11
23.0	4.38	13.22	15	7.10
24.0	4.27	13.19	15	7.08
25.0	4.23	13.13	15	7.07
26.0	4.22	13.09	15	7.06
27.0	4.20	13.07	15	7.05
28.0	4.16	13.01	15	7.04
29.0	4.15	12.99	15	7.03
30.0	4.14	12.76	15	6.91
31.0	4.12	12.99	15	6.96

Table C-3 Surface Water Quality Data for Lac du Sauvage, 2014

Date	UTM (Zone 12W)		Temp. (°C)	Conductivity (µS/cm)	pH	Dissolved Oxygen (mg/L)
	Easting	Northing				
August 19, 2014	546071	7161385	11.60	18	7.98	10.68
August 20, 2014	546517	7160832	11.50	16	6.12	10.47
August 20, 2014	545274	7160889	11.50	19	-	10.49
August 20, 2014	545274	7162048	11.60	18	-	10.56
August 20, 2014	545154	7162080	11.60	15	7.16	10.49
August 21, 2014	545189	7161719	11.44	18	7.26	10.56
August 21, 2014	545169	7161628	11.42	18	7.26	10.53
August 21, 2014	545193	7161745	11.40	18	7.28	10.48
August 21, 2014	545188	7162011	11.40	18	7.28	10.52
August 22, 2014	546848	7160351	11.34	14	-	10.76
August 22, 2014	546976	7160323	11.40	14	-	10.67
August 22, 2014	547275	7160486	11.36	14	6.98	10.72
August 22, 2014	546897	7160953	11.40	16	7.68	10.80
August 23, 2014	546735	7159910	11.48	16	7.28	10.72
August 23, 2014	546899	7160961	11.44	16	7.28	10.68
August 23, 2014	547113	7160489	11.28	16	7.67	10.62
August 24, 2014	546640	7161246	11.30	-	7.31	10.64
August 24, 2014	546903	7161388	11.27	-	7.28	10.56
August 24, 2014	547119	7161252	11.29	-	7.40	10.54
August 24, 2014	547521	7161403	11.44	16	7.89	10.62
August 24, 2014	545638	7161134	11.28	16	7.89	10.62
August 24, 2014	545860	7161145	11.30	16	7.78	10.68
August 24, 2014	548560	7161265	11.28	17	7.62	10.98

UTM = Universal Transverse Mercator; Temp = Temperature; mg/L = milligrams per litre; µS/cm = microSiemens per centimetre; °C = degrees Celsius; - probe not stabilizing.

Table C-4 Surface Water Quality Data for Ursula Lake, 2014

Date	UTM (Zone 12W)		Temp. (°C)	Conductivity (µS/cm)	pH	Dissolved Oxygen (mg/L)
	Easting	Northing				
August 26, 2014	526501	7188051	11.24	13	7.68	10.62
August 26, 2014	526551	7188035	11.44	14	7.87	10.48
August 26, 2014	526592	7188006	11.41	14	7.89	10.72
August 27, 2014	526715	7187941	11.10	16	7.90	10.68
August 28, 2014	526704	7188114	11.40	16	7.90	10.62
August 28, 2014	526711	7188004	11.60	17	7.18	10.68

UTM = Universal Transverse Mercator; Temp = Temperature; mg/L = milligrams per litre; µS/cm = microSiemens per centimetre; °C = degrees Celsius;

APPENDIX D

FISH CATCH DATA

DOMINION DIAMOND

Tables

Table D-1 Fish Catch Data Collected by Angling, Summer Program, 2014 1
Table D-2 Fish Catch Data Collected by Backpack Electrofishing, Spring Program, 2014 2
Table D-3 Fish Catch Data Collected by Gill Netting, Summer Program, 2014 3
Table D-5 Fish Catch Data Collected with Minnow Traps, Summer Program, 2014 6
Table D-6 Fish Catch Data Collected with Two-Way Traps, 2014 8

Table D-1 Fish Catch Data Collected by Angling, Summer Program, 2014

Waterbody	Date	Time	Easting	Northing	Effort (h)	LKTR (#)	CPUE (fish/ h)
Lac du Sauvage	8/20/2014	12:05	NR-angled near gill net sets		0.08	1	12.00
Lac du Sauvage	8/21/2014	10:05	NR-angled near gill net sets		0.30	1	3.33
Lac du Sauvage	8/21/2014	12:27	NR-angled near gill net sets		0.23	1	4.29
Lac du Sauvage	8/21/2014	14:00	NR-angled near gill net sets		0.55	2	3.64
Lac du Sauvage	8/21/2014	16:00	NR-angled near gill net sets		0.55	1	1.82
Lac du Sauvage	8/22/2014	9:17	545200	7161416	0.52	1	1.94
Lac du Sauvage	8/22/2014	11:20	545883	7161786	0.25	1	4.00
Lac du Sauvage	8/22/2014	12:34	546976	7160323	0.52	1	1.94
Lac du Sauvage	8/22/2014	13:05	546897	7160953	0.52	1	1.94
Lac du Sauvage	8/23/2014	11:00	547113	7160489	1.72	4	2.33
Lac du Sauvage	8/23/2014	14:14	545883	7161786	1.07	1	0.94
Lac du Sauvage	8/24/2014	11:23	548498	7161341	1.05	5	4.76
Lac du Sauvage	8/24/2014	13:15	547780	7161383	0.45	2	4.44
Lac du Sauvage	8/24/2014	15:03	546956	7162208	0.55	2	3.64
Ursula Lake	8/25/2014	NR	NR-angled near gill net sets		0.98	2	2.04
Ursula Lake	8/26/2014	14:36	527841	7188096	1.13	1	0.88
				Total	**10.46**	**27**	**2.58**

h = hour; LKTR = Lake Trout; # = number; CPUE = catch-per-unit-effort; fish/h = fish caught per hour; NR = not recorded.

Table D-2 Fish Catch Data Collected by Backpack Electrofishing, Spring Program, 2014

Waterbody	Date	Site	Easting	Northing	Length (m)	Time (s)	Temp (ºC)	pH	Conductivity (µS/cm)	ARGR (#)	BURB (#)	LKTR (#)	NNST (#)	SLSC (#)	Total (#)	CPUE (fish/ 100s)
Stream Ac35	6/13/2014	1	541486	7164133	200	284	-	-	-	1	-	-	-	-	1	0.35
Stream Ac35	6/13/2014	2	541685	7163589	89	110	-	-	-	-	-	-	-	-	-	0.00
Stream Ac35	6/13/2014	3	541804	7163287	40	29	-	-	-	8	-	-	-	-	8	27.59
Stream Ac35	6/13/2014	4	541820	7163147	925	1,045	-	-	-	-	-	-	-	-	-	0.00
Stream Ac4	6/11/2014	1	540638	7165036	416	229	-	-	-	-	-	-	-	-	-	0.00
Stream B1	6/18/2014	1	540093	7163835	50	107	13	8.12	35	2	-	-	-	-	2	1.87
Stream B1	6/18/2014	2	540596	7164030	200	332	13	8.12	35	8	-	-	-	-	8	2.41
Stream B15	6/15/2014	1	538567	7163937	110	200	9.2	8.20	9	3	-	-	-	-	3	1.50
Stream B15	6/15/2014	2	538391	7164087	145	208	9.2	8.20	9	15	-	-	-	-	15	7.21
Stream B2	6/14/2014	1	538960	7163215	108	198	10.3	8.12	82	6	-	-	-	-	6	3.03
Stream B3	6/14/2014	1	539011	7163057	75	113	7	7.86	105	4	-	-	-	1	5	4.42
Stream B4	6/14/2014	1	538949	7162490	94	162	7	7.67	142	1	-	-	-	-	1	0.62
Lake Ac35	6/17/2014	1	541705	7162920	300	1,001	10.5	7.86	15	3	-	-	-	3	6	0.60
Lake B1 (Christine)	6/18/2014	1	539939	7163800	300	556	13	8.12	35		1	-	-	2	3	0.54
Lac du Sauvage	6/19/2014	1	539677	7163782	500	1,553	12	8.22	35	3	-	1	3	-	7	0.45
Stream B0	6/18/2014	1	540821	7163808	300	802	13	8.12	35	4	-	-	-	-	4	0.50
				Total	**3,852**	**6,929**				**58**	**1**	**1**	**3**	**6**	**69**	**1.00**

Easting and Northing UTMs represent the downstream starting point of transect, m = metre; s = second; °C = degrees Celsius; µS/cm = microsiemens per centimetre; # = number; ARGR = Arctic Grayling; BURB = Burbot; LKTR = Lake Trout; NNST = Ninespine Stickleback; SLSC = Slimy Sculpin; CPUE = catch-per-unit-effort; fish/100 s = fish caught per 100 seconds.

Table D-3 Fish Catch Data Collected by Gill Netting, Summer Program, 2014

Waterbody	Date	Pull Time	Set	Easting	Northing	Effort (net-unit, h)	LKTR (#)	LKWH (#)	Total (#)	CPUE (fish/ net-unit)
Lac du Sauvage	8/19/2014	15:40	1	546071	7161385	1.45	-	-	0	0.00
Lac du Sauvage	8/20/2014	10:30	2	546517	7160832	1.48	-	1	1	0.67
Lac du Sauvage	8/20/2014	10:41	3	546193	7160889	1.46	-	-	0	0.00
Lac du Sauvage	8/20/2014	13:24	4	545274	7162048	2.56	-	3	3	1.17
Lac du Sauvage	8/20/2014	13:48	5	545154	7162080	2.89	2	2	4	1.38
Lac du Sauvage	8/21/2014	11:29	6	545189	7161719	2.36	-	2	2	0.85
Lac du Sauvage	8/21/2014	11:41	7	545169	7161628	2.43	-	3	3	1.23
Lac du Sauvage	8/21/2014	14:08	8	545193	7161745	2.36	1	1	2	0.85
Lac du Sauvage	8/21/2014	14:19	9	545188	7162011	2.36	-	2	2	0.85
Lac du Sauvage	8/21/2014	16:04	10	545845	7161398	1.74	1	-	1	0.58
Lac du Sauvage	8/22/2014	10:35	11	546848	7160351	2.23	2	-	2	0.90
Lac du Sauvage	8/22/2014	10:55	12	546976	7160323	2.49	-	-	0	0.00
Lac du Sauvage	8/22/2014	13:13	11	546848	7160351	2.85	1	2	3	1.05
Lac du Sauvage	8/22/2014	15:15	13	546897	7160953	4.57	1	2	3	0.66
Lac du Sauvage	8/22/2014	15:31	14	547275	7160486	2.40	-	-	0	0.00
Lac du Sauvage	8/23/2014	11:13	15	546899	7160961	2.49	-	-	0	0.00
Lac du Sauvage	8/23/2014	11:23	16	547113	7160489	2.34	1	2	3	1.28
Lac du Sauvage	8/23/2014	14:33	18	546735	7159910	3.04	1	1	2	0.66
Lac du Sauvage	8/24/2014	11:40	19	546640	7161246	2.95	-	1	1	0.34
Lac du Sauvage	8/24/2014	11:48	20	546903	7161388	2.89	1	-	1	0.35
Lac du Sauvage	8/24/2014	16:10	26	545860	7161195	2.38	1	2	3	1.26
Lac du Sauvage	8/24/2014	16:21	27	545560	7161265	2.51	1	5	6	2.39
Lake Ac35	8/22/2014	14:38	1	541667	7162090	1.81	1	-	1	0.55
Lake Ac36	8/23/2014	15:12	1	540778	7162486	3.06	3	-	3	0.98
Ursula Lake	8/25/2014	13:42	1	527041	7188114	3.09	1	-	1	0.32
Ursula Lake	8/25/2014	13:48	2	526827	7188047	2.91	-	-	0	0.00

Table D-3 Fish Catch Data Collected by Gill Netting, Summer Program, 2014

Waterbody	Date	Pull Time	Set	Easting	Northing	Effort (net-unit, h)	LKTR (#)	LKWH (#)	Total (#)	CPUE (fish/ net-unit)
Ursula Lake	8/25/2014	15:10	3	526711	7188004	1.83	-	-	0	0.00
Ursula Lake	8/25/2014	15:20	4	526746	7188048	1.45	2	-	2	1.38
Ursula Lake	8/25/2014	16:40	5	526822	7188667	5.31	-	-	0	0.00
Ursula Lake	8/26/2014	12:45	6	526501	7188051	2.60	-	-	0	0.00
Ursula Lake	8/26/2014	12:48	7	526551	7188035	2.65	-	-	0	0.00
Ursula Lake	8/26/2014	12:56	8	526592	7188026	2.51	-	-	0	0.00
Ursula Lake	8/26/2014	14:44	9	526953	7187780	1.74	-	-	0	0.00
Ursula Lake	8/26/2014	14:56	10	526803	7187874	2.05	-	-	0	0.00
Ursula Lake	8/26/2014	15:10	11	527044	7187775	2.50	1	-	1	0.40
Ursula Lake	8/27/2014	13:01	12	526715	7187941	2.61	1	-	1	0.38
					Total	**82.29**	**22**	**29**	**51**	**0.56**

h = hour; LKTR = Lake Trout; LKWH = Lake Whitefish; # = number; net-unit = 100 m^2 of gill net set for 1 hour; CPUE = catch-per-unit-effort; fish/net unit = fish caught per net unit.

DOMINION DIAMOND

Table D-4 Arctic Grayling Egg Data Collected by Kick Sampling, Summer Program, 2014

Waterbody	Date	Site	Easting	Northing	Eggs (#)
Stream Ac35	6/13/2014	1	541483	7164094	0
Stream Ac35	6/13/2014	2	541492	7163924	0
Stream Ac35	6/13/2014	3	541520	7163880	0
Stream Ac35	6/13/2014	4	541528	7163790	0
Stream Ac35	6/13/2014	5	541535	7163743	0
Stream Ac35	6/13/2014	6	541570	7163708	0
Stream Ac35	6/13/2014	7	541729	7162959	3
Stream Ac35	6/13/2014	8	541733	7163518	0
Stream Ac35	6/13/2014	9	541746	7163490	0
Stream Ac35	6/13/2014	10	541760	7162987	0
Stream Ac35	6/13/2014	11	541789	7163031	3
Stream B0	6/12/2014	2	540970	7163974	0
Stream B0	6/12/2014	3	540980	7163979	0
Stream B0	6/12/2014	4	541003	7163991	0
Stream B0	6/12/2014	5	541058	7163989	0
Stream B0	6/12/2014	6	541118	7164015	0
Stream B0	6/12/2014	7	541132	7164058	0
Stream B0	6/12/2014	8	540448	7163985	0
Stream B1	6/12/2014	1	540823	7163802	26
Stream B15	6/15/2014	1	538555	7163976	0
Stream B15	6/15/2014	2	538562	7163971	10
Stream B15	6/15/2014	3	538569	7163965	5
Stream B2	6/14/2014	1	538982	7163156	0
Stream B2	6/14/2014	2	538998	7163169	35
Stream B3	6/14/2014	1	538990	7163045	1
Stream B3	6/14/2014	2	538998	7163056	1
Stream B4	6/14/2014	1	538926	7162426	1
Stream B4	6/14/2014	2	538937	7162450	40
	Total	**28 sites**			

m = metre; # = number.

Table D-5 Fish Catch Data Collected with Minnow Traps, Summer Program, 2014

Waterbody	Date	Time	Set	Easting	Northing	Effort (h)	ARGR (#)	BURB (#)	LKCH (#)	SLSC (#)	Total (#)	CPUE (fish/ trap-d)
Stream B1	6/12/2014	9:00	1	540878	7163790	23.55	-	-	-	-	-	0.00
Stream B1	6/12/2014	9:00	2	540923	7163828	23.55	-	-	-	-	-	0.00
Stream B1	6/11/2014	14:15	3	540379	7164991	2.58	-	-	-	-	-	0.00
Stream B1	6/11/2014	14:15	4	540302	7165050	2.50	-	-	-	-	-	0.00
Stream B1	6/13/2014	9:00	5	540878	7163790	24.00	-	-	-	-	-	0.00
Stream B1	6/13/2014	9:00	6	540923	7163828	24.00	-	-	-	-	-	0.00
Stream B0	8/21/2014	11:21	1	540951	7163917	21.38	-	-	-	-	-	0.00
Stream B0	8/21/2014	11:21	2	540951	7163917	21.38	-	-	-	-	-	0.00
Stream B0	8/21/2014	11:21	3	540929	7163896	21.38	-	-	-	-	-	0.00
Stream B0	8/21/2014	11:21	4	540929	7163896	21.38	-	-	-	-	-	0.00
Stream B0	8/21/2014	11:21	5	540927	7163868	21.38	-	-	-	-	-	0.00
Stream B0	8/21/2014	11:21	6	540927	7163868	21.38	-	-	-	-	-	0.00
Lake B0	8/24/2014	7:35	1	540750	7163867	22.43	-	-	-	-	-	0.00
Lake B0	8/24/2014	7:35	2	540750	7163867	22.43	-	-	-	-	-	0.00
Lake B0	8/24/2014	7:35	3	541768	7163892	22.43	-	-	-	-	-	0.00
Lake B0	8/24/2014	7:35	4	541768	7163892	22.43	-	-	-	-	-	0.00
Lake Ac35	8/22/2014	15:07	1	541590	7161951	24.83	-	-	-	-	-	0.00
Lake Ac35	8/22/2014	15:07	2	541590	7161951	24.83	-	-	-	-	-	0.00
Lake Ac35	8/22/2014	15:07	3	541600	7161987	24.83	-	-	-	-	-	0.00
Lake Ac35	8/22/2014	15:07	4	541600	7161987	24.83	-	-	-	-	-	0.00
Lake Ac35	8/22/2014	15:07	5	541604	7162025	24.83	-	-	-	-	-	0.00
Lake Ac35	8/22/2014	15:07	6	541604	7162025	24.83	-	-	-	-	-	0.00
Lake Ac35	8/22/2014	15:07	7	541654	7161903	24.83	-	-	-	-	-	0.00
Lake Ac35	8/22/2014	15:07	8	541654	7161903	24.83	-	-	-	-	-	0.00
Lake Ac35	8/22/2014	15:07	9	541660	7161897	24.83	-	-	-	-	-	0.00
Lake Ac35	8/22/2014	15:07	10	541660	7161897	24.83	-	-	-	-	-	0.00
Lake B1	8/25/2014	12:28	1	539887	7163739	26.80	-	-	-	-	-	0.00

Table D-5 Fish Catch Data Collected with Minnow Traps, Summer Program, 2014

Waterbody	Date	Time	Set	Easting	Northing	Effort (h)	ARGR (#)	BURB (#)	LKCH (#)	SLSC (#)	Total (#)	CPUE (fish/ trap-d)
Lake B1	8/25/2014	12:28	2	539887	7163739	26.80	-	-	-	-	-	0.00
Lake B1	8/25/2014	12:28	3	539887	7163739	26.80	-	-	-	-	-	0.00
Lake B1	8/25/2014	12:28	4	539885	7163769	26.80	-	-	3	-	3	2.69
Lake Ac36	8/24/2014	13:01	1	541220	7162730	25.52	-	-	-	-	-	0.00
Lake Ac36	8/24/2014	13:01	2	541220	7162730	25.52	-	-	-	-	-	0.00
Lake Ac36	8/24/2014	13:01	3	541251	7162681	25.52	-	-	-	-	-	0.00
Lake Ac36	8/24/2014	13:01	4	541251	7162681	25.52	-	-	-	-	-	0.00
Lake Ac36	8/24/2014	13:01	5	541265	7162668	25.52	-	-	-	-	-	0.00
Lake Ac36	8/24/2014	13:01	6	541265	7162668	25.52	-	-	-	-	-	0.00
Lac du Sauvage	8/21/2014	7:50	1	545813	7161820	23.33	-	-	-	-	-	0.00
Lac du Sauvage	8/22/2014	8:02	2	545813	7161820	24.20	-	-	-	-	-	0.00
					Total	**874.4**						
						36.4 trap-d	**0**	**0**	**3**	**0**	**3**	**0.08**

h = hour; # = number; ARGR = Arctic Grayling; BURB = Burbot; LKCH = Lake Chub; SLSC = Slimy Sculpin; CPUE = catch-per-unit-effort; fish/trap-d = fish caught per trap day.

DOMINION DIAMOND

Table D-6 Fish Catch Data Collected with Two-Way Traps, 2014

Waterbody	Trap Type	Date	Set	Time	Direction	Effort (h)	ARGR (#)	BURB (#)	LKCH (#)	LKTR (#)	NRPK (#)	RNWH (#)	SLSC (#)	Total (#)	CPUE (fish/ trap-h)
Stream B0	Fyke	6/11/2014	1	16:00	d/s	5.50	-	-	-	-	-	-	-	0	0.00
Stream B0	Fyke	6/11/2014	1	16:00	u/s	-	7	-	-	-	-	-	-	7	1.27
Stream B0	Fyke	6/12/2014	2	8:00	d/s	16.00	-	-	-	-	-	-	-	0	0.00
Stream B0	Fyke	6/12/2014	2	8:00	u/s	-	19	-	-	1	-	-	-	20	1.25
Stream B0	Fyke	6/12/2014	3	16:00	d/s	7.25	-	-	-	-	-	-	-	0	0.00
Stream B0	Fyke	6/12/2014	3	16:00	u/s	-	16	-	-	-	-	-	-	16	2.21
Stream B0	Fyke	6/13/2014	4	8:15	d/s	15.25	0	-	-	-	-	-	-	0	0.00
Stream B0	Fyke	6/13/2014	4	8:15	u/s	-	21	-	-	-	-	-	-	21	1.38
Stream B0	Fyke	6/13/2014	5	15:30	u/s	7.50	12	-	-	-	-	-	-	12	1.60
Stream B0	Fyke	6/13/2014	5	16:00	d/s	-	2	-	-	-	-	-	-	2	0.27
Stream B0	Fyke	6/14/2014	6	8:30	d/s	16.50	-	-	-	-	-	-	-	0	0.00
Stream B0	Fyke	6/14/2014	6	8:30	u/s	-	23	-	-	-	-	-	-	23	1.39
Stream B0	Fyke	6/14/2014	7	13:15	u/s	4.75	6	-	-	-	-	-	-	6	1.26
Stream B0	Fyke	6/14/2014	7	13:15	d/s	-	3	-	-	-	-	-	-	3	0.63
Stream B0	Fyke	6/15/2014	8	7:45	d/s	18.50	-	-	-	-	-	-	-	0	0.00
Stream B0	Fyke	6/15/2014	8	7:45	u/s	-	38	-	-	-	-	-	-	38	2.05
Stream B0	Fyke	6/15/2014	9	13:45	u/s	6.00	-	-	-	-	-	-	-	0	0.00
Stream B0	Fyke	6/15/2014	9	13:45	d/s	-	1	-	-	-	-	-	-	1	0.17
Stream B0	Fyke	6/16/2014	10	10:00	d/s	20.25	-	-	-	-	-	-	-	0	0.00
Stream B0	Fyke	6/16/2014	10	10:00	u/s	-	4	-	-	-	-	-	-	4	0.20
Stream B0	Fyke	6/17/2014	11	9:00	d/s	23.00	1	-	-	-	-	-	-	1	0.04
Stream B0	Fyke	6/17/2014	11	9:00	u/s	-	17	-	-	-	-	-	-	17	0.74
Stream B0	Fyke	6/17/2014	12	14:15	u/s	5.25	-	-	-	-	-	-	-	0	0.00
Stream B0	Fyke	6/17/2014	12	14:15	d/s	-	2	-	-	-	-	-	-	2	0.38
Stream B0	Fyke	6/18/2014	13	9:00	d/s	18.75	-	-	-	-	-	-	-	0	0.00
Stream B0	Fyke	6/18/2014	13	9:00	u/s	-	20	-	-	-	-	-	-	20	1.07

DOMINION DIAMOND

Table D-6 Fish Catch Data Collected with Two-Way Traps, 2014

Waterbody	Trap Type	Date	Set	Time	Direction	Effort (h)	ARGR (#)	BURB (#)	LKCH (#)	LKTR (#)	NRPK (#)	RNWH (#)	SLSC (#)	Total (#)	CPUE (fish/ trap-h)
Stream B0	Fyke	6/18/2014	14	14:30	d/s	5.50	-	-	-	-	-	-	-	0	0.00
Stream B0	Fyke	6/18/2014	14	14:30	u/s	-	8	-	-	-	-	-	-	8	1.45
Stream B0	Fyke	6/19/2014	15	8:15	d/s	17.75	-	-	-	-	-	-	-	0	0.00
Stream B0	Fyke	6/19/2014	15	8:15	u/s	-	20	-	-	-	-	-	-	20	1.13
Stream B0	Fyke	6/19/2014	16	13:40	d/s	5.42	4	-	-	-	-	-	-	4	0.74
Stream B0	Fyke	6/19/2014	16	13:40	u/s	-	2	-	-	-	1	-	-	3	0.55
Stream B0	Fyke	6/20/2014	17	8:20	u/s	20.00	74	-	-	-	-	-	-	74	3.70
Stream B0	Fyke	6/20/2014	17	9:40	d/s	-	1	-	-	-	-	-	-	1	0.05
Stream B0	Fyke	6/20/2014	18	15:30	u/s	8.42	25	-	-	-	-	-	-	25	2.97
Stream B0	Fyke	6/20/2014	18	16:45	d/s	-	2	-	-	-	-	-	-	2	0.24
Stream B0	Fyke	6/21/2014	19	10:00	d/s	18.50	8	-	-	-	-	-	-	8	0.43
Stream B0	Fyke	6/21/2014	19	10:00	u/s	-	94	-	-	-	-	-	-	94	5.08
Stream B1	Hoop	6/13/2014	1	8:45	d/s	17.00	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/13/2014	1	8:45	u/s	-	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/13/2014	2	17:00	d/s	8.00	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/13/2014	2	17:00	u/s	-	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/14/2014	3	9:15	d/s	16.25	2	-	-	-	-	-	3	5	0.31
Stream B1	Hoop	6/14/2014	3	9:15	d/s	-	-	-	-	-	-	-		0	0.00
Stream B1	Hoop	6/14/2014	4	12:50	u/s	3.58	1	-	1	-	-	-	1	3	0.84
Stream B1	Hoop	6/14/2014	4	12:50	d/s	-	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/15/2014	5	13:20	u/s	24.50	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/15/2014	5	13:20	d/s	-	4	-	-	-	-	1	-	5	0.20
Stream B1	Hoop	6/16/2014	6	10:00	d/s	20.40	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/16/2014	6	10:00	u/s	-	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/17/2014	7	9:45	d/s	23.75	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/17/2014	7	9:45	u/s	-	-	-	-	-	-	-	-	0	0.00

Table D-6 Fish Catch Data Collected with Two-Way Traps, 2014

Waterbody	Trap Type	Date	Set	Time	Direction	Effort (h)	ARGR (#)	BURB (#)	LKCH (#)	LKTR (#)	NRPK (#)	RNWH (#)	SLSC (#)	Total (#)	CPUE (fish/ trap-h)
Stream B1	Hoop	6/18/2014	8	8:30	d/s	22.75	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/18/2014	8	8:30	u/s	-	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/18/2014	9	14:00	d/s	5.50	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/18/2014	9	14:00	u/s	-	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/19/2014	10	8:00	d/s	18.00	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/19/2014	10	8:00	u/s	-	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/19/2014	11	14:10	d/s	6.20	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/19/2014	11	14:10	u/s	-	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/20/2014	12	16:45	d/s	26.60	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/20/2014	12	16:45	u/s	-	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/21/2014	13	9:00	d/s	16.25	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	6/21/2014	13	9:00	u/s	-	-	-	-	-	-	-	-	0	0.00
Stream B1	Hoop	8/20/2014	1	11:42	u/s	20.63	-	3	1	-	-	-	-	4	0.19
Stream B1	Hoop	8/20/2014	1	12:08	d/s	-	-	-	13	-	-	-	-	13	0.63
Stream B1	Hoop	8/21/2014	2	12:53	u/s	25.18	-	1	6	-	-	-	-	7	0.28
Stream B1	Hoop	8/21/2014	2	13:09	d/s	-	1	-	19	-	-	-	1	21	0.83
Stream B1	Hoop	8/22/2014	3	10:10	u/s	21.30	-	-	6	-	-	1	-	7	0.33
Stream B1	Hoop	8/22/2014	3	10:27	d/s	-	1	-	11	-	-	-	1	13	0.61
Stream B1	Hoop	8/23/2014	4	10:12	u/s	23.98	-	1	4	-	-	-	-	5	0.21
Stream B1	Hoop	8/23/2014	4	10:26	d/s	-	-	2		-	-	-	-	2	0.08
Stream B1	Hoop	8/24/2014	5	9:54	u/s	23.63	-	1	1	-	-	-	-	2	0.08
Stream B1	Hoop	8/24/2014	5	10:04	d/s	-	-	1	4	-	-	-	-	5	0.21
Stream B1	Hoop	8/25/2014	6	11:47	u/s	25.87	-	-	5	-	-	-	1	6	0.23
Stream B1	Hoop	8/25/2014	6	11:56	d/s	-	-	-	-	-	-	-	-	0	0.00
Stream B0	Fyke	8/20/2014	1	9:08	d/s	20.97	129	4	-	1	-	-	-	134	6.39
Stream B0	Fyke	8/20/2014	1	10:32	u/s	-	9	2	-	-	-	-	-	11	0.52

Table D-6 Fish Catch Data Collected with Two-Way Traps, 2014

Waterbody	Trap Type	Date	Set	Time	Direction	Effort (h)	ARGR (#)	BURB (#)	LKCH (#)	LKTR (#)	NRPK (#)	RNWH (#)	SLSC (#)	Total (#)	CPUE (fish/ trap-h)
Stream B0	Fyke	8/21/2014	2	9:42	d/s	24.57	69	6	-	-	-	-	-	75	3.05
Stream B0	Fyke	8/21/2014	2	10:24	u/s	-	6		-	-	-	-	-	6	0.24
Stream B0	Fyke	8/22/2014	3	8:41	d/s	22.98	20	9	-	-	-	-	-	29	1.26
Stream B0	Fyke	8/22/2014	3	9:16	u/s	-	4		-	-	-	-	-	4	0.17
Stream B0	Fyke	8/23/2014	4	8:15	d/s	23.57	3	5	-	-	-	-	-	8	0.34
Stream B0	Fyke	8/23/2014	4	8:38	u/s	-	8		-	-	-	-	-	8	0.34
Stream B0	Fyke	8/24/2014	5	7:48	d/s	23.67	7	5	-	-	-	-	-	12	0.51
Stream B0	Fyke	8/24/2014	5	8:18	u/s	-	17		-	-	-	-	-	17	0.72
Stream B0	Fyke	8/25/2014	6	7:32	d/s	23.60	6	4	-	-	-	-	-	10	0.42
Stream B0	Fyke	8/25/2014	6	7:54	u/s	-	1		-	-	-	-	-	1	0.04
Stream B0	Fyke	8/26/2014	7	10:42	d/s	27.17	1	3	-	-	-	-	-	4	0.15
Stream B0	Fyke	8/26/2014	7	10:52	u/s	-	2	-	-	-	-	-	-	2	0.07
					Total	756.0	721	47	71	2	1	2	7	851	1.13

h = hour; # = number; ARGR = Arctic Grayling; BURB = Burbot; LKCH = Lake Chub; LKTR = Lake Trout; NRPK = Northern Pike; RNWH = Round Whitefish; SLSC = Slimy Sculpin; CPUE = catch-per-unit-effort; fish/trap-h = fish caught per trap hour.

APPENDIX E

FISH LIFE HISTORY DATA

DOMINION DIAMOND

Tables

Table E-1 Fish Life History Data 1
Table E-2 Fish Life History Data for Ursula Lake 24

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
6/11/14 10:30	Stream B0	Fyke	ARGR	328	461	6	5	-	-
6/11/14 10:30	Stream B0	Fyke	ARGR	260	220	-	-	-	-
6/11/14 10:30	Stream B0	Fyke	ARGR	310	373	5	5	-	-
6/11/14 10:30	Stream B0	Fyke	ARGR	358	530	7	6	-	-
6/11/14 10:30	Stream B0	Fyke	ARGR	320	412	6	5	-	-
6/11/14 10:30	Stream B0	Fyke	ARGR	155	187	-	-	-	-
6/11/14 10:30	Stream B0	Fyke	ARGR	266	255	4	4	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	265	220	-	-	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	140	25	-	-	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	210	105	4	4	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	325	426	5	5	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	335	468	6	5	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	205	96	-	-	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	303	328	5	5	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	290	295	4	5	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	265	208	4	4	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	365	606	7	7	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	193	81	3	3	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	223	131	4	4	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	280	256	4	5	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	324	436	6	6	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	246	168	4	4	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	192	80	3	3	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	205	94	3	3	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	140	30	-	-	-	-
6/11/14 16:00	Stream B0	Fyke	ARGR	151	38	-	-	-	-
6/11/14 16:00	Stream B0	Fyke	LKTR	394	572	6	-	-	12
6/12/14 8:45	Stream B0	Fyke	ARGR	260	206	-	-	-	-
6/12/14 8:45	Stream B0	Fyke	ARGR	265	225	-	-	-	-
6/12/14 8:45	Stream B0	Fyke	ARGR	324	383	5	6	-	-
6/12/14 8:45	Stream B0	Fyke	ARGR	383	612	7	6	-	-
6/12/14 8:45	Stream B0	Fyke	ARGR	280	261	4	5	-	-
6/12/14 8:45	Stream B0	Fyke	ARGR	246	187	-	-	-	-
6/12/14 8:45	Stream B0	Fyke	ARGR	191	71	3	3	-	-
6/12/14 8:45	Stream B0	Fyke	ARGR	274	233	4	4	-	-
6/12/14 8:45	Stream B0	Fyke	ARGR	210	81	-	-	-	-
6/12/14 8:45	Stream B0	Fyke	ARGR	245	162	4	4	-	-

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
6/12/14 8:45	Stream B0	Fyke	ARGR	238	152	4	4	-	-
6/12/14 8:45	Stream B0	Fyke	ARGR	265	213	4	4	-	-
6/12/14 8:45	Stream B0	Fyke	ARGR	189	91	-	-	-	-
6/12/14 8:45	Stream B0	Fyke	ARGR	245	174	-	-	-	-
6/12/14 8:45	Stream B0	Fyke	ARGR	183	67	3	3	-	-
6/12/14 8:45	Stream B0	Fyke	ARGR	203	95	3	4	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	280	296	4	5	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	202	108	3	4	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	275	247	4	5	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	300	328	4	5	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	288	286	5	5	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	135	27	-	-	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	208	103	3	4	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	190	87	3	4	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	250	171	-	-	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	187	77	3	4	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	145	40	-	-	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	267	221	5	5	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	222	134	4	4	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	334	418	6	6	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	190	76	3	4	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	244	154	3	5	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	235	135	4	4	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	256	200	-	-	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	238	167	-	-	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	336	428	6	6	-	-
6/12/14 17:00	Stream B0	Fyke	ARGR	280	259	4	5	-	-
6/13/14 8:30	Stream B0	Fyke	ARGR	240	142	-	-	-	-
6/13/14 8:30	Stream B0	Fyke	ARGR	250	210	-	-	-	-
6/13/14 8:30	Stream B0	Fyke	ARGR	139	25	-	-	-	-
6/13/14 8:30	Stream B0	Fyke	ARGR	148	37	-	-	-	-
6/13/14 8:30	Stream B0	Fyke	ARGR	83	7	-	-	-	-
6/13/14 8:30	Stream B0	Fyke	ARGR	156	40	-	-	-	-
6/13/14 8:30	Stream B0	Fyke	ARGR	141	22	-	-	-	-
6/13/14 8:30	Stream B0	Fyke	ARGR	137	25	-	-	-	-
6/13/14 8:30	Stream B0	Fyke	ARGR	154	38	-	-	-	-
6/13/14 8:30	Stream B0	Fyke	ARGR	147	28	-	-	-	-

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
6/13/14 8:30	Stream B0	Fyke	ARGR	330	395	6	6	-	-
6/13/14 8:30	Stream B0	Fyke	ARGR	330	475	6	6	-	-
6/13/14 8:30	Stream B0	Fyke	ARGR	131	24	-	-	-	-
6/13/14 8:30	Stream B0	Fyke	ARGR	141	25	-	-	-	-
6/13/14 13:00	Stream Ac35	EF	ARGR	78	4	-	-	-	-
6/13/14 13:00	Stream Ac35	EF	ARGR	162	49	-	-	-	-
6/13/14 13:00	Stream Ac35	EF	ARGR	80	5	-	-	-	-
6/13/14 13:00	Stream Ac35	EF	ARGR	82	6	-	-	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	265	225	-	-	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	333	442	6	6	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	325	416	6	7	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	247	176	4	5	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	145	31	-	-	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	324	408	-	-	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	206	104	3	4	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	259	210	4	5	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	260	198	-	-	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	260	214	4	5	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	268	219	4	4	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	191	83	3	3	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	115	17	-	-	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	153	38	-	-	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	209	90	-	-	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	135	27	-	-	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	128	23	-	-	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	200	79	3	4	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	74	6	-	-	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	123	23	-	-	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	125	22	-	-	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	111	14	-	-	-	-
6/13/14 16:00	Stream B0	Fyke	ARGR	125	20	-	-	-	-
6/13/14 17:00	Stream B1	Hoop	ARGR	217	112	3	3	-	-
6/13/14 17:00	Stream B1	Hoop	ARGR	157	40	-	-	-	-
6/13/14 17:00	Stream B1	Hoop	SLSC	98	5	-	-	-	-
6/13/14 17:00	Stream B1	Hoop	SLSC	52		-	-	-	-
6/13/14 17:00	Stream B1	Hoop	SLSC	57	1	-	-	-	-
6/14/14 8:30	Stream B0	Fyke	ARGR	136	25	-	-	-	-

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
6/14/14 8:30	Stream B0	Fyke	ARGR	197	16	-	-	-	-
6/14/14 8:30	Stream B0	Fyke	ARGR	151	31	-	-	-	-
6/14/14 8:30	Stream B0	Fyke	ARGR	138	25	-	-	-	-
6/14/14 8:30	Stream B0	Fyke	ARGR	150	37	-	-	-	-
6/14/14 8:30	Stream B0	Fyke	ARGR	142	27	-	-	-	-
6/14/14 8:30	Stream B0	Fyke	ARGR	127	18	-	-	-	-
6/14/14 8:30	Stream B0	Fyke	ARGR	145	30	-	-	-	-
6/14/14 8:30	Stream B0	Fyke	ARGR	128	21	-	-	-	-
6/14/14 9:15	Stream B1	Hoop	ARGR	216	110	-	-	-	-
6/14/14 9:15	Stream B1	Hoop	LKCH	130	22	-	-	-	-
6/14/14 9:15	Stream B1	Hoop	SLSC	56		-	-	-	-
6/14/14 9:50	Stream B2	EF	ARGR	138	25	-	-	-	-
6/14/14 9:50	Stream B2	EF	ARGR	142	25	-	-	-	-
6/14/14 9:50	Stream B2	EF	ARGR	145	30	-	-	-	-
6/14/14 9:50	Stream B2	EF	ARGR	152	35	-	-	-	-
6/14/14 11:20	Stream B3	EF	ARGR	352	510	-	-	-	-
6/14/14 11:20	Stream B3	EF	ARGR	220	97	-	-	-	-
6/14/14 11:20	Stream B3	EF	SLSC	89		-	-	-	-
6/14/14 11:20	Stream B4	EF	ARGR	224	122	-	-	-	-
6/14/14 12:50	Stream B1	Hoop	ARGR	154	34	-	-	-	-
6/14/14 12:50	Stream B1	Hoop	ARGR	138	25	-	-	-	-
6/14/14 12:50	Stream B1	Hoop	ARGR	154	33	-	-	-	-
6/14/14 12:50	Stream B1	Hoop	ARGR	147	31	-	-	-	-
6/14/14 12:50	Stream B1	Hoop	RNWH	120	13	-	2	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	310	359	5	5	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	310	321	4	5	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	225	128	4	4	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	200	95	3	4	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	197	78	3	3	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	176	58	-	3	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	142	29	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	118	18	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	209	94	3	3	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	140	25	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	154	38	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	165	39	-	2	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	149	31	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	135	26	-	-	-	-

DOMINION DIAMOND

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
6/14/14 13:15	Stream B0	Fyke	ARGR	147	33	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	142	25	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	140	27	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	149	31	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	145	35	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	150	36	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	150	38	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	158	43	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	141	26	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	146	27	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	129	20	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	139	24	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	153	30	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	140	31	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	148	36	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	136	20	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	87	6	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	142	26	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	140	27	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	158	34	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	155	39	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	140	27	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	144	28	-	-	-	-
6/14/14 13:15	Stream B0	Fyke	ARGR	135	26	-	-	-	-
6/15/14 7:45	Stream B0	Fyke	ARGR	87	5	-	-	-	-
6/15/14 9:00	Stream B15	EF	ARGR	216	84	-	-	-	-
6/15/14 9:00	Stream B15	EF	ARGR	173	67	-	-	-	-
6/15/14 9:00	Stream B15	EF	ARGR	148	28	-	-	-	-
6/15/14 13:45	Stream B0	Fyke	ARGR	203	104	-	-	-	-
6/15/14 13:45	Stream B0	Fyke	ARGR	88	5	-	-	-	-
6/15/14 13:45	Stream B0	Fyke	ARGR	88	5	-	-	-	-
6/15/14 13:45	Stream B0	Fyke	ARGR	119	17	-	-	-	-
6/16/14 10:00	Stream B0	Fyke	ARGR	245	173	-	-	-	-
6/16/14 10:00	Stream B0	Fyke	ARGR	318	493	7	7	-	-
6/16/14 10:00	Stream B0	Fyke	ARGR	262	184	4	4	-	-

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
6/16/14 10:00	Stream B0	Fyke	ARGR	260	204	4	4	-	-
6/16/14 10:00	Stream B0	Fyke	ARGR	233	137	4	4	-	-
6/16/14 10:00	Stream B0	Fyke	ARGR	151	32	-	-	-	-
6/16/14 10:00	Stream B0	Fyke	ARGR	135	24	-	-	-	-
6/16/14 10:00	Stream B0	Fyke	ARGR	147	32	-	-	-	-
6/16/14 10:00	Stream B0	Fyke	ARGR	84	5	-	-	-	-
6/16/14 10:00	Stream B0	Fyke	ARGR	81	4	-	-	-	-
6/16/14 10:00	Stream B0	Fyke	ARGR	86	5	-	-	-	-
6/16/14 10:00	Stream B0	Fyke	ARGR	93	5	-	-	-	-
6/16/14 10:00	Stream B0	Fyke	ARGR	81	5	-	-	-	-
6/16/14 10:00	Stream B0	Fyke	ARGR	83	4	-	-	-	-
6/16/14 10:00	Stream B0	Fyke	ARGR	78	4	-	-	-	-
6/16/14 10:00	Stream B0	Fyke	ARGR	86	6	-	-	-	-
6/16/14 10:00	Stream B0	Fyke	ARGR	86	5	-	-	-	-
6/16/14 10:00	Stream B0	Fyke	ARGR	84	5	-	-	-	-
6/17/14 9:00	Stream B0	Fyke	ARGR	80	4	-	-	-	-
6/17/14 9:00	Stream B0	Fyke	ARGR	150	31	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	238	163	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	155	35	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	150	34	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	86	5	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	135	23	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	133	23	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	83	5	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	86	6	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	81	4	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	90	7	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	86	5	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	84	6	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	127	19	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	87	5	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	77	4	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	145	26	-	-	-	-

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
6/17/14 14:15	Stream B0	Fyke	ARGR	145	30	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	78	4	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	80	5	-	-	-	-
6/17/14 14:15	Stream B0	Fyke	ARGR	90	5	-	-	-	-
6/18/14 9:00	Stream B0	Fyke	ARGR	235	173	-	-	-	-
6/18/14 9:00	Stream B0	Fyke	ARGR	264	222	4	4	-	-
6/18/14 9:00	Stream B0	Fyke	ARGR	218	233	-	4	-	-
6/18/14 9:00	Stream B0	Fyke	ARGR	204	103	-	-	-	-
6/18/14 9:00	Stream B0	Fyke	ARGR	143	30	-	-	-	-
6/18/14 9:00	Stream B0	Fyke	ARGR	121	18	-	-	-	-
6/18/14 9:00	Stream B0	Fyke	ARGR	81	5	-	-	-	-
6/18/14 9:00	Stream B0	Fyke	ARGR	80	4	-	-	-	-
6/18/14 9:45	Stream B1	EF	ARGR	196	81	-	-	-	-
6/18/14 9:45	Stream B1	EF	ARGR	191	72	-	-	-	-
6/18/14 9:45	Stream B1	EF	ARGR	278	208	-	-	-	-
6/18/14 9:45	Stream B1	EF	ARGR	273	222	-	-	-	-
6/18/14 9:45	Stream B1	EF	ARGR	335	386	-	-	-	-
6/18/14 9:45	Stream B1	EF	ARGR	275		-	-	-	-
6/18/14 9:45	Stream B1	EF	ARGR	282	254	-	-	-	-
6/18/14 9:45	Stream B1	EF	ARGR	139	29	-	-	-	-
6/18/14 11:00	Stream B0	EF	ARGR	321		-	-	-	-
6/18/14 13:00	Lake B1 (Christine)	EF	BURB	395		-	-	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	256	178	4	4	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	305	325	5	5	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	256	203	-	-	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	280	245	4	5	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	245	175	3	4	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	195	90	-	3	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	253	184	4	4	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	250	198	-	-	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	235	147	4	4	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	154	50	-	-	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	130	21	-	-	-	-

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
6/18/14 14:30	Stream B0	Fyke	ARGR	128	23	-	-	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	142	31	-	-	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	82	5	-	-	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	141	28	-	-	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	92	5	-	-	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	150	31	-	-	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	142	28	-	-	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	77	5	-	-	-	-
6/18/14 14:30	Stream B0	Fyke	ARGR	81	5	-	-	-	-
6/19/14 8:15	Stream B0	Fyke	NRPK	325	300	-	-	-	-
6/19/14 8:15	Stream B0	Fyke	ARGR	85	5	-	-	-	-
6/19/14 8:15	Stream B0	Fyke	ARGR	91	7	-	-	-	-
6/19/14 8:15	Stream B0	Fyke	ARGR	181	23	-	-	-	-
6/19/14 8:15	Stream B0	Fyke	ARGR	90	6	-	-	-	-
6/19/14 8:15	Stream B0	Fyke	ARGR	82	5	-	-	-	-
6/19/14 8:15	Stream B0	Fyke	ARGR	81	5	-	-	-	-
6/19/14 9:20	Lac Du Sauvage	EF	ARGR	70	3	-	-	-	-
6/19/14 9:20	Lac Du Sauvage	EF	NSST	28	4	-	-	-	-
6/19/14 9:20	Lac Du Sauvage	EF	LKTR	200	80	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	211	98	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	132	27	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	254	178	3	4	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	295	308	4	5	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	190	83	-	3	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	157	48	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	215	110	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	247	174	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	305	323	5	6	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	157	38	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	262	195	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	314	354	5	5	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	248	188	3	4	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	152	35	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	171	57	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	156	48	-	-	-	-

DOMINION DIAMOND

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
6/19/14 13:40	Stream B0	Fyke	ARGR	124	22	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	200	94	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	143	33	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	144	36	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	242	167	3	4	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	168	60	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	145	34	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	150	38	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	146	30	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	219	122	3	3	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	207	103	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	140	31	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	80	5	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	140	31	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	86	8	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	89	7	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	72	3	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	250	177	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	211	100	3	3	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	147	37	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	140	33	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	154	38	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	145	32	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	236	146	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	153	39	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	91	7	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	84	5	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	146	37	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	250	185	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	267	252	4	4	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	240	173	3	4	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	150	34	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	250	205	3	4	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	154	40	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	140	27	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	175	64	-	-	-	-

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
6/19/14 13:40	Stream B0	Fyke	ARGR	123	21	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	144	33	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	150	40	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	206	96	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	250	204	3	4	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	224	121	3	4	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	195	94	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	141	25	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	211	104	3	3	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	151	26	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	203	104	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	197	83	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	226	143	3	3	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	180	67	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	146	34	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	252	198	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	179	67	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	220	111	3	4	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	120	16	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	237	170	-	4	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	238	161	3	4	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	81	5	-	-	-	-
6/19/14 13:40	Stream B0	Fyke	ARGR	90	7	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	137	26	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	135	26	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	306	327	5	5	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	195	89	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	231	149	3	4	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	234	160	4	4	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	207	105	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	200	78	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	170	69	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	147	33	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	155	38	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	140	33	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	160	51	-	-	-	-

DOMINION DIAMOND

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
6/20/14 8:20	Stream B0	Fyke	ARGR	163	51	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	141	33	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	85	7	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	145	35	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	137	22	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	100	11	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	155	33	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	135	25	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	140	35	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	125	23	-	-	-	-
6/20/14 8:20	Stream B0	Fyke	ARGR	122	16	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	185	83	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	145	38	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	145	31	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	140	34	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	140	34	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	159	40	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	138	32	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	150	35	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	140	30	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	125	18	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	140	35	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	158	49	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	151	41	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	162	44	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	146	41	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	144	35	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	87	5	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	135	27	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	130	21	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	145	31	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	150	39	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	140	37	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	137	31	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	161	44	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	144	32	-	-	-	-

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
6/20/14 15:30	Stream B0	Fyke	ARGR	150	36	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	156	46	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	150	32	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	143	32	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	131	29	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	155	40	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	143	31	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	131	22	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	136	27	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	146	32	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	145	33	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	130	25	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	151	40	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	128	24	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	145	36	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	85	5	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	168	52	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	147	40	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	155	40	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	94	6	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	146	32	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	142	27	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	140	27	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	146	34	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	138	29	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	150	38	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	145	30	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	136	29	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	158	41	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	150	34	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	150	33	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	83	5	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	152	42	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	142	34	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	184	70	-	-	-	-

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Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
6/20/14 15:30	Stream B0	Fyke	ARGR	258	210	4	4	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	-	96	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	265	196	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	252	181	4	4	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	140	33	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	145	36	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	246	155	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	140	31	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	190	74	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	214	116	3	3	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	234	147	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	222	122	3	3	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	169	54	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	242	147	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	204	99	3	3	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	210	92	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	84	5	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	207	90	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	142	35	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	150	39	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	155	43	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	150	41	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	135	31	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	153	38	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	140	31	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	133	25	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	86	6	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	162	49	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	155	34	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	145	34	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	150	30	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	160	44	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	155	36	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	121	14	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	240	132	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	145	30	-	-	-	-

DOMINION DIAMOND

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
6/20/14 15:30	Stream B0	Fyke	ARGR	148	32	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	144	35	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	87	8	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	188	73	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	123	15	-	-	-	-
6/20/14 15:30	Stream B0	Fyke	ARGR	147	34	-	-	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	73	5	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	66	3	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	66	3	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	74	3	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	75	4	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	63	2	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	81	5	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	67	5	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	70	4	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	68	3	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	76	4	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	72	4	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	73	4	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	77	6	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	66	3	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	66	3	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	81	6	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	76	4	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	68	3	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	67	2	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	73	3	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	74	4	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	73	4	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	71	5	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	80	4	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	72	4	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	61	2	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	66	3	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	83	6	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	90	5	-	-	-	YOY
8/19/14 13:34	Stream B0	Fyke	ARGR	176	64	2	2	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	136	26	-	-	-	-

DOMINION DIAMOND

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
8/19/14 13:34	Stream B0	Fyke	ARGR	154	44	-	-	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	210	112	-	3	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	141	29	-	-	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	176	52	-	2	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	158	46	-	-	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	144	28	-	-	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	140	32	-	-	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	139	29	-	-	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	132	25	-	-	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	121	19	-	-	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	115	17	-	-	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	150	41	-	-	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	139	32	-	-	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	191	83	-	2	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	188	86	-	2	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	208	119	-	2	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	204	107	-	2	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	170	49	-	2	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	185	76	-	2	-	-
8/19/14 13:34	Stream B0	Fyke	ARGR	181	68	-	2	-	-
8/19/14 13:34	Stream B0	Fyke	BURB	78	5	-	-	-	-
8/19/14 13:34	Stream B0	Fyke	BURB	82	4	-	-	-	-
8/19/14 13:34	Stream B0	Fyke	BURB	75	3	-	-	-	-
8/19/14 13:34	Stream B0	Fyke	BURB	75	4	-	-	-	-
8/19/14 13:34	Stream B0	Fyke	BURB	185	45	-	-	-	-
8/19/14 13:34	Stream B0	Fyke	BURB	305	194	-	-	-	-
8/19/14 13:34	Stream B0	Fyke	LKTR	213	129	3	-	-	7
8/19/14 15:30	Stream B1	Hoop	BURB	290	147	-	-	-	-
8/19/14 15:30	Stream B1	Hoop	BURB	188	50	-	-	-	-
8/19/14 15:30	Stream B1	Hoop	BURB	320	-	-	-	-	-
8/19/14 15:30	Stream B1	Hoop	LKCH	86	6	-	-	-	-
8/19/14 15:30	Stream B1	Hoop	LKCH	120	22	-	-	-	-
8/19/14 15:30	Stream B1	Hoop	LKCH	94	9	-	-	-	-
8/19/14 15:30	Stream B1	Hoop	LKCH	30	-	-	-	-	-
8/19/14 15:30	Stream B1	Hoop	LKCH	22	-	-	-	-	-
8/19/14 15:30	Stream B1	Hoop	LKCH	27	-	-	-	-	-
8/19/14 15:30	Stream B1	Hoop	LKCH	27	-	-	-	-	-
8/19/14 15:30	Stream B1	Hoop	LKCH	30	-	-	-	-	-

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
8/19/14 15:30	Stream B1	Hoop	LKCH	31	-	-	-	-	-
8/19/14 15:30	Stream B1	Hoop	LKCH	30	-	-	-	-	-
8/19/14 15:30	Stream B1	Hoop	LKCH	29	-	-	-	-	-
8/19/14 15:30	Stream B1	Hoop	LKCH	24	-	-	-	-	-
8/19/14 15:30	Stream B1	Hoop	LKCH	24	-	-	-	-	-
8/19/14 15:30	Stream B1	Hoop	LKCH	24	-	-	-	-	-
8/20/14 9:08	Stream B0	Fyke	ARGR	67	3	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	77	5	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	68	4	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	62	2	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	58	2	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	77	3	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	54	1	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	82	5	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	72	3	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	80	5	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	75	4	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	71	3	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	73	3	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	74	3	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	78	4	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	75	3	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	60	2	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	78	5	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	78	4	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	67	2	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	73	3	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	77	4	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	66	2	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	73	4	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	70	4	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	69	2	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	64	2	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	87	6	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	77	4	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	78	3	-	-	-	YOY
8/20/14 9:08	Stream B0	Fyke	ARGR	140	29	-	-	-	-
8/20/14 9:08	Stream B0	Fyke	ARGR	156	41	-	-	-	-

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
8/20/14 9:08	Stream B0	Fyke	ARGR	136	24	-	-	-	-
8/20/14 9:08	Stream B0	Fyke	ARGR	129	22	-	-	-	-
8/20/14 9:08	Stream B0	Fyke	ARGR	143	31	-	-	-	-
8/20/14 9:08	Stream B0	Fyke	BURB	94	5	-	-	-	-
8/20/14 9:08	Stream B0	Fyke	BURB	94	5	-	-	-	-
8/20/14 9:08	Stream B0	Fyke	BURB	78	4	-	-	-	-
8/20/14 9:08	Stream B0	Fyke	BURB	89	5	-	-	-	-
8/20/14 9:08	Stream B0	Fyke	BURB	77	3	-	-	-	-
8/20/14 9:08	Stream B0	Fyke	BURB	85	4	-	-	-	-
8/20/2014 9:09	Lac du Sauvage	FWIN	LKWH	530	1,200	-	12	-	-
8/20/14 10:32	Stream B0	Fyke	ARGR	192	82	-	2	-	-
8/20/14 10:32	Stream B0	Fyke	ARGR	191	76	-	2	-	-
8/20/14 10:32	Stream B0	Fyke	ARGR	129	22	-	-	-	-
8/20/2014 11:04	Lac du Sauvage	FWIN	LKWH	504	1,590	-	12	-	-
8/20/2014 11:04	Lac du Sauvage	FWIN	LKWH	550	2,050	-	13	-	-
8/20/2014 11:04	Lac du Sauvage	FWIN	LKWH	536	1,590	-	12	-	-
8/20/14 11:10	Lac du Sauvage	FWIN	LKTR	455	1,015	-	-	9	-
8/20/14 11:10	Lac du Sauvage	FWIN	LKTR	464	950	-	-	9	-
8/20/2014 11:10	Lac du Sauvage	FWIN	LKWH	509	1,585	-	11	-	-
8/20/2014 11:10	Lac du Sauvage	FWIN	LKWH	480	1,095	-	12	-	-
8/20/14 11:42	Stream B1	Hoop	BURB	304	164	-	-	-	-
8/20/14 11:42	Stream B1	Hoop	LKCH	123	21	-	-	-	-
8/20/14 11:42	Stream B1	Hoop	LKCH	33	0	-	-	-	-
8/20/14 11:42	Stream B1	Hoop	LKCH	24	-	-	-	-	-
8/20/14 11:42	Stream B1	Hoop	LKCH	27	-	-	-	-	-
8/20/14 11:42	Stream B1	Hoop	LKCH	26	-	-	-	-	-
8/20/14 11:42	Stream B1	Hoop	LKCH	23	-	-	-	-	-
8/20/14 12:00	Lac du Sauvage	Angling	LKTR	732	4,450	23	-	-	35
8/20/14 12:08	Stream B1	Hoop	ARGR	130	23	-	1	-	-
8/20/14 12:08	Stream B1	Hoop	LKCH	53	2	-	-	-	-
8/20/14 12:08	Stream B1	Hoop	LKCH	23	-	-	-	-	-
8/20/14 12:08	Stream B1	Hoop	LKCH	24	-	-	-	-	-
8/20/14 12:08	Stream B1	Hoop	LKCH	23	-	-	-	-	-
8/20/14 12:08	Stream B1	Hoop	LKCH	34	-	-	-	-	-
8/20/14 12:08	Stream B1	Hoop	LKCH	33	-	-	-	-	-
8/20/14 12:08	Stream B1	Hoop	LKCH	21	-	-	-	-	-
8/20/14 12:08	Stream B1	Hoop	LKCH	26	-	-	-	-	-
8/20/14 12:08	Stream B1	Hoop	LKCH	27	-	-	-	-	-

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
8/20/14 12:08	Stream B1	Hoop	LKCH	28	-	-	-	-	-
8/20/14 12:08	Stream B1	Hoop	LKCH	26	-	-	-	-	-
8/20/14 12:08	Stream B1	Hoop	LKCH	31	-	-	-	-	-
8/20/14 12:08	Stream B1	Hoop	LKCH	27	-	-	-	-	-
8/20/14 12:08	Stream B1	Hoop	LKCH	27	-	-	-	-	-
8/20/14 12:08	Stream B1	Hoop	LKCH	26	-	-	-	-	-
8/20/14 12:08	Stream B1	Hoop	LKCH	27	-	-	-	-	-
8/20/14 12:08	Stream B1	Hoop	LKCH	28	-	-	-	-	-
8/20/14 12:08	Stream B1	Hoop	LKCH	23	-	-	-	-	-
8/20/14 12:08	Stream B1	Hoop	LKCH	29	-	-	-	-	-
8/20/14 12:08	Stream B1	Hoop	SLSC	23	-	-	-	-	-
8/21/2014 9:20	Lac du Sauvage	FWIN	LKWH	506	1,515	-	11	-	-
8/21/2014 9:20	Lac du Sauvage	FWIN	LKWH	518	2,000	-	15	-	-
8/21/2014 9:28	Lac du Sauvage	FWIN	LKWH	485	1,450	-	10	-	-
8/21/2014 9:28	Lac du Sauvage	FWIN	LKWH	504	1,650	-	9	-	-
8/21/14 9:42	Stream B0	Fyke	ARGR	73	4	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	72	4	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	74	5	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	68	3	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	66	3	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	69	3	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	68	3	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	70	4	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	64	2	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	73	4	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	74	4	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	71	4	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	68	3	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	67	3	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	71	3	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	66	3	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	68	3	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	75	4	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	58	2	-	-	-	YOY
8/21/14 9:42	Stream B0	Fyke	ARGR	136	26	-	-	-	-
8/21/14 9:42	Stream B0	Fyke	BURB	83	4	-	-	-	-
8/21/14 9:42	Stream B0	Fyke	BURB	83	4	-	-	-	-
8/21/14 9:42	Stream B0	Fyke	BURB	80	3	-	-	-	-

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
8/21/14 9:42	Stream B0	Fyke	BURB	93	6	-	-	-	-
8/21/14 9:42	Stream B0	Fyke	BURB	83	3	-	-	-	-
8/21/14 9:42	Stream B0	Fyke	BURB	87	4	-	-	-	-
8/21/14 9:42	Stream B0	Fyke	BURB	72	3	-	-	-	-
8/21/14 9:42	Stream B0	Fyke	BURB	78	4	-	-	-	-
8/21/14 9:42	Stream B0	Fyke	BURB	81	4	-	-	-	-
8/21/14 9:47	Lac du Sauvage	Angling	LKTR	575	2,015	-	-	-	-
8/21/14 10:24	Stream B0	Fyke	ARGR	66	2	-	-	-	YOY
8/21/14 10:24	Stream B0	Fyke	ARGR	134	24	-	-	-	-
8/21/14 10:24	Stream B0	Fyke	ARGR	134	24	-	-	-	-
8/21/14 10:24	Stream B0	Fyke	ARGR	195	89	-	3	-	-
8/21/14 11:59	Lac du Sauvage	FWIN	LKTR	555	2,100	-	-	20	-
8/21/2014 11:59	Lac du Sauvage	FWIN	LKWH	505	1,800	-	14	-	-
8/21/2014 12:10	Lac du Sauvage	FWIN	LKWH	495	1,700	-	11	-	-
8/21/2014 12:10	Lac du Sauvage	FWIN	LKWH	528	1,900	-	11	-	-
8/21/14 12:13	Lac du Sauvage	Angling	LKTR	511	1,500	-	-	10	-
8/21/14 12:53	Stream B1	Hoop	LKCH	93	9	-	-	-	-
8/21/14 12:53	Stream B1	Hoop	LKCH	27	-	-	-	-	-
8/21/14 12:53	Stream B1	Hoop	LKCH	29	-	-	-	-	-
8/21/14 12:53	Stream B1	Hoop	LKCH	27	-	-	-	-	-
8/21/14 12:53	Stream B1	Hoop	LKCH	28	-	-	-	-	-
8/21/14 12:53	Stream B1	Hoop	LKCH	28	-	-	-	-	-
8/21/14 12:53	Stream B1	Hoop	RNWH	196	76	-	3	-	-
8/21/14 13:09	Stream B1	Hoop	ARGR	77	3	-	-	-	YOY
8/21/14 13:09	Stream B1	Hoop	LKCH	28	-	-	-	-	-
8/21/14 13:09	Stream B1	Hoop	LKCH	110	13	-	-	-	-
8/21/14 13:09	Stream B1	Hoop	LKCH	29	-	-	-	-	-
8/21/14 13:09	Stream B1	Hoop	LKCH	27	-	-	-	-	-
8/21/14 13:09	Stream B1	Hoop	LKCH	24	-	-	-	-	-
8/21/14 13:09	Stream B1	Hoop	LKCH	22	-	-	-	-	-
8/21/14 13:09	Stream B1	Hoop	LKCH	28	-	-	-	-	-
8/21/14 13:09	Stream B1	Hoop	LKCH	30	-	-	-	-	-
8/21/14 13:09	Stream B1	Hoop	LKCH	28	-	-	-	-	-
8/21/14 13:09	Stream B1	Hoop	LKCH	27	-	-	-	-	-
8/21/14 13:09	Stream B1	Hoop	LKCH	25	-	-	-	-	-
8/21/14 13:09	Stream B1	Hoop	SLSC	25	-	-	-	-	-
8/21/14 14:29	Lac du Sauvage	FWIN	LKTR	206	78	-	-	-	-
8/22/2014 8:33	Lac du Sauvage	FWIN	LKWH	544	2,200	-	14	-	-

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
8/22/14 8:41	Stream B0	Fyke	ARGR	138	27	-	-	-	-
8/22/14 8:41	Stream B0	Fyke	ARGR	73	3	-	-	-	YOY
8/22/14 8:41	Stream B0	Fyke	ARGR	72	2	-	-	-	YOY
8/22/14 8:41	Stream B0	Fyke	BURB	70	1	-	-	-	-
8/22/14 8:41	Stream B0	Fyke	BURB	75	2	-	-	-	-
8/22/14 8:41	Stream B0	Fyke	BURB	84	2	-	-	-	-
8/22/14 8:41	Stream B0	Fyke	BURB	82	3	-	-	-	-
8/22/14 8:41	Stream B0	Fyke	BURB	76	3	-	-	-	-
8/22/14 8:46	Lac du Sauvage	Angling	LKTR	496	1,200	-	-	12	-
8/22/14 9:16	Stream B0	Fyke	ARGR	183	68	-	2	-	-
8/22/14 9:16	Stream B0	Fyke	ARGR	181	81	-	2	-	-
8/22/14 9:16	Stream B0	Fyke	ARGR	190	86	-	2	-	-
8/22/14 9:16	Stream B0	Fyke	ARGR	135	28	-	-	-	-
8/22/14 9:16	Stream B0	Fyke	ARGR	205	94	-	-	-	-
8/22/14 9:16	Stream B0	Fyke	ARGR	183	69	-	3	-	-
8/22/14 9:16	Stream B0	Fyke	ARGR	186	81	-	-	-	-
8/22/14 9:16	Stream B0	Fyke	ARGR	210	104	-	-	-	-
8/22/14 10:10	Stream B1	Hoop	BURB	300	162	-	-	-	-
8/22/14 10:10	Stream B1	Hoop	LKCH	27	-	-	-	-	-
8/22/14 10:10	Stream B1	Hoop	LKCH	33	-	-	-	-	-
8/22/14 10:10	Stream B1	Hoop	LKCH	29	-	-	-	-	-
8/22/14 10:10	Stream B1	Hoop	LKCH	32	-	-	-	-	-
8/22/14 10:27	Stream B1	Hoop	BURB	490	820	-	-	-	-
8/22/14 10:27	Stream B1	Hoop	BURB	302	170	-	-	-	-
8/22/14 10:37	Lac du Sauvage	FWIN	LKTR	560	1,950	-	-	11	-
8/22/2014 10:37	Lac du Sauvage	FWIN	LKWH	488	1,700	-	12	-	-
8/22/2014 10:37	Lac du Sauvage	FWIN	LKWH	505	1,950	-	11	-	-
8/22/14 11:05	Lac du Sauvage	FWIN	LKTR	620	3,000	-	-	18	-
8/22/14 11:05	Lac du Sauvage	Angling	LKTR	626	2,900	-	-	11	-
8/22/2014 11:05	Lac du Sauvage	FWIN	LKWH	517	1,600	-	13	-	-
8/22/14 12:34	Lac du Sauvage	Angling	LKTR	633	3,100	-	-	20	-
8/22/14 12:34	Lac du Sauvage	Angling	LKTR	610	2,900	-	-	12	-
8/22/14 12:59	Ac35 lake	FWIN	LKTR	311	384	5	-	-	10
8/23/14 8:15	Stream B0	Fyke	ARGR	190	84	-	-	-	-
8/23/14 8:15	Stream B0	Fyke	ARGR	186	74	-	-	-	-
8/23/14 8:15	Stream B0	Fyke	ARGR	65	3	-	-	-	YOY
8/23/14 8:15	Stream B0	Fyke	ARGR	70	3	-	-	-	YOY
8/23/14 8:15	Stream B0	Fyke	ARGR	79	5	-	-	-	YOY

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
8/23/14 8:15	Stream B0	Fyke	ARGR	72	4	-	-	-	YOY
8/23/14 8:15	Stream B0	Fyke	ARGR	66	3	-	-	-	YOY
8/23/14 8:15	Stream B0	Fyke	BURB	87	4	-	-	-	-
8/23/14 8:15	Stream B0	Fyke	BURB	80	4	-	-	-	-
8/23/14 8:15	Stream B0	Fyke	BURB	82	4	-	-	-	-
8/23/14 8:15	Stream B0	Fyke	BURB	83	4	-	-	-	-
8/23/14 8:15	Stream B0	Fyke	BURB	75	3	-	-	-	-
8/23/14 8:38	Stream B0	Fyke	ARGR	138	23	-	-	-	-
8/23/14 8:38	Stream B0	Fyke	ARGR	194	84	-	-	-	-
8/23/14 8:38	Stream B0	Fyke	ARGR	185	76	-	2	-	-
8/23/14 8:38	Stream B0	Fyke	ARGR	153	37	-	-	-	-
8/23/14 8:38	Stream B0	Fyke	ARGR	197	91	-	2	-	-
8/23/14 8:38	Stream B0	Fyke	ARGR	151	37	-	-	-	-
8/23/14 8:38	Stream B0	Fyke	ARGR	179	57	-	2	-	-
8/23/14 8:38	Stream B0	Fyke	ARGR	134	28	-	-	-	-
8/23/14 8:38	Stream B0	Fyke	ARGR	130	25	-	-	-	-
8/23/14 8:38	Stream B0	Fyke	ARGR	133	25	-	-	-	-
8/23/14 8:38	Stream B0	Fyke	ARGR	72	3	-	-	-	YOY
8/23/14 8:38	Stream B0	Fyke	ARGR	71	3	-	-	-	YOY
8/23/14 8:38	Stream B0	Fyke	ARGR	81	5	-	-	-	YOY
8/23/14 8:38	Stream B0	Fyke	ARGR	70	3	-	-	-	YOY
8/23/14 8:38	Stream B0	Fyke	ARGR	69	3	-	-	-	YOY
8/23/14 8:38	Stream B0	Fyke	ARGR	70	3	-	-	-	YOY
8/23/14 8:38	Stream B0	Fyke	ARGR	71	4	-	-	-	YOY
8/23/14 9:15	Lac du Sauvage	FWIN	LKTR	531	1,700	-	-	10	-
8/23/2014 9:15	Lac du Sauvage	FWIN	LKWH	498	1,950	-	11	-	-
8/23/2014 9:15	Lac du Sauvage	FWIN	LKWH	504	1,900	-	13	-	-
8/23/14 9:17	Lac du Sauvage	Angling	LKTR	574	1,950	-	-	13	-
8/23/14 9:17	Lac du Sauvage	Angling	LKTR	543	1,900	-	-	12	-
8/23/14 9:17	Lac du Sauvage	Angling	LKTR	682	3,550	-	-	24	-
8/23/14 9:17	Lac du Sauvage	Angling	LKTR	695	3,300	-	-	16	-
8/23/14 10:12	Stream B1	Hoop	BURB	299	176	-	-	-	-
8/23/14 10:12	Stream B1	Hoop	LKCH	31	-	-	-	-	-
8/23/14 10:26	Stream B1	Hoop	BURB	395	411	-	-	-	-
8/23/14 10:26	Stream B1	Hoop	LKCH	27	-	-	-	-	-
8/23/14 10:26	Stream B1	Hoop	LKCH	28	-	-	-	-	-
8/23/14 10:26	Stream B1	Hoop	LKCH	31	-	-	-	-	-
8/23/14 10:26	Stream B1	Hoop	LKCH	27	-	-	-	-	-

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
8/23/14 11:37	Lac du Sauvage	FWIN	LKTR	440	850	8	-	-	14
8/23/14 11:37	Lac du Sauvage	FWIN	LKTR	470	1,160	9	-	-	16
8/23/14 11:47	Lac du Sauvage	FWIN	LKTR	650	3,200	18	-	-	28
8/23/2014 11:47	Lac du Sauvage	FWIN	LKWH	489	1,500	-	12	-	-
8/23/14 12:25	Ac36 lake	FWIN	LKTR	355	470	10	-	-	17
8/23/14 12:25	Ac36 lake	FWIN	LKTR	478	1,375	13	-	-	21
8/23/14 12:25	Ac36 lake	FWIN	LKTR	287	258	-	-	8	-
8/23/14 13:10	Lac du Sauvage	Angling	LKTR	697	2,450	-	-	18	-
8/24/14 7:48	Stream B0	Fyke	ARGR	167	65	-	-	-	-
8/24/14 7:48	Stream B0	Fyke	ARGR	75	5	-	-	-	YOY
8/24/14 7:48	Stream B0	Fyke	ARGR	72	4	-	-	-	YOY
8/24/14 7:48	Stream B0	Fyke	ARGR	67	2	-	-	-	YOY
8/24/14 7:48	Stream B0	Fyke	ARGR	76	4	-	-	-	YOY
8/24/14 7:48	Stream B0	Fyke	ARGR	54	1	-	-	-	YOY
8/24/14 7:48	Stream B0	Fyke	BURB	87	5	-	-	-	-
8/24/14 7:48	Stream B0	Fyke	BURB	88	4	-	-	-	-
8/24/14 7:48	Stream B0	Fyke	BURB	71	4	-	-	-	-
8/24/14 7:48	Stream B0	Fyke	BURB	83	3	-	-	-	-
8/24/14 8:18	Stream B0	Fyke	ARGR	190	78	-	2	-	-
8/24/14 9:10	Lac du Sauvage	FWIN	LKTR	417	750	-	-	-	-
8/24/14 9:10	Lac du Sauvage	FWIN	LKTR	450	550	-	-	-	-
8/24/14 9:25	Lac du Sauvage	FWIN	LKTR	597	3,000	-	-	-	-
8/24/2014 9:25	Lac du Sauvage	FWIN	LKWH	408	750	-	-	-	-
8/24/2014 9:25	Lac du Sauvage	FWIN	LKWH	485	1,450	-	-	-	-
8/24/2014 9:40	B1 lake	MT	LKCH	118	21	-	-	-	-
8/24/2014 9:40	B1 lake	MT	LKCH	78	5	-	-	-	-
8/24/2014 9:40	B1 lake	MT	LKCH	75	5	-	-	-	-
8/24/14 9:54	Stream B1	Hoop	LKCH	27	-	-	-	-	-
8/24/14 9:54	Stream B1	Hoop	LKCH	34	-	-	-	-	-
8/24/14 9:54	Stream B1	Hoop	LKCH	31	-	-	-	-	-
8/24/14 9:54	Stream B1	Hoop	LKCH	29	-	-	-	-	-
8/24/14 9:54	Stream B1	Hoop	LKCH	30	-	-	-	-	-
8/24/14 9:54	Stream B1	Hoop	SLSC	73	8	-	-	-	-
8/24/14 10:20	Lac du Sauvage	Angling	LKTR	510	1,450	-	-	-	-
8/24/14 10:20	Lac du Sauvage	Angling	LKTR	658	3,950	-	-	-	-
8/24/14 10:20	Lac du Sauvage	Angling	LKTR	534	1,850	-	-	-	-
8/24/14 10:20	Lac du Sauvage	Angling	LKTR	416	700	-	-	-	-
8/24/14 10:20	Lac du Sauvage	Angling	LKTR	595	2,400	-	-	-	-

Table E-1 Fish Life History Data

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
8/24/2014 12:12	Lac du Sauvage	FWIN	LKWH	522	1,900	-	-	-	-
8/24/2014 12:12	Lac du Sauvage	FWIN	LKWH	556	1,850	-	-	-	-
8/24/2014 12:15	Lac du Sauvage	FWIN	LKWH	500	1,600	-	-	-	-
8/24/14 12:48	Lac du Sauvage	Angling	LKTR	622	2,500	-	-	-	-
8/24/14 12:48	Lac du Sauvage	Angling	LKTR	476	1,105	-	-	-	-
8/24/14 13:58	Lac du Sauvage	FWIN	LKTR	460	1,050	-	-	-	-
8/24/14 14:00	Lac du Sauvage	FWIN	LKTR	415	700	-	-	-	-
8/24/2014 14:00	Lac du Sauvage	FWIN	LKWH	500	1,618	-	-	-	-
8/24/2014 14:00	Lac du Sauvage	FWIN	LKWH	525	1,600	-	-	-	-
8/24/14 14:04	Lac du Sauvage	FWIN	LKTR	451	950	-	-	-	-
8/24/2014 14:04	Lac du Sauvage	FWIN	LKWH	510	1,500	-	-	-	-
8/24/2014 14:04	Lac du Sauvage	FWIN	LKWH	498	1,750	-	-	-	-
8/24/2014 14:04	Lac du Sauvage	FWIN	LKWH	518	1,700	-	-	-	-
8/24/14 14:30	Lac du Sauvage	Angling	LKTR	631	2,950	-	-	-	-
8/24/14 14:30	Lac du Sauvage	Angling	LKTR	599	3,005	-	-	-	-
8/25/14 7:32	Stream B0	Fyke	ARGR	74	3	-	-	-	YOY
8/25/14 7:32	Stream B0	Fyke	BURB	105	4	-	-	-	-
8/25/14 7:32	Stream B0	Fyke	BURB	95	3	-	-	-	-
8/25/14 7:32	Stream B0	Fyke	BURB	88	3	-	-	-	-
8/25/14 7:54	Stream B0	Fyke	ARGR	112	12	-	-	-	-
8/25/14 7:54	Stream B0	Fyke	ARGR	73	3	-	-	-	YOY

Note: Lake Trout otolith ages were predicted using Lake Trout otolith-fin ray age relationship of $\text{Age} = 3.28 + (\text{Fin Ray Age} \times 1.38)(R^2 = 0.70)$. Arctic Grayling ages were predicted using Arctic Grayling age-length relationship of $Age = 0.001(\text{Length})^{1.4985}(R^2 = 0.82)$ (Dominion Diamond 2014).
EF = Backpack Electrofishing; FWIN = Fish Walleye Net Index; ARGR = Arctic Grayling; LKTR = Lake Trout;
SLSC = Slimy Sculpin; LKCH = Lake Chub; BURB = Burbot; LKWH = Lake Whitefish; RNWH = Round Whitefish; YOY = young-of-year; mm = millimetre; g = gram; y = years.

DOMINION DIAMOND

Table E-2 Fish Life History Data for Ursula Lake

Date and Time	Site	Sample Method	Species	Length (mm)	Weight (g)	Age, Fin ray (y)	Age, Scale (y)	Age, Otolith (y)	Predicted Age (y)
8/25/14 10:53	Ursula Lake	FWIN	LKTR	447	900	-	-	10	-
8/25/14 14:01	Ursula Lake	FWIN	LKTR	580	1,650	-	-	14	-
8/26/14 13:28	Ursula Lake	Angling	LKTR	605	2,000	-	-	34	-
8/27/14 10:33	Ursula Lake	FWIN	LKTR	280	250	-	-	-	-
8/27/14 10:33	Ursula Lake	FWIN	LKTR	470	1,200	-	-	-	-
8/27/14 10:33	Ursula Lake	Angling	LKTR	450	950	10	-	-	17
8/27/14 10:33	Ursula Lake	Angling	LKTR	449	900	-	-	16	-

Note: Lake Trout otolith ages were predicted using Lake Trout otolith-fin ray age relationship of $\text{Age} = 3.28 + (\text{Fin Ray Age} \times 1.38)(R^2 = 0.70)$ (Fish and Fish Habtiat Baseline Annex XIV).

FWIN = Fish Walleye Net Index; LKTR = Lake Trout; mm = millimetre; g = gram; y = years FWIN = Fish Walleye Net Index.